Exploring Cap-and-Invest: A Pollution Reduction Strategy

Presented to the Vermont Climate Council
Monday, February 10

11:00 - 2:00 p.m.

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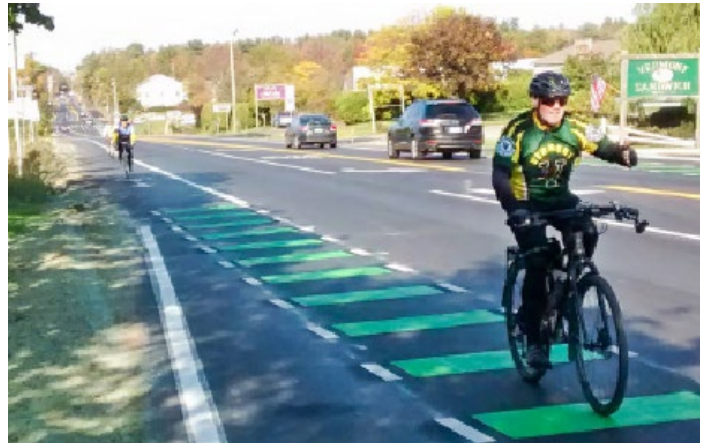
Agenda

- Welcome
- What led Vermont to do this study?
- What is a cap-and-invest program?
- Climate policy study findings
  - How can a cap-and-invest help Vermont meet our climate goals?
  - What are the potential benefits and impacts to Vermonters?
- Discussion/Q&A



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Welcome from the Study Team

Jane Lazorchak
Climate Action Office Manager
Agency of Natural Resources

Andrea Wright
Environmental Policy Manager
Agency of Transportation

Consultant Team

Chris Porter
Project Manager
Cambridge Systematics

Marc Hafstead
Program Expert
Resources for the Future

Molly Robertson
Program Expert
Resources for the Future

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Technical Advisory Committee

- Richard Cowart, Regulatory Assistance Project
- Jared Duval, Environmental Action Network
- Sam Lash, Central Vermont Regional Planning Commission
- Joanna Miller, Vermont Natural Resources Council

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What led Vermont to do this study?

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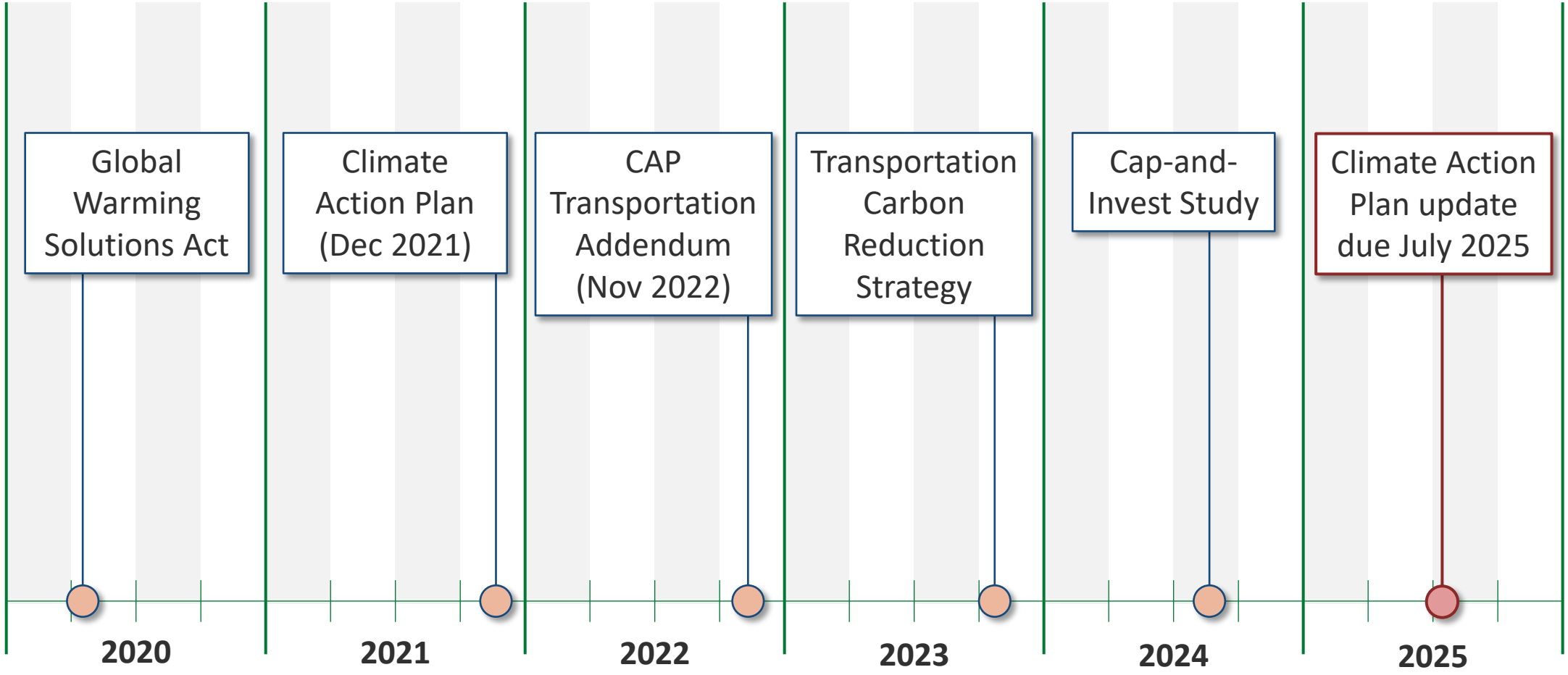
Vermont climate action planning



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What is a cap-and-invest program?

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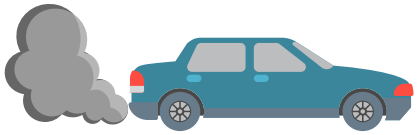
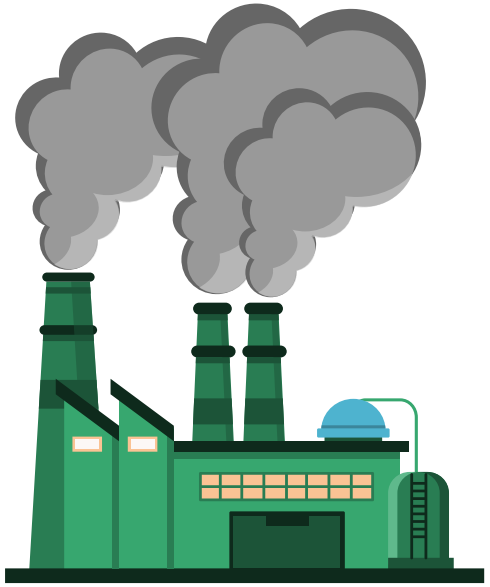
Traditional pollution regulation

Before





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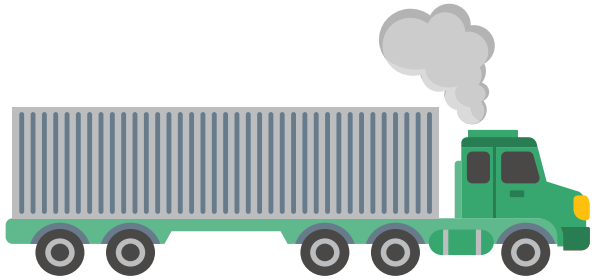

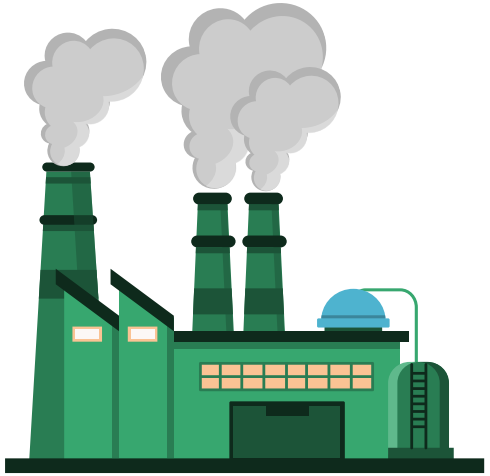

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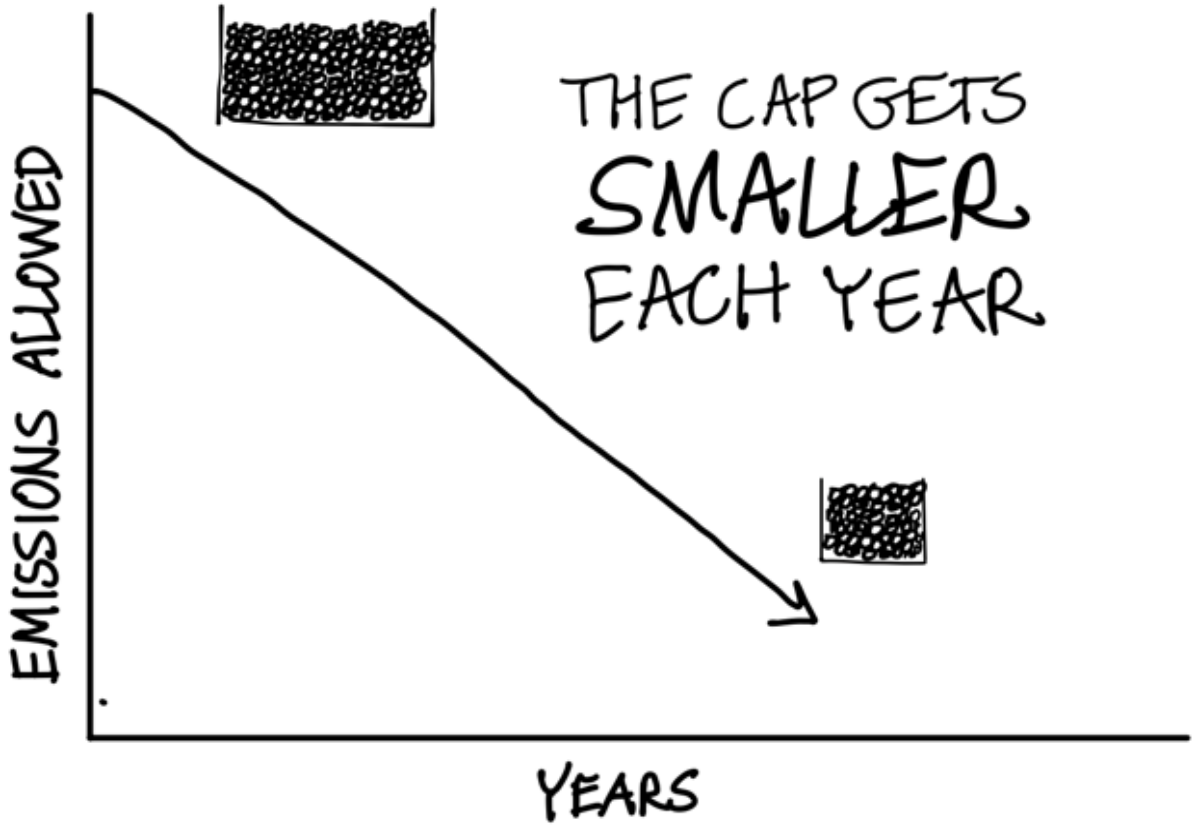
How does a cap-and-invest program work?



