



# Cap and Invest: Understanding the Impact on Households

Transportation and Climate Initiative Technical  
Workshop: Regional Cap and Invest for Transportation

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Resources for the Future

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# Classifying the Household Impacts of TCI

## Economic

- Costs
  - Higher expenditures due to carbon price
- Benefits (depend on revenue use)
  - Examples: Revenues returned to households, Program investments reduce costs of some goods

## Environmental

- Climate impacts
- Air quality
- Noise reduction
- Other



# Economic Impacts Vary across Households

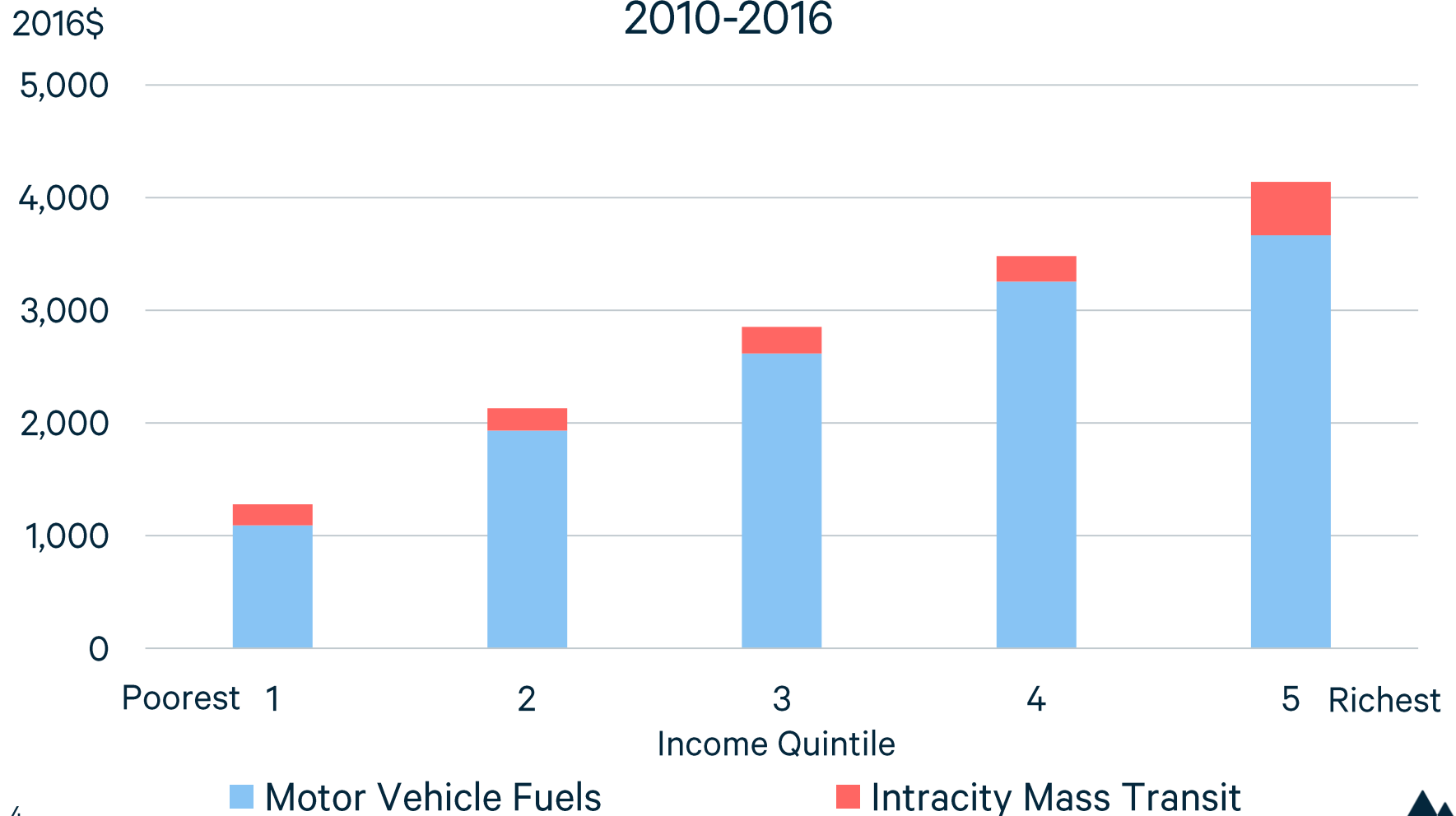
Drivers of differences in impacts include:

