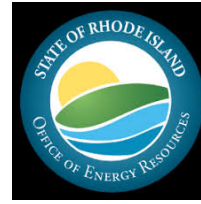


CADMUS



Rhode Island Carbon Pricing Study Update

Cadmus Group & Synapse Energy Economics, Inc.
EC4 Meeting, Tuesday, June 9th



Synapse
Energy Economics, Inc.

CADMUS

Project Goal and Deliverables

Project Goal

To investigate potential state and regional carbon pricing policies.

Final Deliverables

A report and associated presentation that outline key findings from the policy analysis, modeling, and stakeholder engagement.

The purpose of this study is to provide an impartial assessment of various carbon pricing policies. It is intended to inform, not set, final policy design.

Project Tasks and Timeline

Tasks	May	Jun	Jul	Aug	Sep
Task 1. Project Management					
Task 2. Literature Review and Policy Selection (Complete)					
Task 3. Policy Analysis					
Task 4. Carbon Pricing and Economic Modeling					
Task 5. Stakeholder and EC4 Engagement					
Task 6. Final Report and Public Presentations					

Selecting Pricing Levels to Study

Pricing levels are meant to be illustrative and informative for the study.

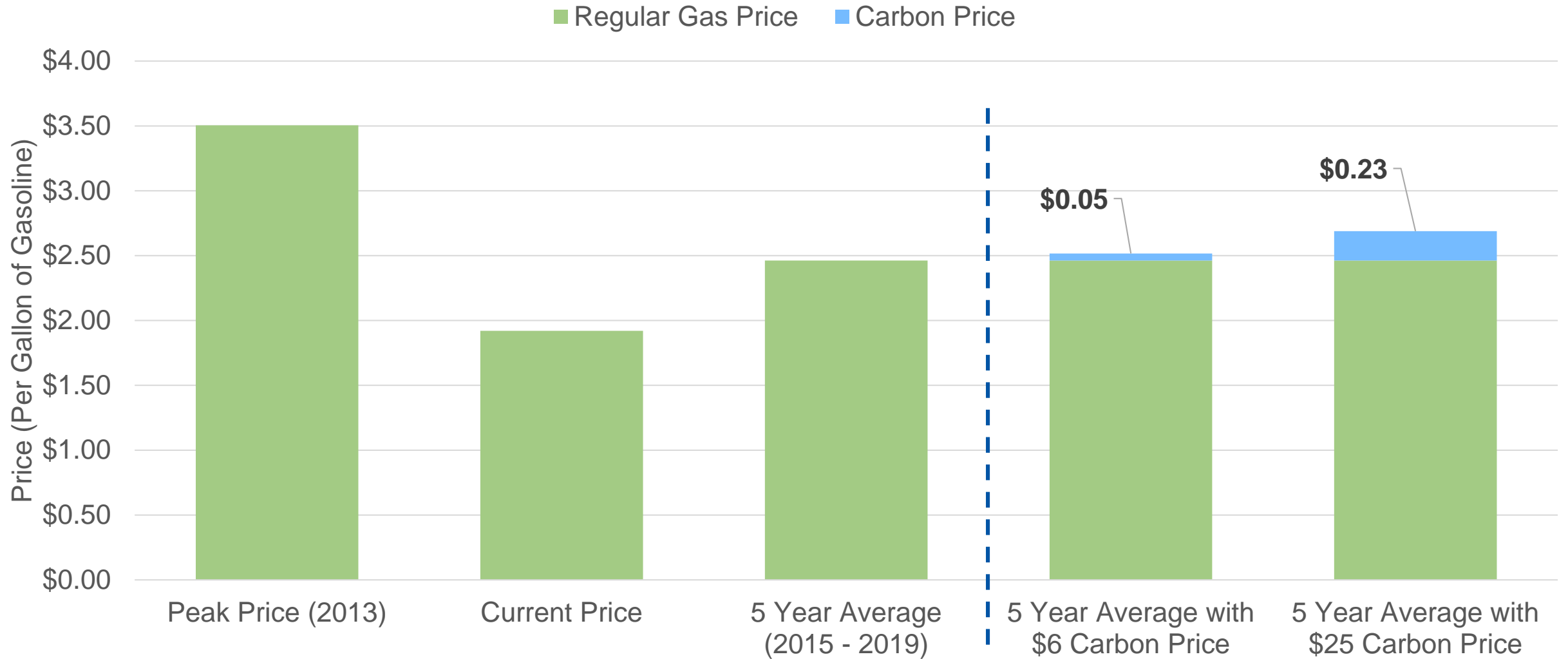
Low Price

- *Generates revenue for investing in decarbonization programs*
- Applied to specific sectors
- \$6 per metric ton of CO₂e in 2021
- Increasing 5% annually above rate of inflation
- Price corresponds to RGGI
- GHG reductions will be driven by reinvestment