Graphic:
Franz Litz (adapted)

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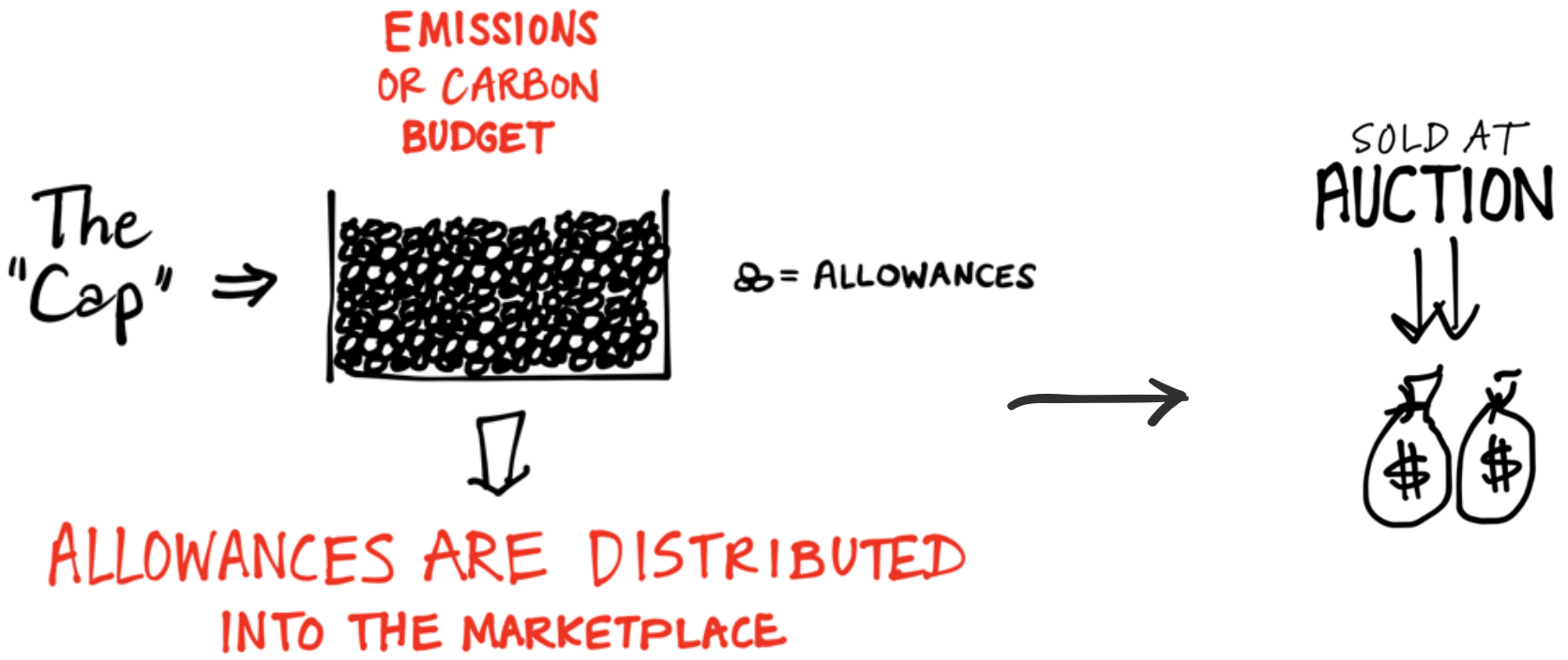
A cap-and-invest program lets the market decide how to reduce emissions



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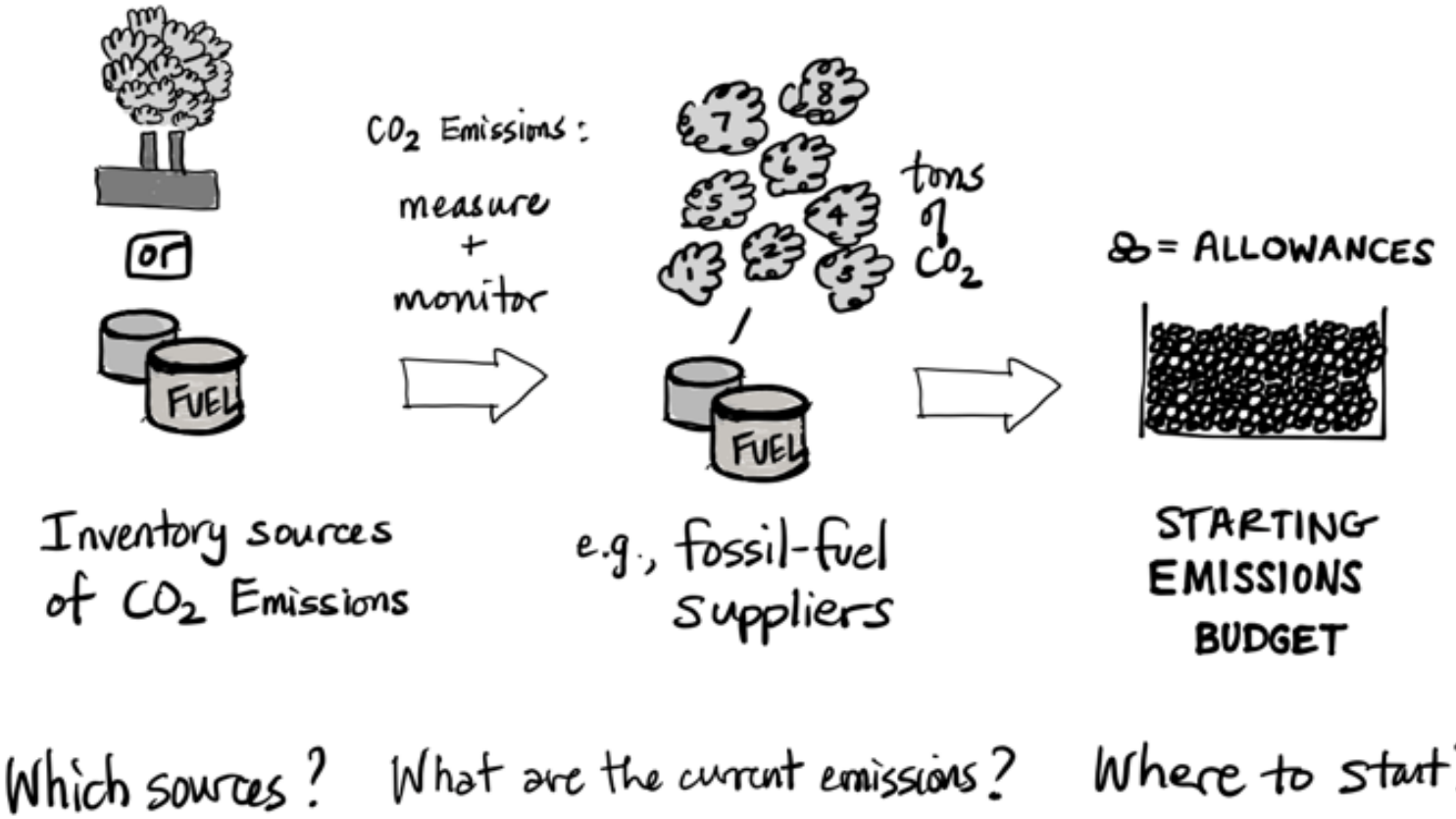
A cap-and-invest program starts with an inventory of sources



Graphic:
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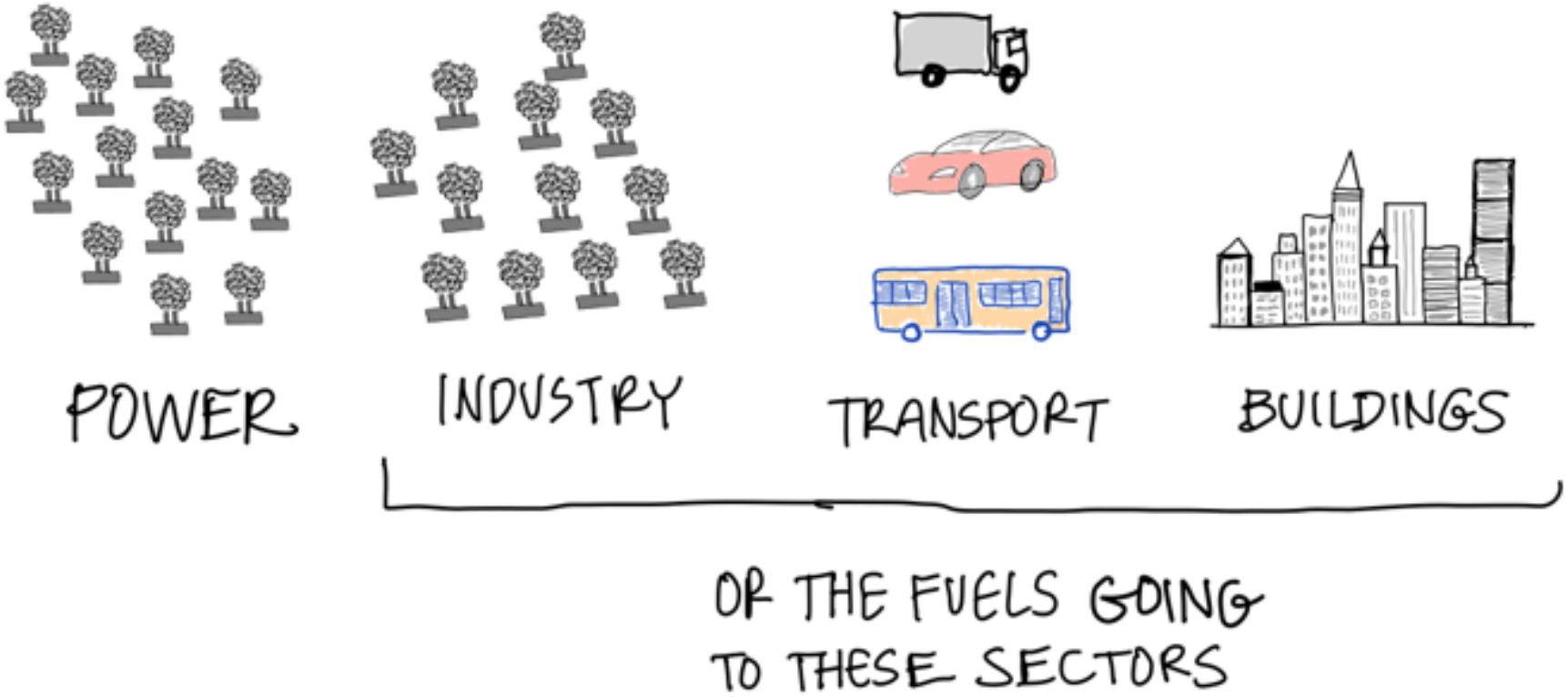
Different emissions sources could be covered