- Income
- Rural vs. urban



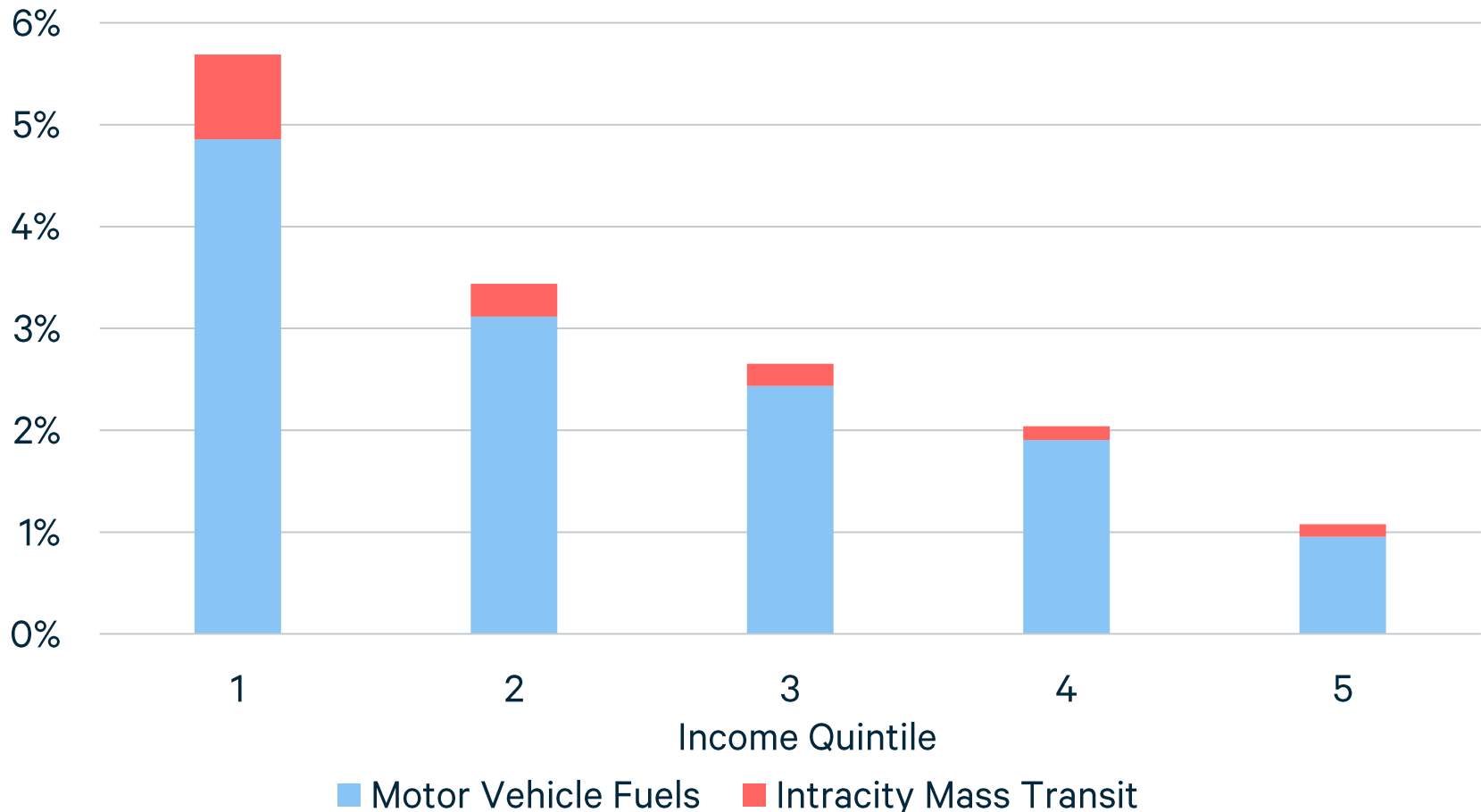
# Transportation expenditures are greatest for higher-income households