High Price

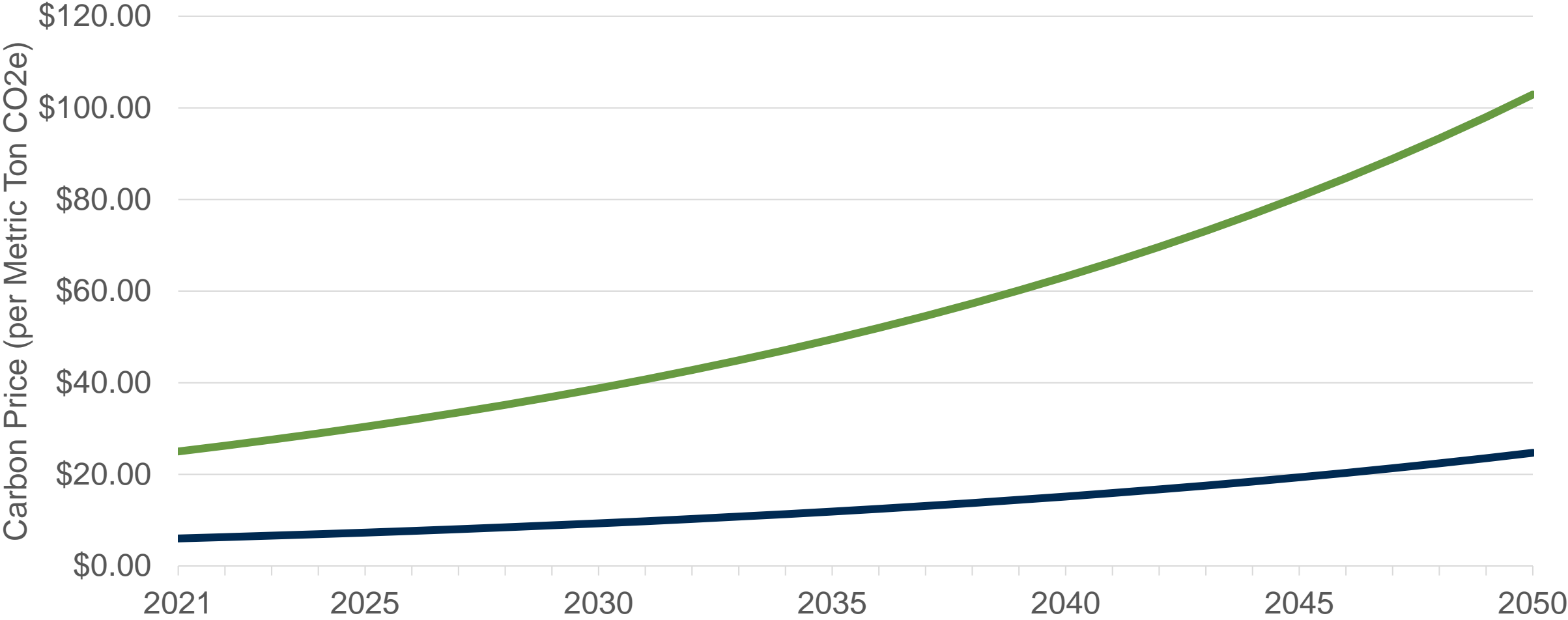
- *Provides a mechanism to change behavior*
- Applied to all sectors
- \$25 per metric ton of CO₂e in 2021
- Increasing 5% annually above rate of inflation
- Price corresponds to EU ETS
- GHG reductions driven by both reinvestment and behavior change
- Rebate to return some funds to RI citizens