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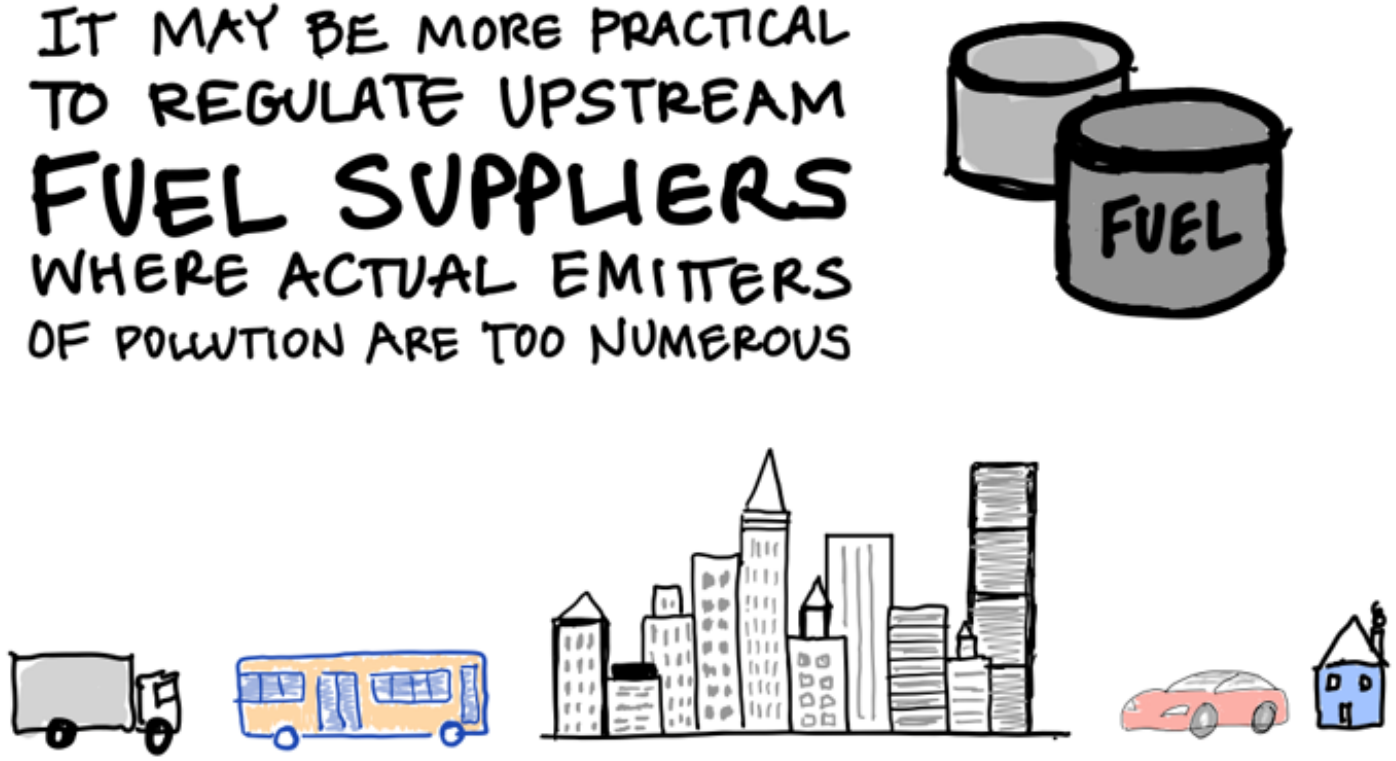
Who are the regulated entities?



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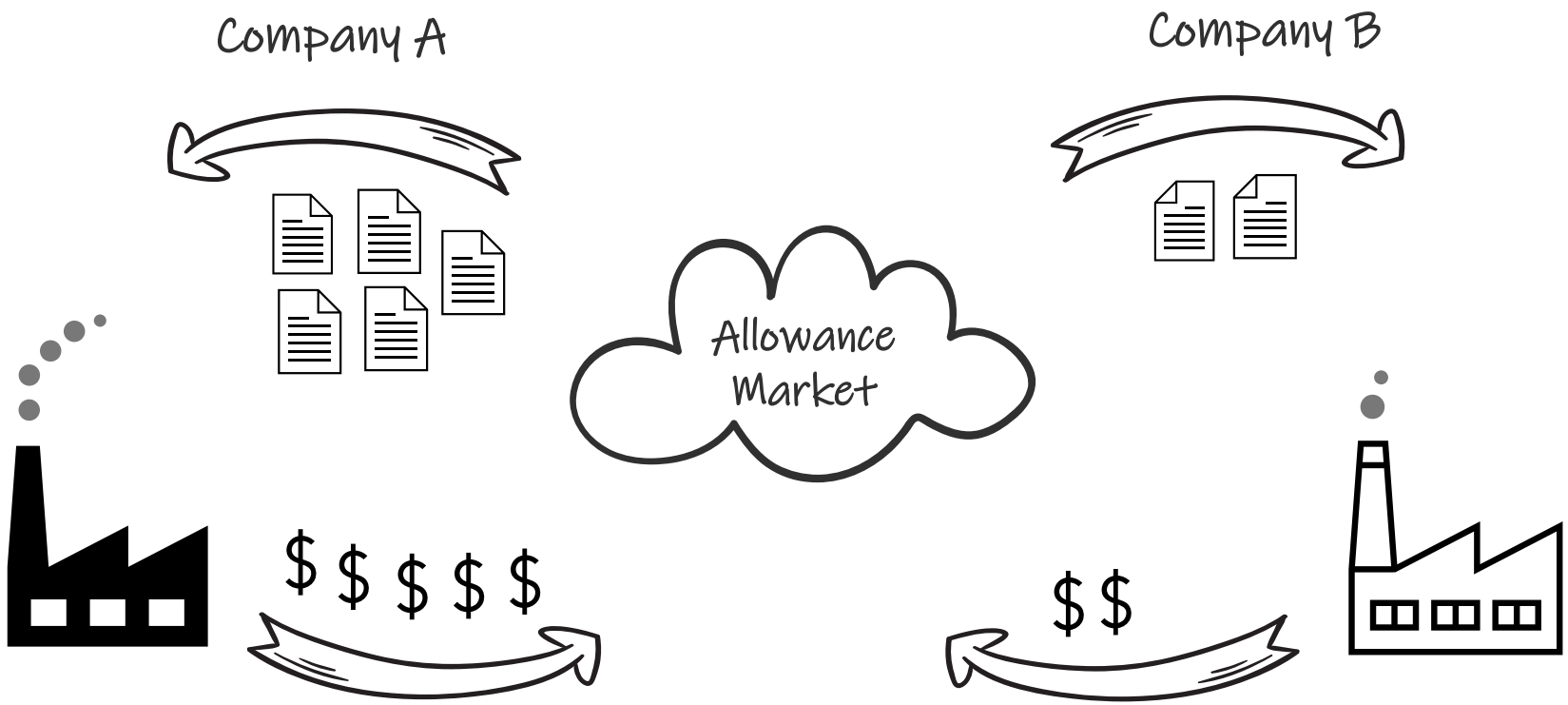
How does the market work?



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How might a cap-and-invest program help Vermont meet its climate goals?

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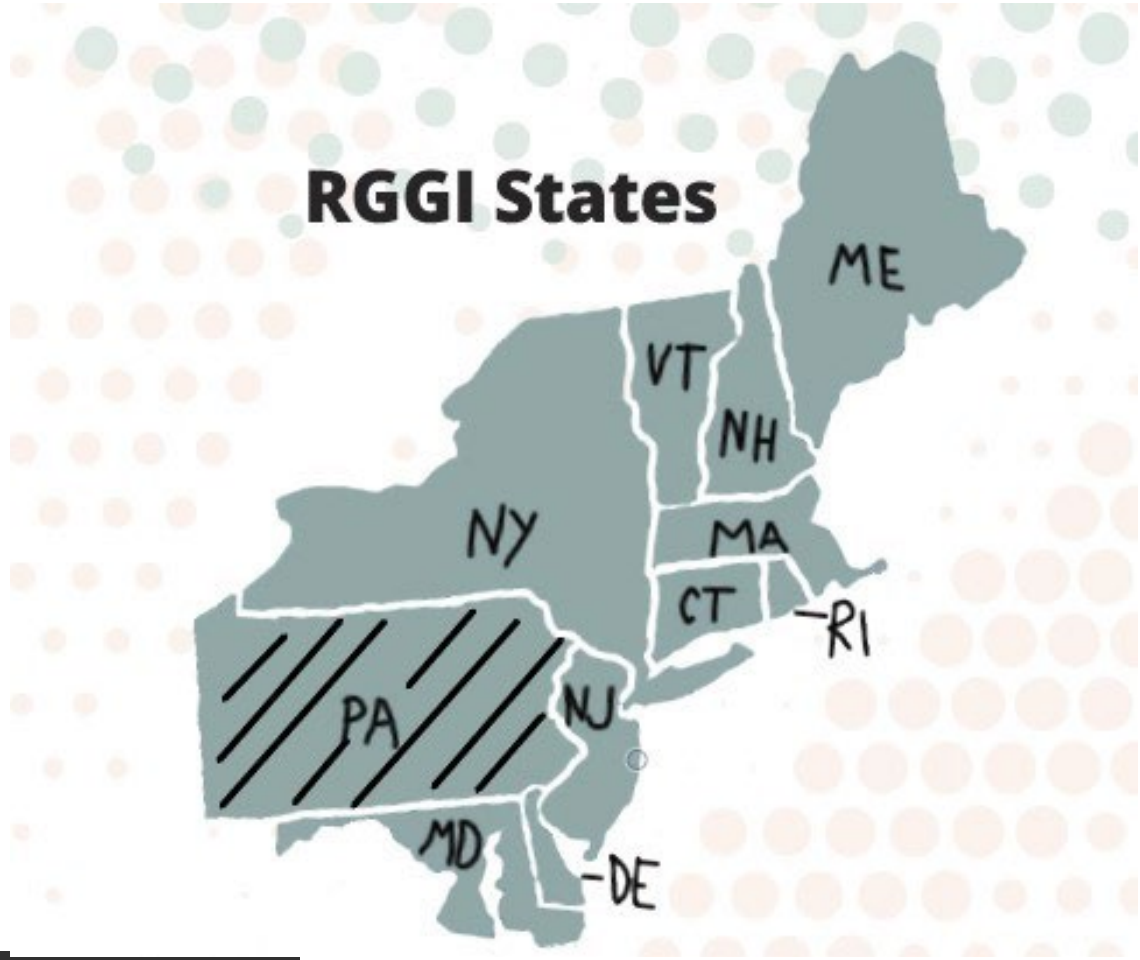
Vermont already has cap-and-invest for the electricity sector