Average Annual Household Expenditures,  
2010-2016



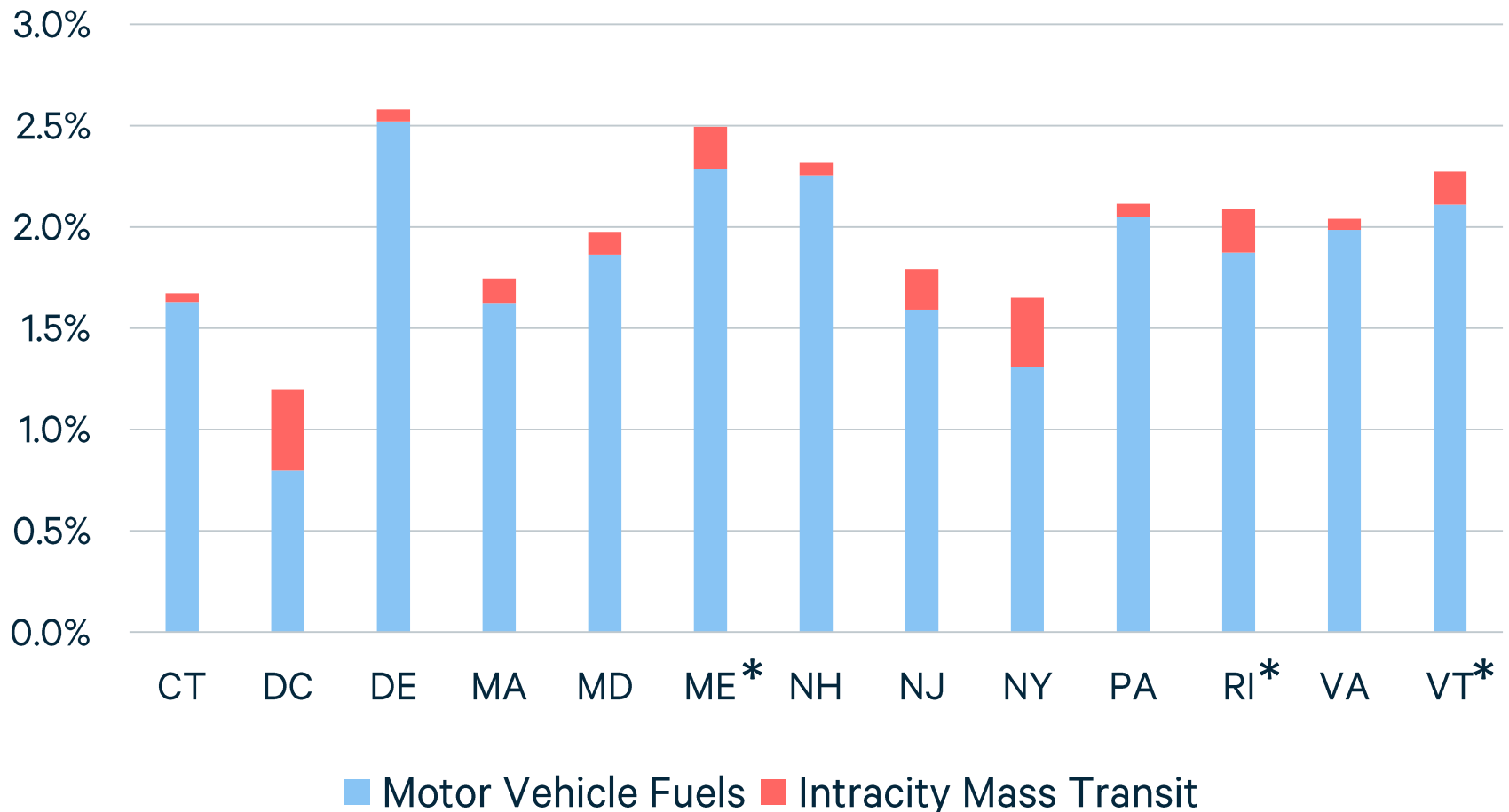
# But transportation expenditures make up larger share of income for lower-income households