Contextualization: Impact on Gas Prices



Pricing Levels Over Time

Low Price High Price



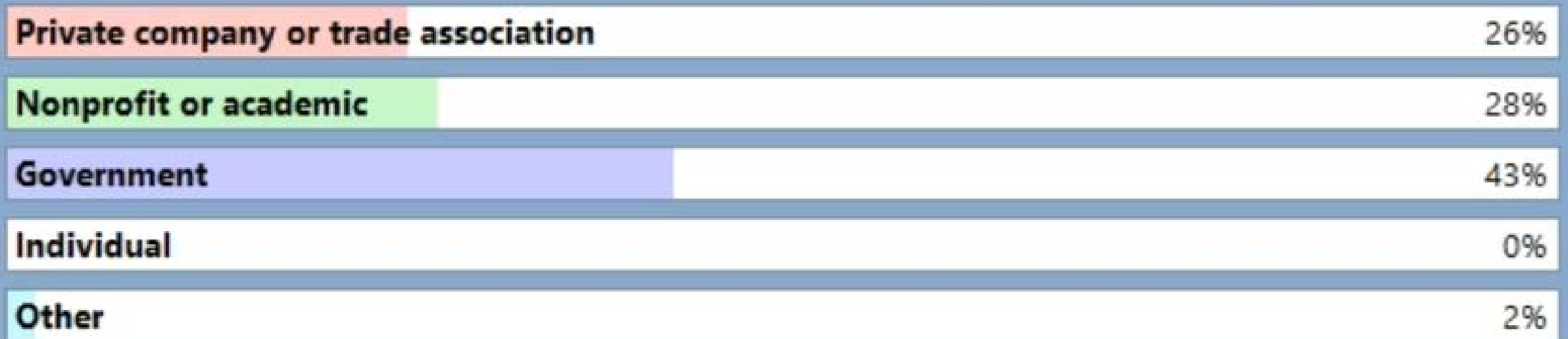


Initial Stakeholder Feedback

Live Polling Results from May 19th Webinar Presentation and Written
Feedback

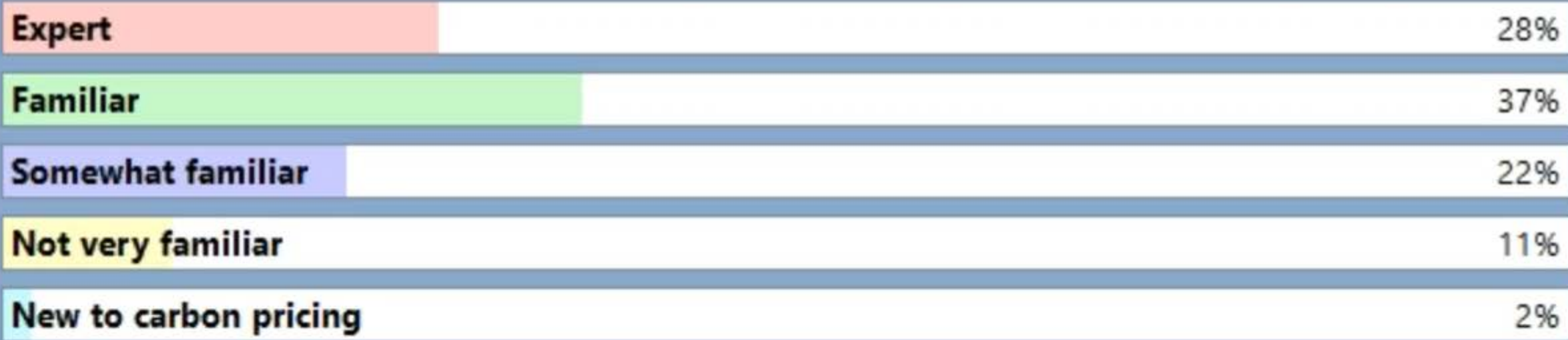
What organization do you represent?

Poll Results (single answer required):



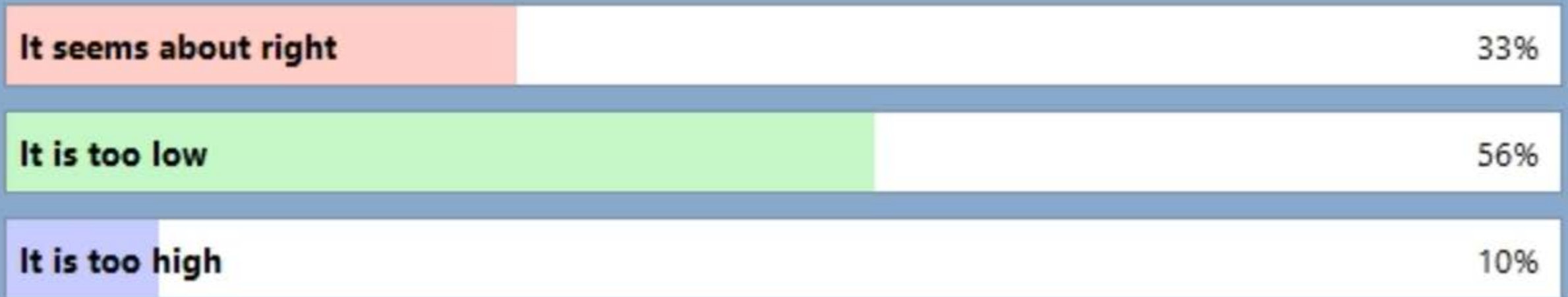
How familiar are you with carbon pricing?