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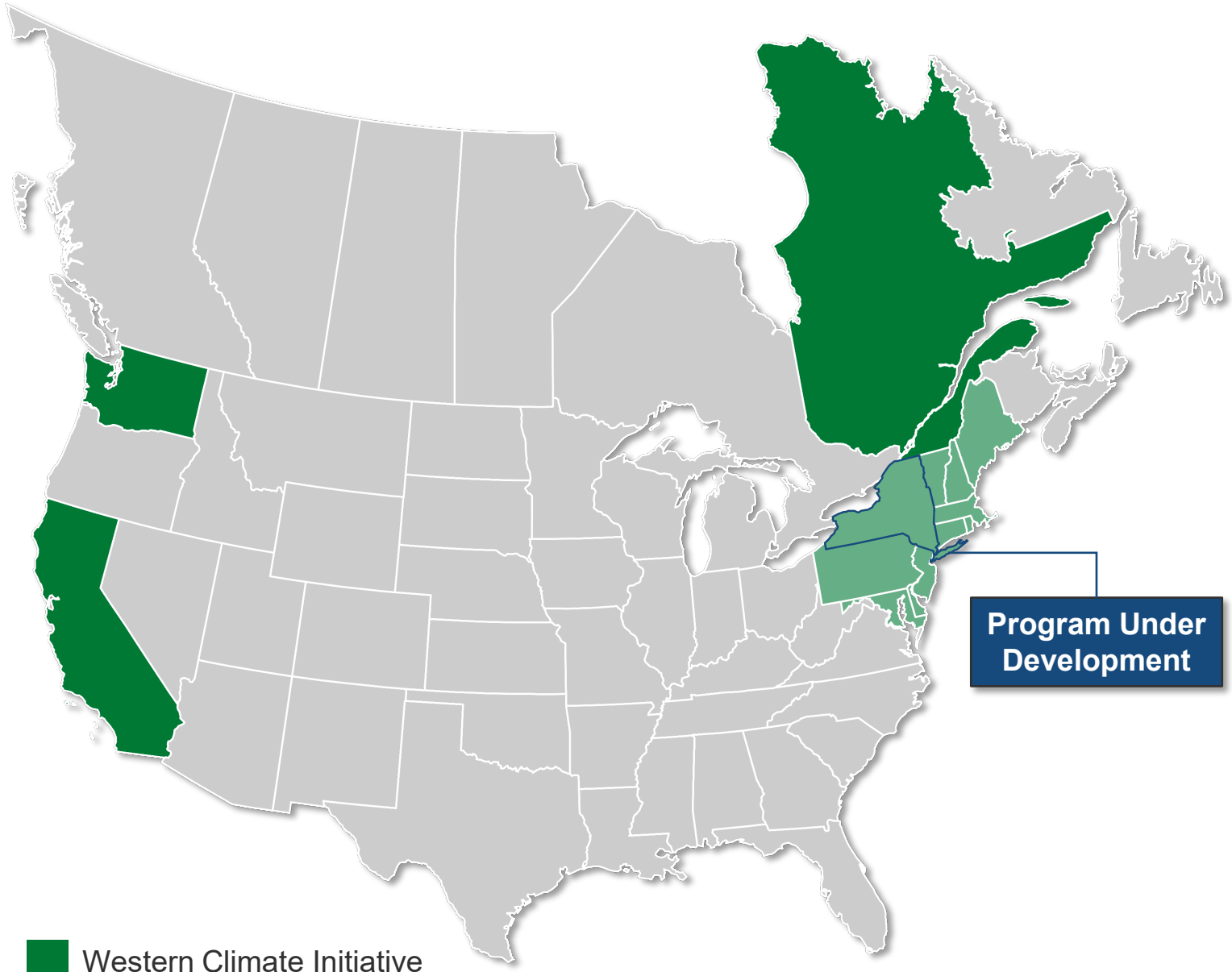
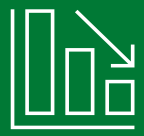
Other states and provinces are doing cap-and-invest



How could cap-and-invest affect Vermonters?

Benefits

- More money into climate action, such as energy efficiency programs, EV, and resilience 
- More jobs in the climate workforce 
- Improved health and environment 
- Improves decision making for businesses by formalizing a timeline for emissions reductions 

Impacts

- Higher prices for conventional fossil fuels 
- Potential border effects with non-participating neighbors 

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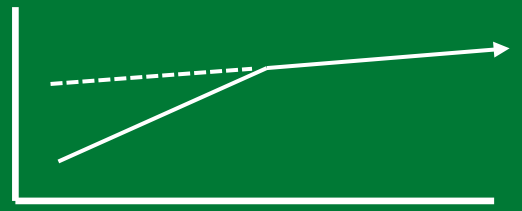
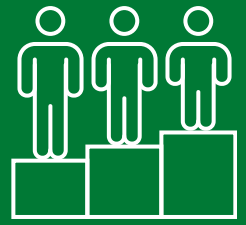
How could the state make sure a program is affordable for Vermonters?

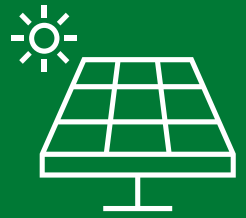
Set an upper limit on the emissions price



Target proceeds to ensure equity



Make it easier to switch to clean energy



Allocate emissions to at-risk industries

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Proceeds can be reinvested into clean energy and efficiency programs

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SUMMARY: Why consider cap-and-invest?

Declining emissions cap provides more certainty about emission reductions

Price on carbon pollution provides a signal to influence future investments

Proceeds can be equitably reinvested into energy efficiency & pollution reduction strategies that benefit Vermonters

Complements and supports other pollution reduction policies

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Climate Policy Study Findings

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What did Vermont study?

Act 148 of 2024 (the T-Bill) requires:

The State in coordination with the VCC to develop a written analysis to:

- Address the pros, cons, costs, and benefits of Vermont participating in regional or cap-and-invest program, such as the Western Climate Initiative (WCI) and the New York Cap-and-Invest program;
- Explore the adoption of a clean transportation fuel standard

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The study…

The study estimated …

1. the amount of emissions reduction that could be generated
2. the revenue that could be generated for reinvestment
3. potential benefits and impacts to Vermonters
   a) Household costs
   b) Jobs
   c) Social cost of carbon
   d) Health benefits
4. the resources needed to administer a program and timeline

The study is providing information to support a recommendation from the Treasurer's Office to the Legislature about a cap-and-invest program.

Public Involvement

- Two virtual public meetings (October 2024)
- Focus groups (October/November 2024)
  - Potentially obligated industries
  - Business community
  - Environmental and community-based organizations, including equity/ environmental justice groups
- Study Webpage

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Program Options

Program to Join:

Western Climate Initiative
- CA, Quebec, possibly WA
- In operation since 2013

New York Climate Initiative
- New York State
- Not established yet
- Earliest start is 2027

Sectors to Include:

Transportation

Transportation + Residential / Commercial / Industrial Fuels

Transportation + R/C/I Fuels + Industrial Processes

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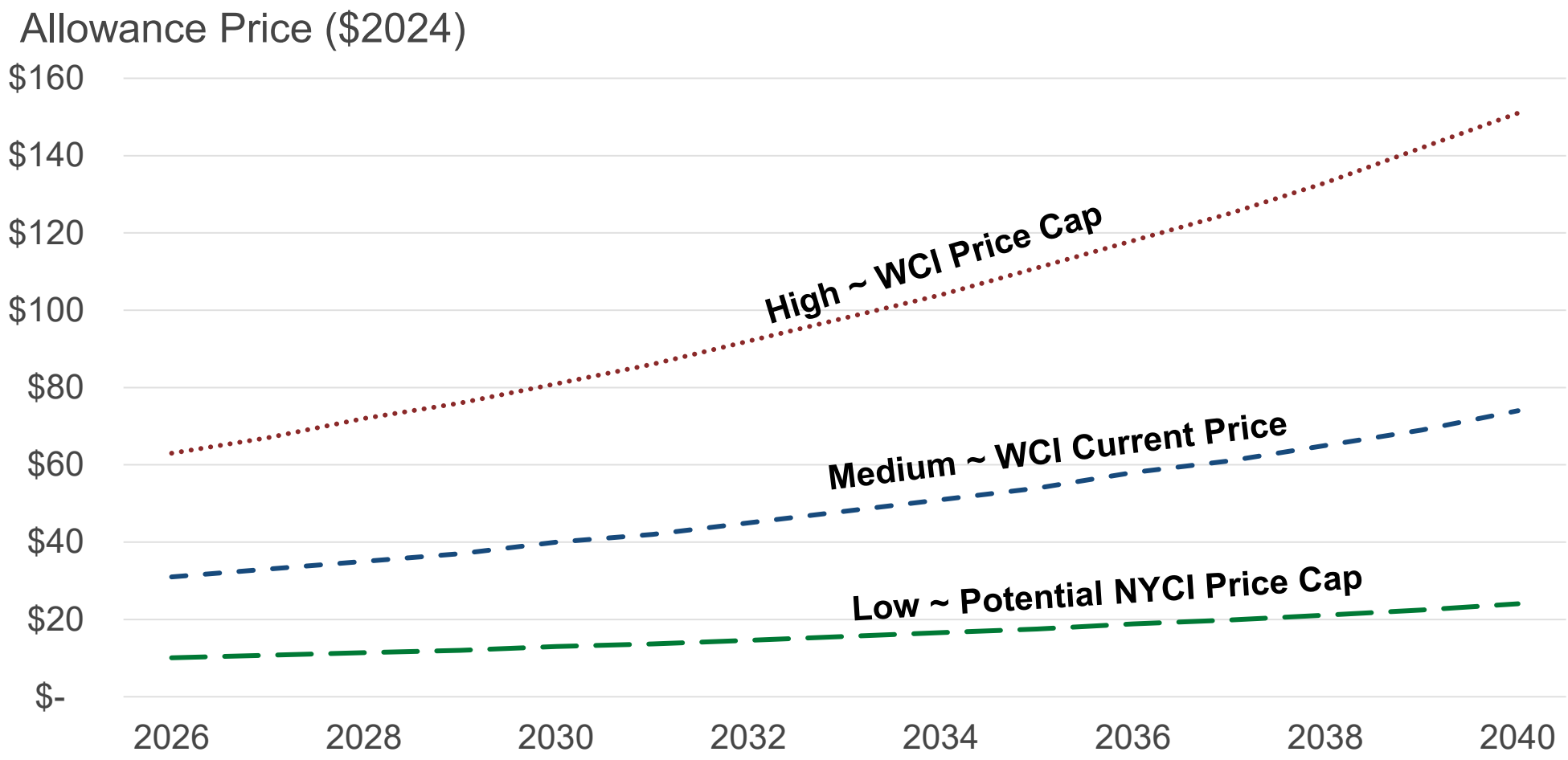
Modeled Allowance Price Trajectories