Annual Household Expenditures as a Share of Pre-Tax Income, 2010-2016



# Transportation expenditures are lower in more urban states

Annual Household Expenditures as a Share of Pre-Tax Income, 2010-2016

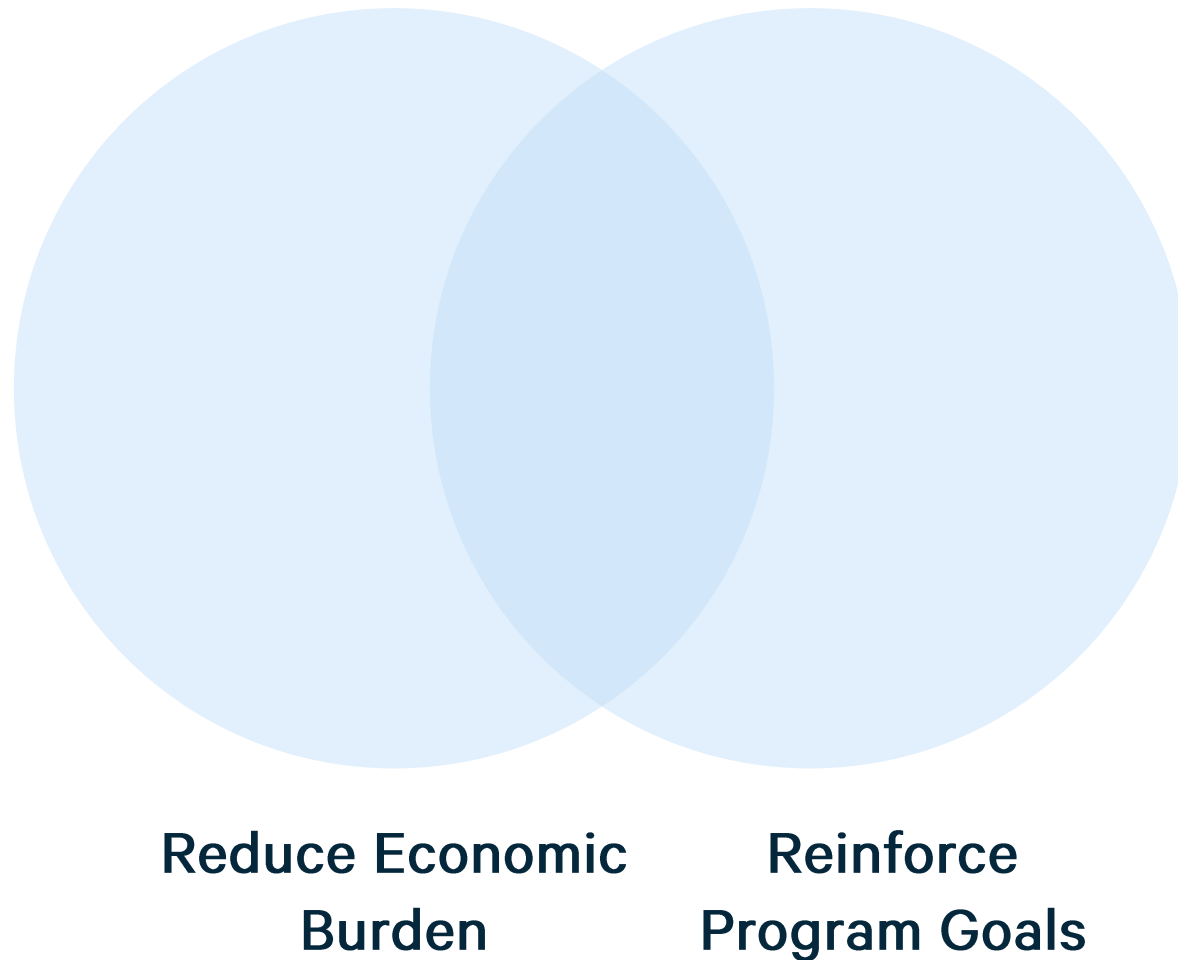


6 \*Estimated from Northeast regional data due to lack of data availability.