Poll Results (single answer required):



From your perspective, please rate the appropriateness of the low price for this study.

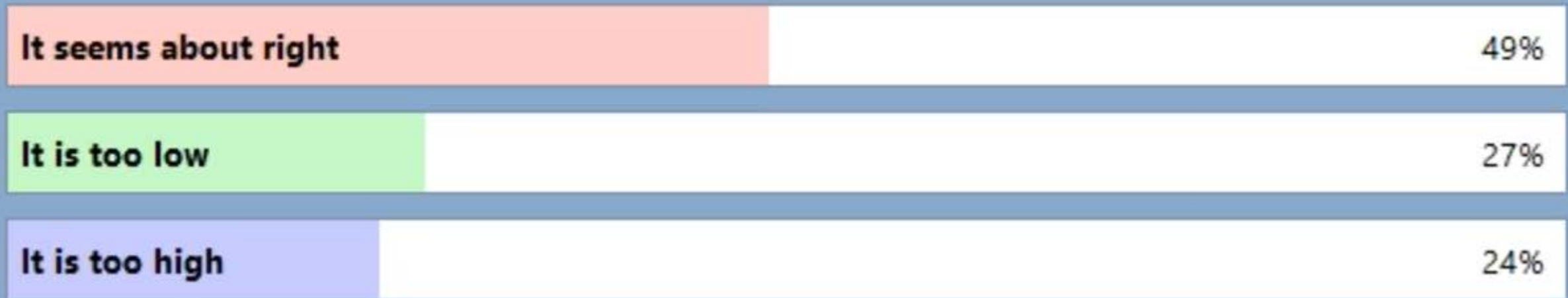
Poll Results (single answer required):



Note: High price starts at \$6 per metric ton, increasing 5% a year faster than inflation.

From your perspective, please rate the appropriateness of the high price for this study.

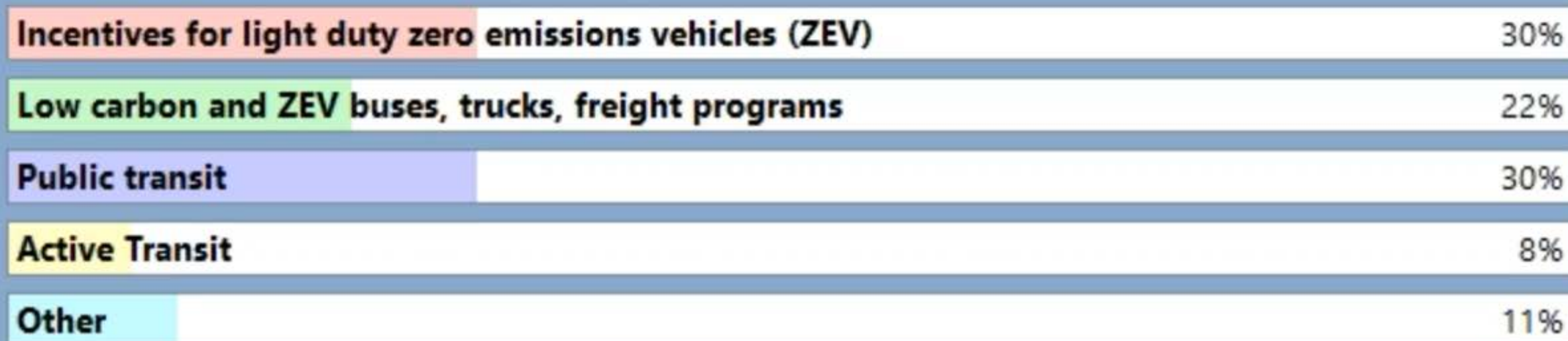
Poll Results (single answer required):



Note: High price starts at \$25 per metric ton, increasing 5% a year faster than inflation.