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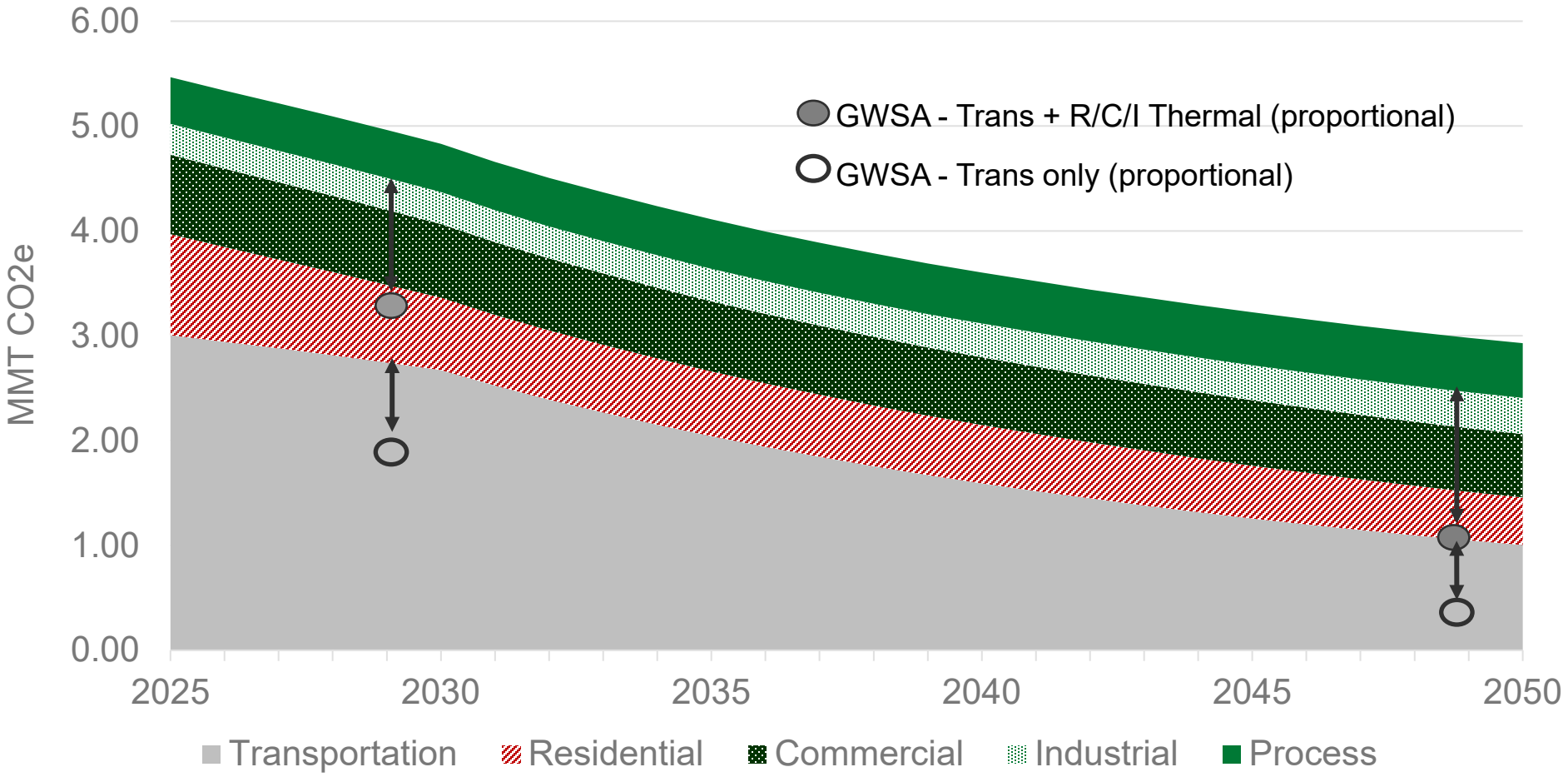
Baseline Emissions and GWSA Levels



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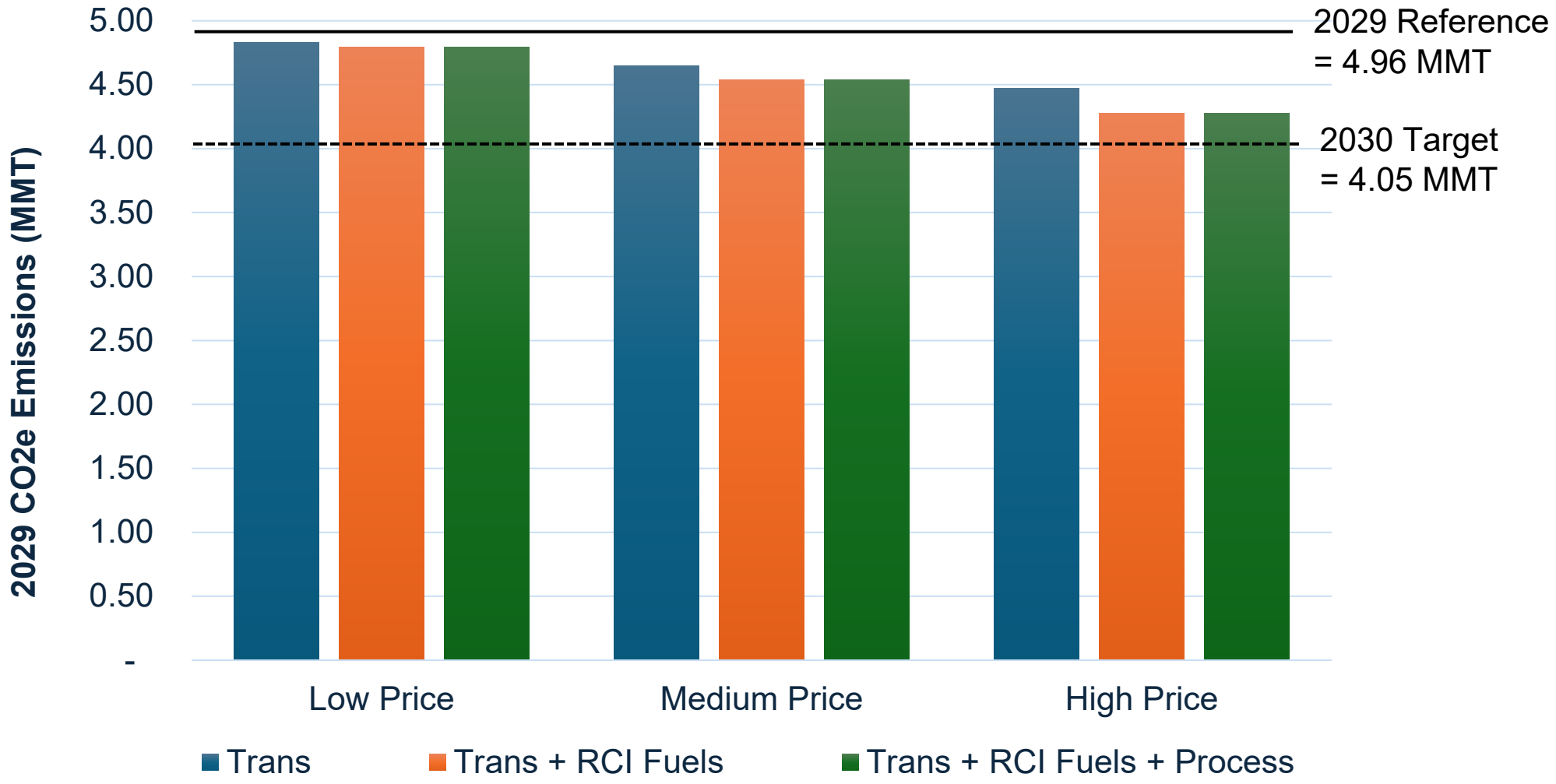
2029 Emissions with No Reinvestment