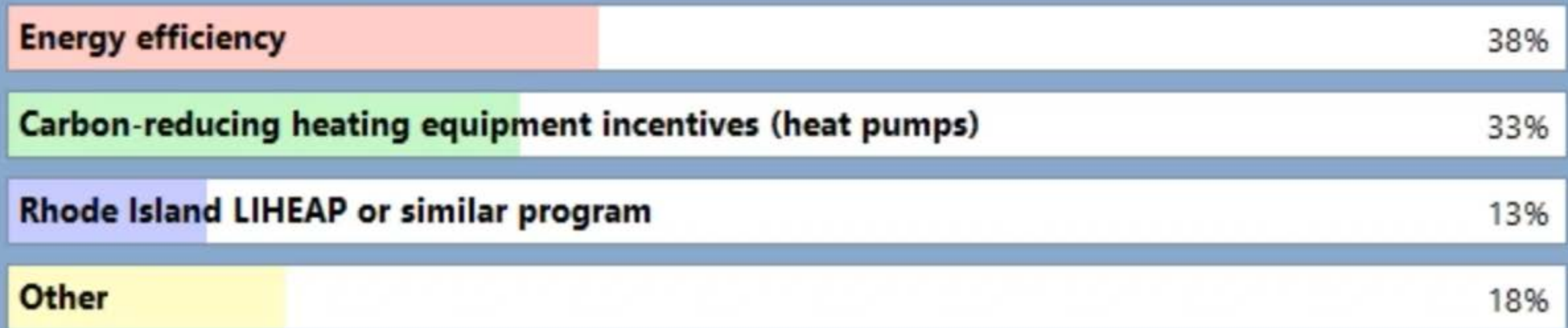
Which transportation investment category is most important to you?

Poll Results (single answer required):



Which building thermal investment category is most important to you?

Poll Results (single answer required):



Stakeholder Feedback Received From:

Name	Organization
Scott Millar	Grow Smart Rhode Island
Henry A. Walker	EC4 STAB Vice Chair and EPA ORD Center for Environmental Measurement & Modeling
Kevin O'Neill	Rhode Island Business Climate Leaders
Jenseric Calimag	New Jersey Student Climate Advocates
MJ Sorrentino	Citizens' Climate Lobby Rhode Island
Timmons Roberts	The Climate and Development Lab (Brown University); Institute at Brown for Environment and Society
Shelby Neal	National Biodiesel Board
Iliana Paul	Institute for Policy Integrity at NYU School of Law
Kenneth F. Payne	Civic Alliance for a Cooler Rhode Island
Kai Salem	Green Consumers Alliance, on behalf of: Acadia Center; Audubon Society of Rhode Island; Clean Water Action; Conservation Law Foundation; Citizen's Climate Lobby RI; the Environment Council of Rhode Island; Green Energy Consumers Alliance; The Nature Conservancy; and the Energize Rhode Island Coalition
Greg Ehlinger	(No affiliation listed)
Fred Griffith	(No affiliation listed)
Rene Englehart	(No affiliation listed)
Abby Huber	(No affiliation listed)
Will Nakshian	(No affiliation listed)

Key Themes from Written Feedback

Based on Preliminary Written Stakeholder Feedback Post 5/21/20 Presentation

- Several stakeholders expressed interest in examining **alternative scenarios**:
 - **GHG-based scenarios**: Interest in scenarios built on the carbon prices that would achieve 50% reduction in GHG emissions by 2035 and net zero emission by 2050
 - **Legislation-based scenario**: Economic and Climate Resilience Act of 2019 (previously Energize RI Act): \$15 starting price, increasing by \$5 per year, then leveling off at \$50
 - **Social cost of carbon-based scenario**: Using the social cost of carbon as a basis for a scenario
 - **Higher prices** for the high price scenario (*note that polling results during the 5/21 meeting did not indicate a strong preference to change the high price*)
- Stakeholders indicated views that the study would **benefit from engagement with Environmental Justice** communities or advocacy groups to understand concerns and priorities of those groups



Appendix

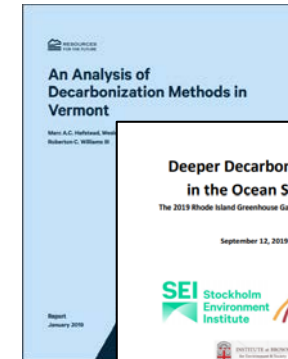
Policy and Literature Review

What was reviewed?