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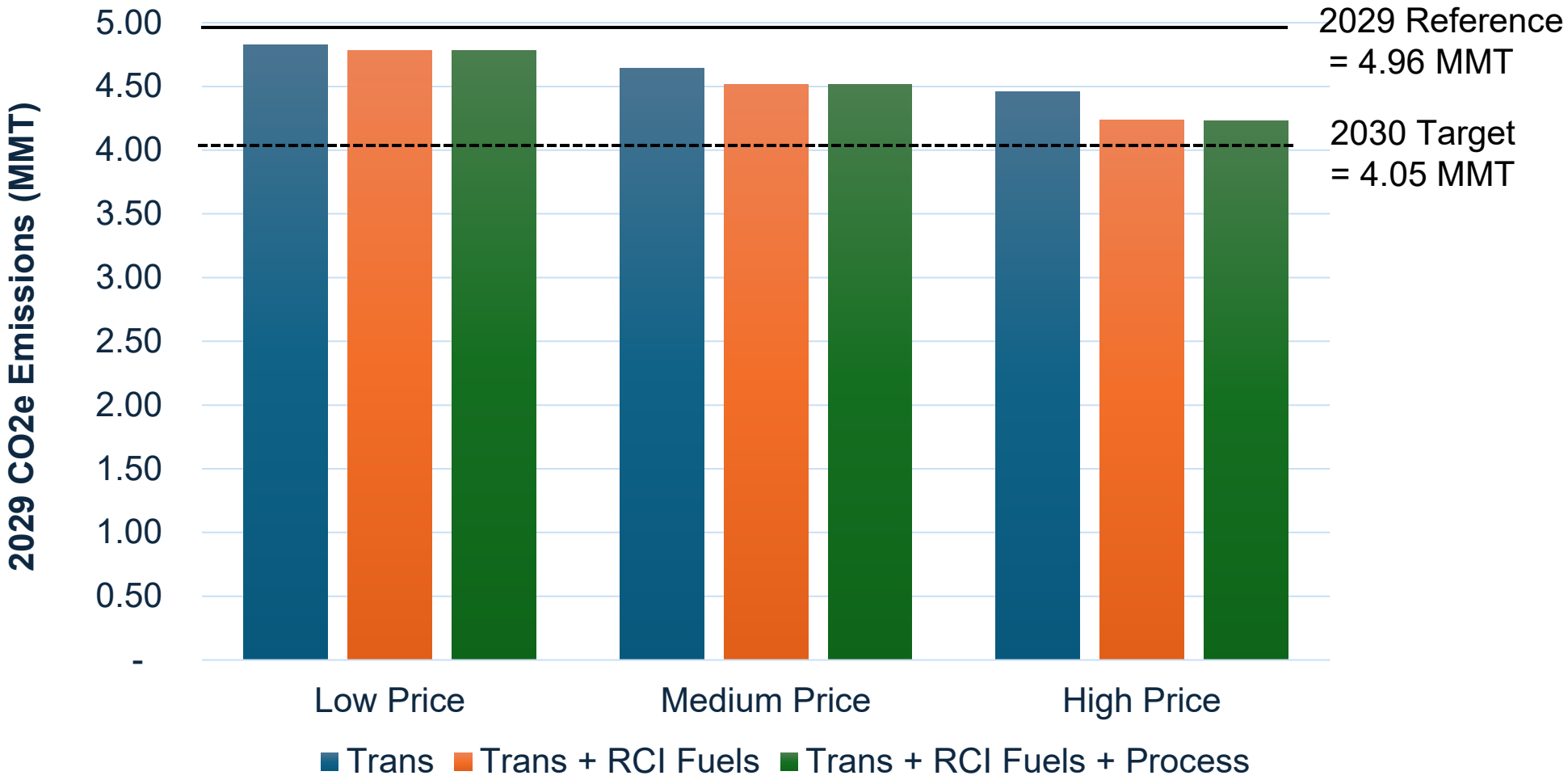
2029 Emissions with Full Reinvestment



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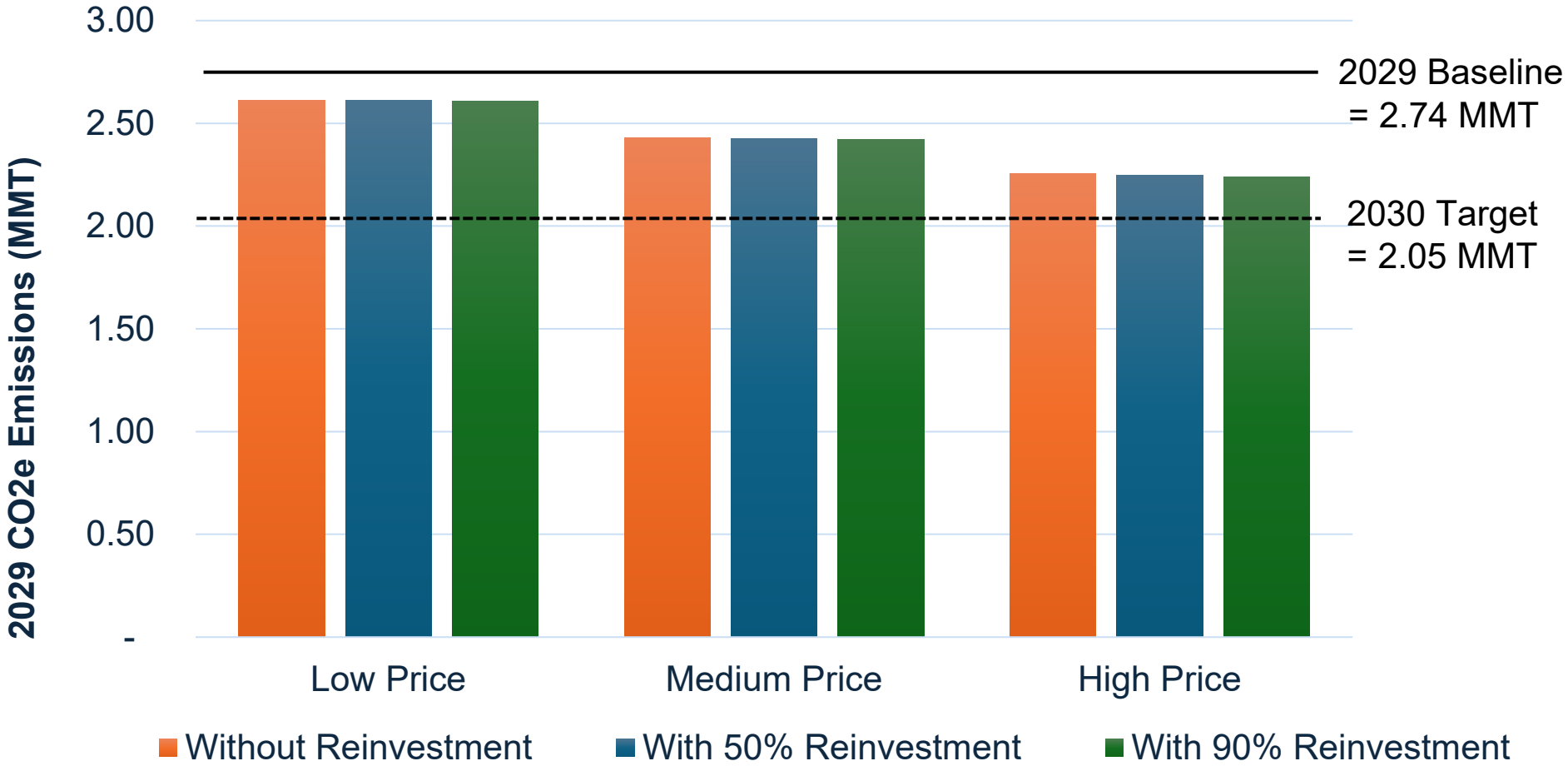
2029 Transportation Emissions



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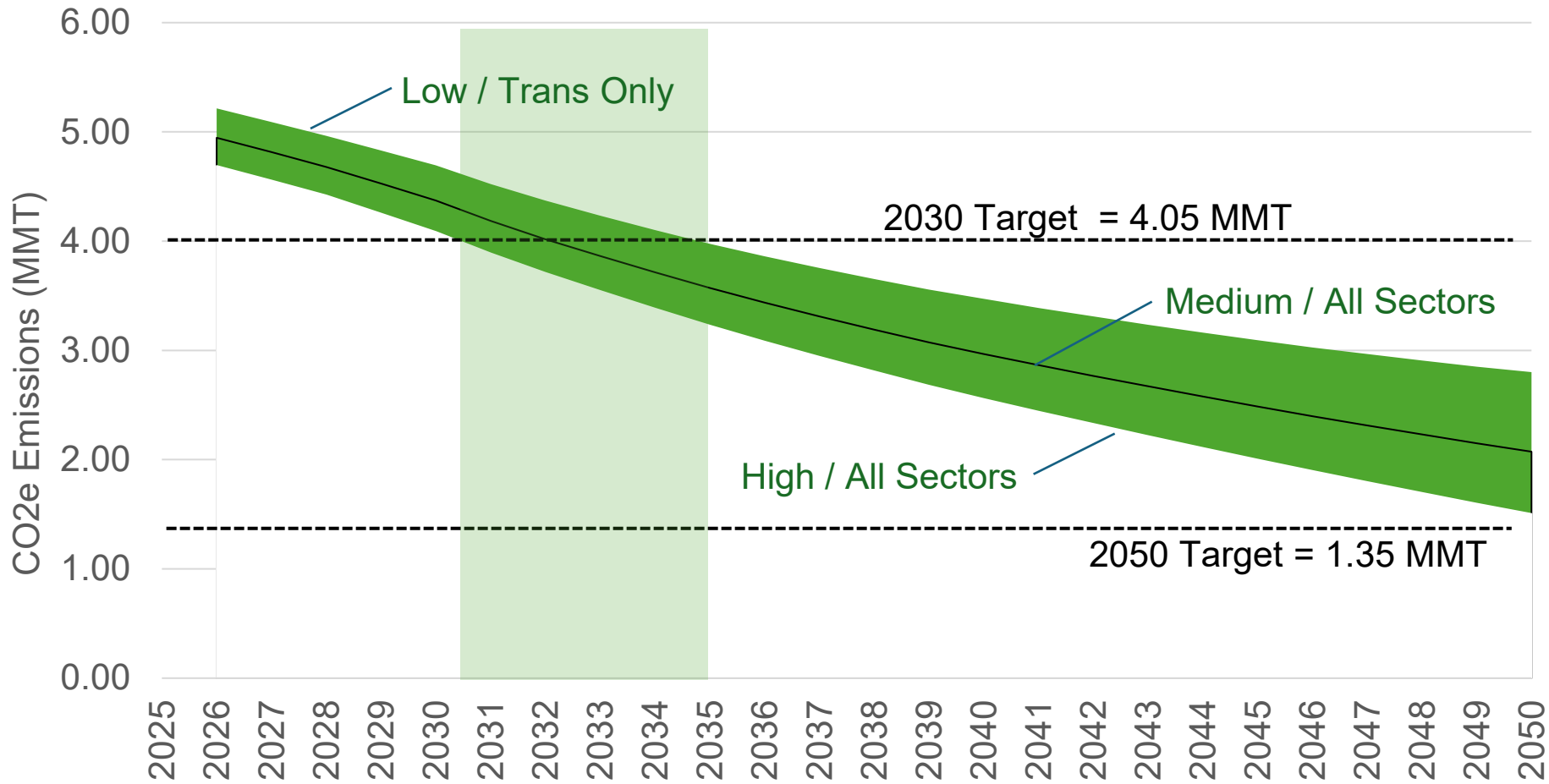
Projected Emissions by Scenario
(50% reinvestment)



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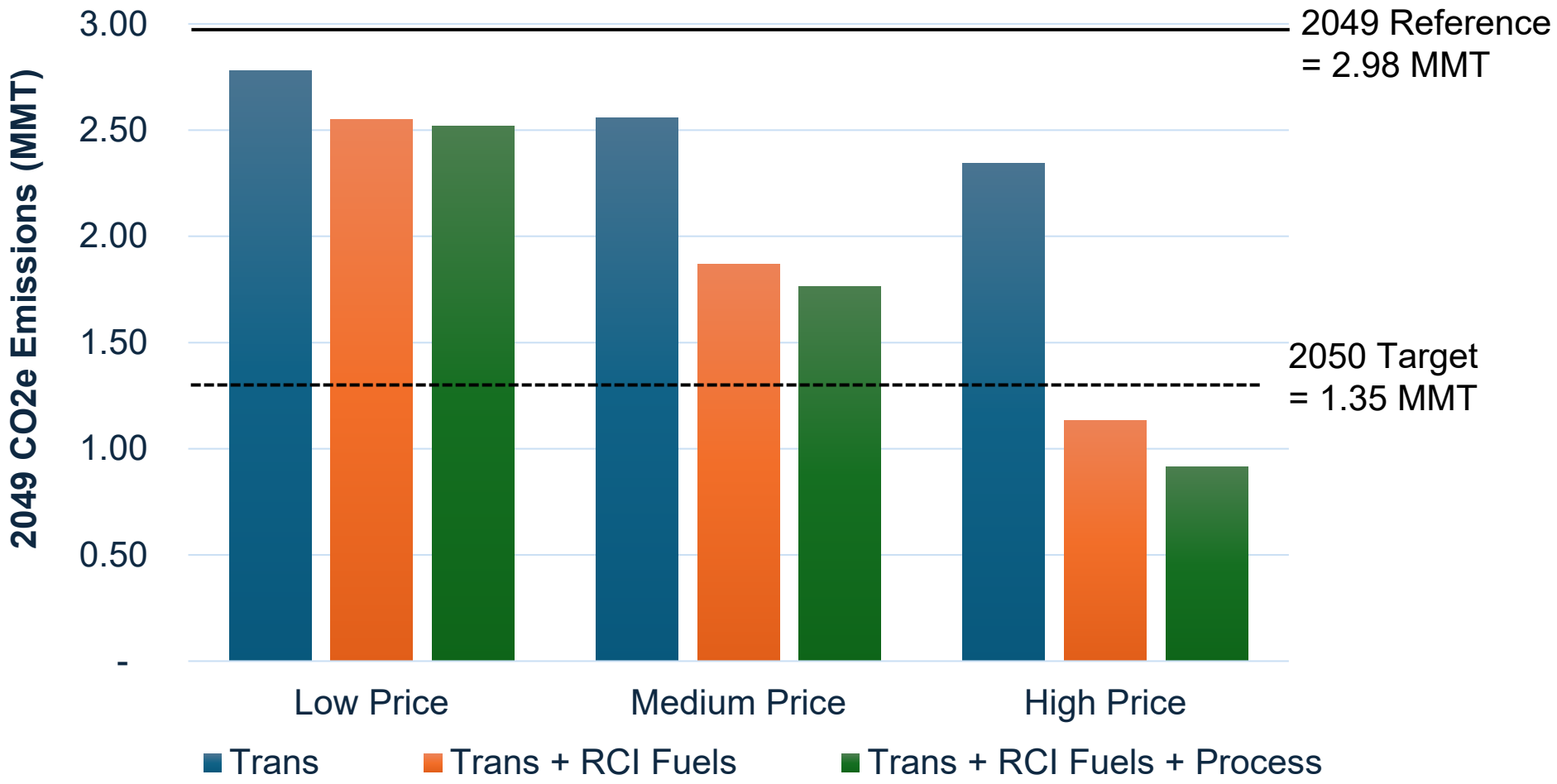
2049 Covered Sector Emissions
(Full Reinvestment)



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Estimated 2030 Auction Proceeds (2024 $M)

Scenario	Transportation	Transportation + Thermal	Transportation + Thermal + Process
Low Price	$ 32	$ 54	$ 59
Medium Price	$ 94	$ 157	$ 175
High Price	$ 177	$ 299	$ 336

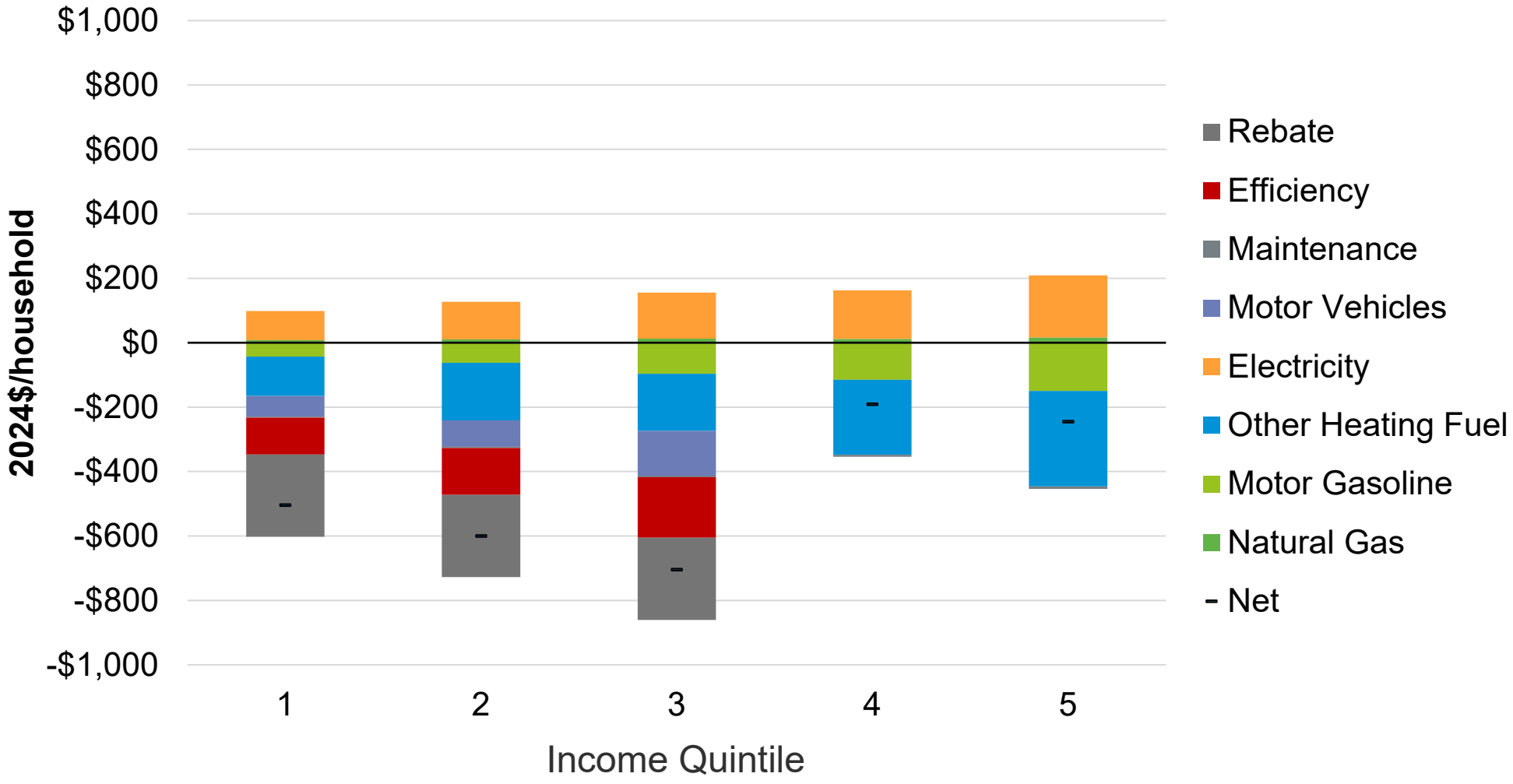
Estimated Net Change in Vermont Jobs in 2030

(50% reinvestment)

Scenario	Transportation	Transportation + Thermal	Transportation + Thermal + Process
Low Price	80	130	140
Medium Price	220	380	420
High Price	420	720	810

Household Expenditure Change in 2030

(Medium price, trans and thermal sectors, 50% reinvestment)



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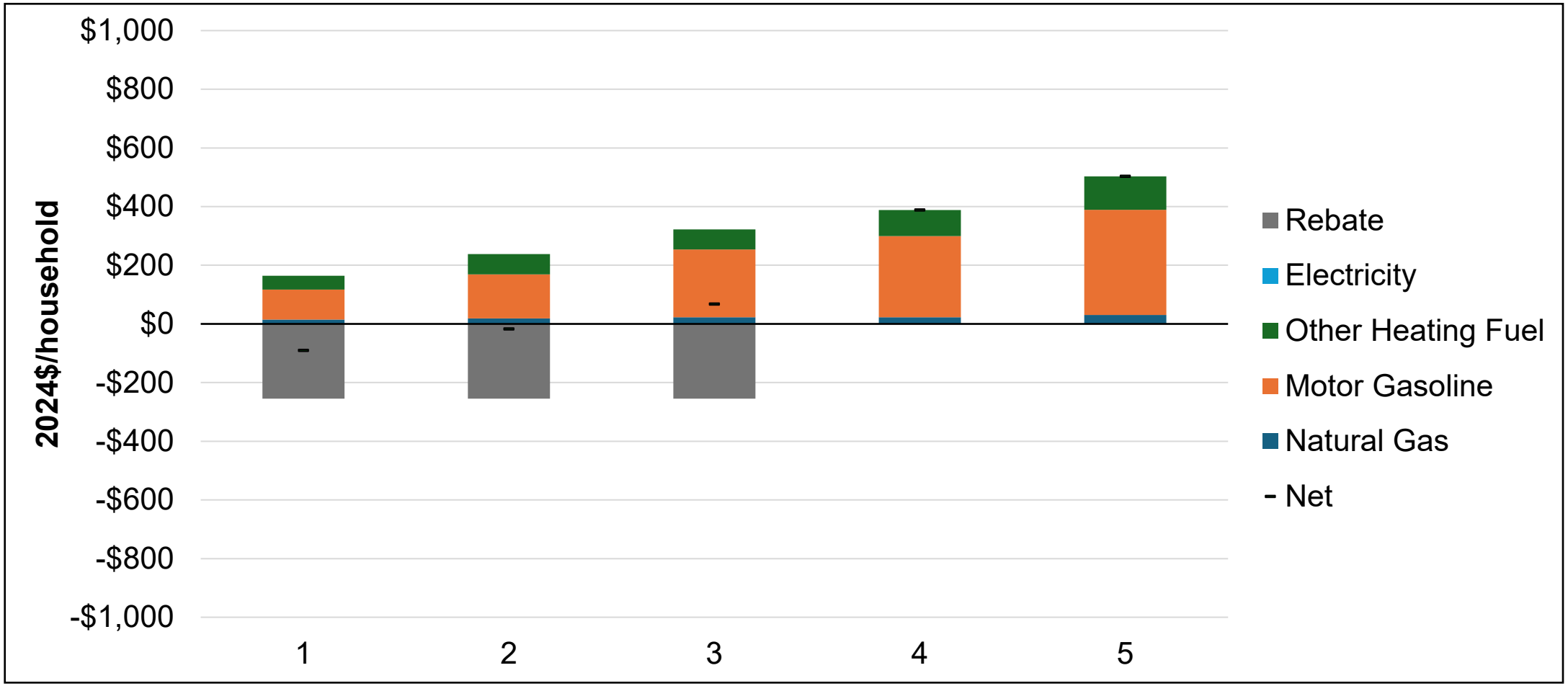
Household Expenditure Change