- Existing policies
- Studies on carbon pricing
- Proposed legislation
- Complimentary policies

46 national and **31** subnational jurisdictions have implemented or scheduled carbon pricing initiatives
































RGGI Inc.



Factors Examined

- Sectors covered
- Program longevity
- Pricing mechanism
- Pricing levels
- GHG reductions

2020 Pricing Levels of Current Programs

Program	Type of Program	Focal Sectors Covered	Current Pricing Level (per metric ton CO2e)
Japan	Carbon Fee	  	\$3
Regional GHG Initiative (RGGI)	Cap-and-Trade		\$6
Transportation Climate Initiative (TCI)	Proposed Cap-and-Trade		\$6-\$22
South Africa	Carbon Fee	  	\$9
California	Cap-and-Trade	  	\$18
Northwest Territories	Carbon Fee + Rebate	  	\$21
European Union ETS	Cap-and-Trade	  	\$25
Korea	Cap-and-Trade	  	\$33
British Columbia	Carbon Fee + Rebate	  	\$42
Finland	Carbon Fee	  	\$64
Switzerland	Carbon Fee + Rebate	  	\$99
Sweden	Carbon Fee	 	\$123

Case Study: California Cap-and-Trade



Background

- Started in 2013 as part of larger climate change policy
- Broadest cap-and-trade program in the world
- Linked to Quebec (2014)
- Current Price is **\$18**

Program Details

- Primarily covers transportation, electric, thermal, industry
- Covers about **85%** of GHG emissions
- Revenue is invested into efficiency and clean energy programs

Outcomes

- Raised **\$9.3B** for investment
- Emissions declined **16%**
- **33.2%** growth in advanced energy jobs

Key Lessons

- Investment of revenue is a key part of program success at lower price levels
- Comprehensive GHG programs can be effective in reducing GHG emissions while preserving economic growth

Case Study: Swedish Carbon Fee



Background

- Implemented as part of 1991 national tax reform
- Initially set at **\$28** per metric ton CO₂e
- Current price is about **\$123**

Program Details

- Primarily covers transport and building thermal
- Covers about **40%** of GHG emissions
- Revenue is not invested and applied to the general fund (reducing other taxes)

Outcomes

- Emissions declined by **26%**
- **54%** of final energy use is renewable

Key Lessons

- High price can be effective in reducing GHG emissions while preserving economic growth, even without investment
- Limited scope limits total impact

Scenario 1: Low CO₂ Price – Transportation

Low price applied to the transportation sector

- **Transportation and Climate Initiative**

- Proposed cap-and-invest program
- Aligns with estimated starting price range: \$6 to \$22
- Regional cooperation

- **Transportation Investment**

- Incentives for light duty zero emissions vehicles (ZEV)
- Low carbon and ZEV buses, trucks, freight programs
- Public transit
- Active transportation

- **Goals Informed by Recent Decarbonization Studies**

- Transportation and Climate Initiative preliminary analysis (2019)
- RI Greenhouse Gas Emissions Reduction Plan (2016)
- Deeper Decarbonization in the Ocean State (2019)

Scenario 2: Low CO₂ Price – Building Thermal

Low price applied to the thermal sector

- Study to differentiate impacts on residential and commercial subsectors
- Regional Cooperation
- **Thermal Investment**
 - Energy efficiency
 - Carbon-reducing heating equipment incentives (e.g., heat pumps)
 - Rhode Island Low Income Home Assistance Program (LIHEAP) or similar program
- **Goals Informed by Decarbonization Studies**
 - Rhode Island Greenhouse Gas Emissions Reduction Plan (2016)
 - Deeper Decarbonization in the Ocean State (2019)
 - Heating Sector Transformation in Rhode Island (2020)

Scenario 3: High CO₂ Price and Rebate

High price applied to transportation, thermal, and electricity sectors

- **Regional Cooperation**

- **Investment**

- Investment is assumed to occur at the same levels as the low price scenarios
- Current RGGI investments used for electric sector

- **Rebate**

- Total amount available for rebate is any revenue remaining after investment
- Policy analysis will review different rebate approaches

Policy Assessment

Assess policy scenarios on several criteria



*Projected carbon
reduction potential*



*Political and
technical feasibility*



*Implementation
costs*



*Costs and benefits
to residents*



*Health and
economic impacts*



*Alignment with
existing initiatives*



*Extent of need for regional
participation*



Social Equity