(Medium price, trans and thermal sectors, 50% reinvestment)



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Household Expenditure Change – Lower 3 Quintiles

(Medium price, trans and thermal sectors, 50% reinvestment)

Price Scenario	HH Cost Maximum Impact[a]	Typical HH Cost Impact[b]	Average HH Cost Impact[c]
Low	$90	$0	($230)
Medium	$240	($10)	($600)
High	$430	($60)	($1,100)

a ”Maximum Impact” = average change *in fossil fuel costs* for households *not reducing consumption or fuel switching*

b “Typical Impact” = average change in *all costs*, inclusive of dividends, for *households not reducing consumption or fuel switching*

c “Average impact” = average change in *all costs*, inclusive of dividends and rebates, and inclusive of *reduced consumption and fuel switching*

All metrics are only for lower 60% of households by income (quintiles 1-3)

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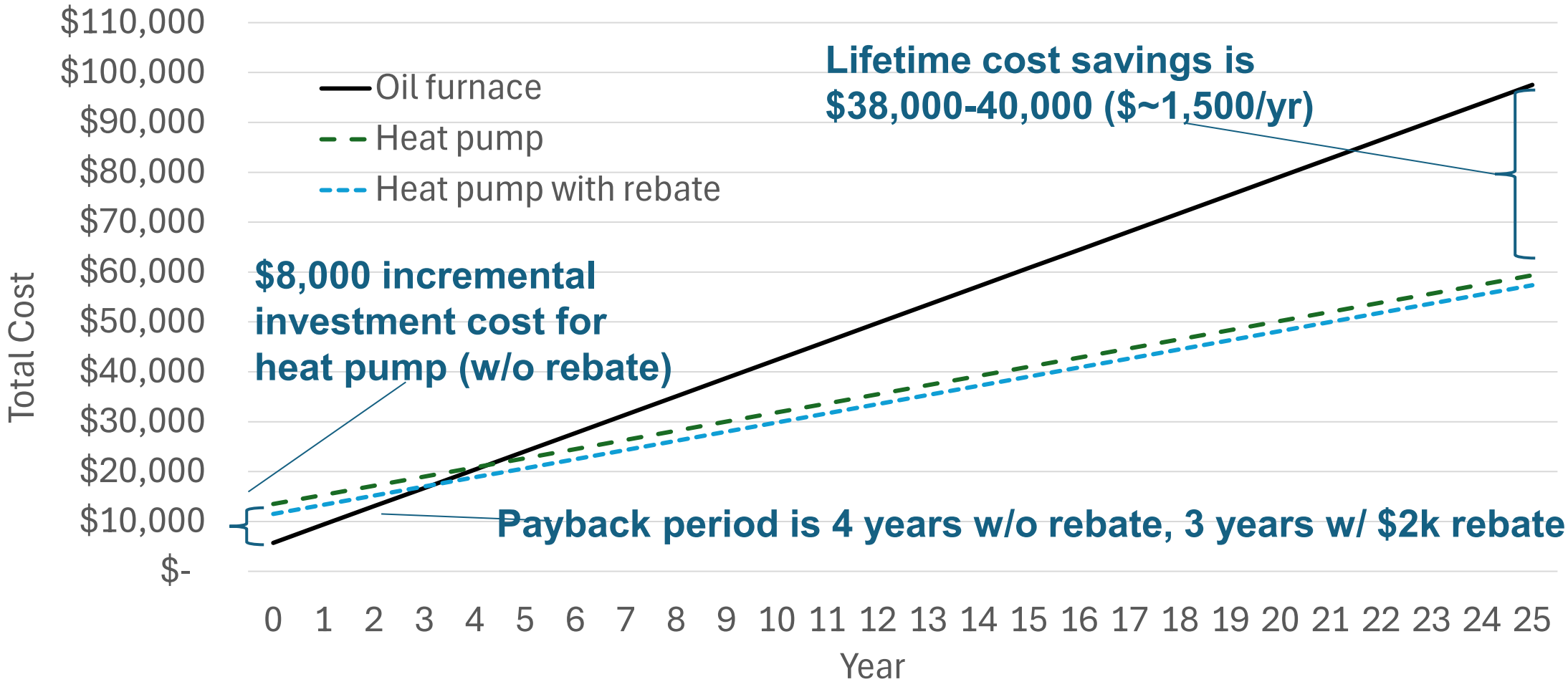
Illustrative Household Cashflow – Heat Pump Replaces End-of-Life Oil Furnace



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Social Benefits of Carbon Emissions Reduction in 2030 (2024 $M) *(50% reinvestment)*

Scenario	Transportation	Transportation + Thermal	Transportation + Thermal + Process
Low Price	$38	$50	$50
Medium Price	$90	$125	$126
High Price	$140	$203	$205

Estimated Health Benefits in 2030

(Transportation sector, 50% reinvestment)

Scenario	Deaths avoided - physical activity	Deaths avoided - air pollution	Asthma avoided (age 0-18)	Value of health benefits (2024 $M)
Low Price	3	4	36	$50
Medium Price	6	9	87	$119
High Price	10	14	136	$185

Implementation Costs

- Vermont will need to hire staff to administer the program and its proceeds, and also pay platform fees
- Extrapolating from Quebec's experience, administrative cost is estimated to be $1.9 - $3.4M – 4-6% for the low price scenario, less for the medium or high price scenario
- Washington State's legislation caps admin costs at 5%
- Vermont might require a higher administrative % due to high fixed costs relative to program size
- Efficiency Vermont's admin costs were 8% of budget

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Summary Evaluation

Price Scenario	Gap vs. 2030 Limit (mmt)	2030 Limit Reached by…	2030 Auction Proceeds ($M)	HH Cost Net Impact[a]	New Jobs	Social Cost of Carbon ($M)	Value of Health Benefits ($M)
Low	0.74	2035	$30-60	$0 – ($230)	80-140	($40-50)	$50
Medium	0.48	2032-2034	$90-180	($10) – ($600)	230-430	($90-130)	$120
High	0.20	2031-2032	$180-340	($60) – ($1100)	430-810	($140-210)	$190

a High value is average change *in fossil fuel costs* for households *not reducing consumption or fuel switching, but including dividends. Low value is* average change in *all costs*, inclusive of dividends and rebates, and inclusive of *reduced consumption and fuel switching.* All metrics are only for lower 60% of households by income.

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Low-Carbon Fuel Standard

- Requires fuel suppliers to reduce ***intensity*** of carbon emissions per unit of fuel – not total emissions
- Covers life-cycle emissions, including out-of-state upstream
- Generates credits specifically for ***producers of low carbon fuels*** including biofuels and electricity
- Is complementary to a cap-and-invest

Low-Carbon Fuel Standard – Evaluation Criteria

Criterion	Considerations
Emissions reduction	• 10% LCFS on transportation would reduce GHGs by 0.24 MMT in 2030 • Some might be out-of-state
Revenue generation	• No net impact
Allowance prices	• Could reduce prices by providing another emissions reduction mechanism
Change in fuel / energy cost	• Current CA LCFS impact is about $0.10/gal • Electricity prices would decrease • Long-term net fuel costs will decrease

Low-Carbon Fuel Standard – Evaluation Criteria

Criterion	Considerations
Macroeconomic effects	• WA study found small net gain, with electrification jobs gaining more than petroleum sector losses
Household impacts	• Modest impacts related to changes in fuel costs
Health benefits	• Proportional to emission reductions, especially from diesel trucks
Implementation costs	• Additional administrative costs • Currently no neighboring state has a program that could be linked
Timeline	• Could be implemented independently of C&I

Summary of Stakeholder Input

Potentially Obligated Entities and Other Businesses

- Potential support from renewable fuel industry
- Concerns over potential cost impacts and business growth
- Concerns over administrative requirements for obligated entities
- Preference for one emissions regulation program over multiple sector-specific programs
- Questions about small fuel distributors and distributors who cross state borders on a delivery route
- Need better understanding about what program would mean for specific parties

Summary of Stakeholder Input

Environmental and Community Groups

- Strong support for program as a cost-effective way of achieving emission reductions
- Program provides a pool of resources for reinvestment in emissions reduction - no other new funding opportunities on the horizon
- Focus on supporting equity
  - Make sure rural and low-income Vermonters are not left behind or overburdened in the energy transition
- Involve people in conversation about use of funds
- Communicate the “how” and “why” of the program

Summary of Public Meeting Input

- Interest in **more information** about states in which similar programs are working
  - Success and challenges for those programs
  - Effects of the program on fuel prices
  - Resulting impacts to consumers, businesses, and the state's economy
- Questions about **mechanics**
  - How biofuels fit in
  - Relationship to proposed Clean Heat Standard
- Other **resource** questions
  - Resources on making home improvements and vehicle choices
  - Workforce development

Summary Findings on Effectiveness

- Cap-and-invest would support **additional progress** towards GWSA emissions requirements
- 2030 GWSA levels are likely to be reached by the **early- to mid-2030s**
- Cap-and-invest would **move the state closer to its 2050 levels**, with the following program choices affecting how much the gap is closed:
  - Joining a program with a higher expected allowance price (WCI)
  - Covering multiple sectors
  - Reinvesting a substantial share of proceeds in emissions–reducing activities
  - Also implementing a low-carbon fuel standard

Summary of Benefits and Impacts to Vermonters

- Fossil fuel prices are likely to increase by 10 to 30 cents per gallon initially
- Auction proceeds will be returned to consumers and businesses in the form of dividends and/or rebates
- How the proceeds are spent will affect who benefits
- ***Low- and moderate-income households can be insulated from fuel price increases through income-targeted dividends***
- Vermonters will also see benefits in other forms:
  - Net new job creation
  - Cleaner air and improved public health

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Summary of Feasibility and Timing Considerations

- WCI (California and Quebec) is operating; NYCI still under development
- Earliest practical start date for either is likely to be **2028**
- Could start with a **reporting-only year** in 2027
- Current program members (WCI = CA/QC or NY) would need to approve terms of VT's participation
- Vermont will require time to **ramp-up a program**, both implementation and management/investment of proceeds
- Proceeds could start to be spent and generate emissions benefits in **2029-2030** and beyond

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Let's hear from you!
Questions and Comments

- A summary of questions and comments that we don't cover today will be posted on the project website at climatechange.vermont.gov/cap-and-invest-study

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Thank You!

Visit the Study Website at:

climatechange.vermont.gov/cap-and-invest-study

Share your thoughts with the study team:

Email: anr.cao@vermont.gov

Phone: (802) 522-9555

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