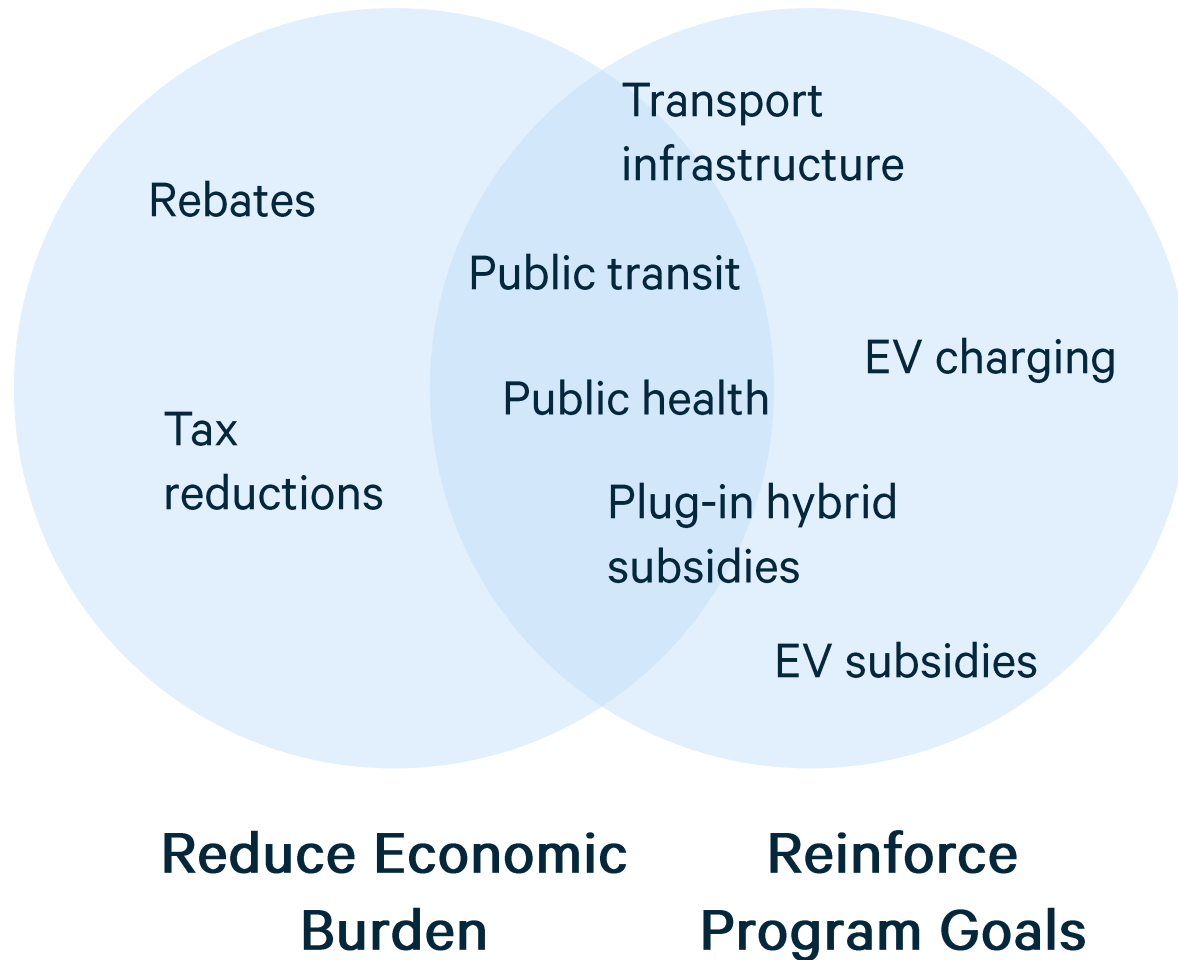
Source: Estimates based on Consumer Expenditure Survey and National Income and Product Accounts.



# Considering Options for Use of Program Proceeds



# Considering Options for Use of Program Proceeds





# Value of Modeling Economic Impacts on Households

- Quantify the expected distribution of economic impacts
- Inform policy options to alleviate the burden on households



# Distribution Modeling Capabilities

## RFF Incidence Model

- Estimates economic impacts on households **across** and **within** states
- Estimates changes in household **expenditures** and **income**
- Produces a comprehensive estimate of economic **welfare** change (is the household better off?)

Next 2 slides: example of model outputs for two illustrative carbon price scenarios

- Policies vary by revenue use
- Carbon price path and emissions outcomes are equal

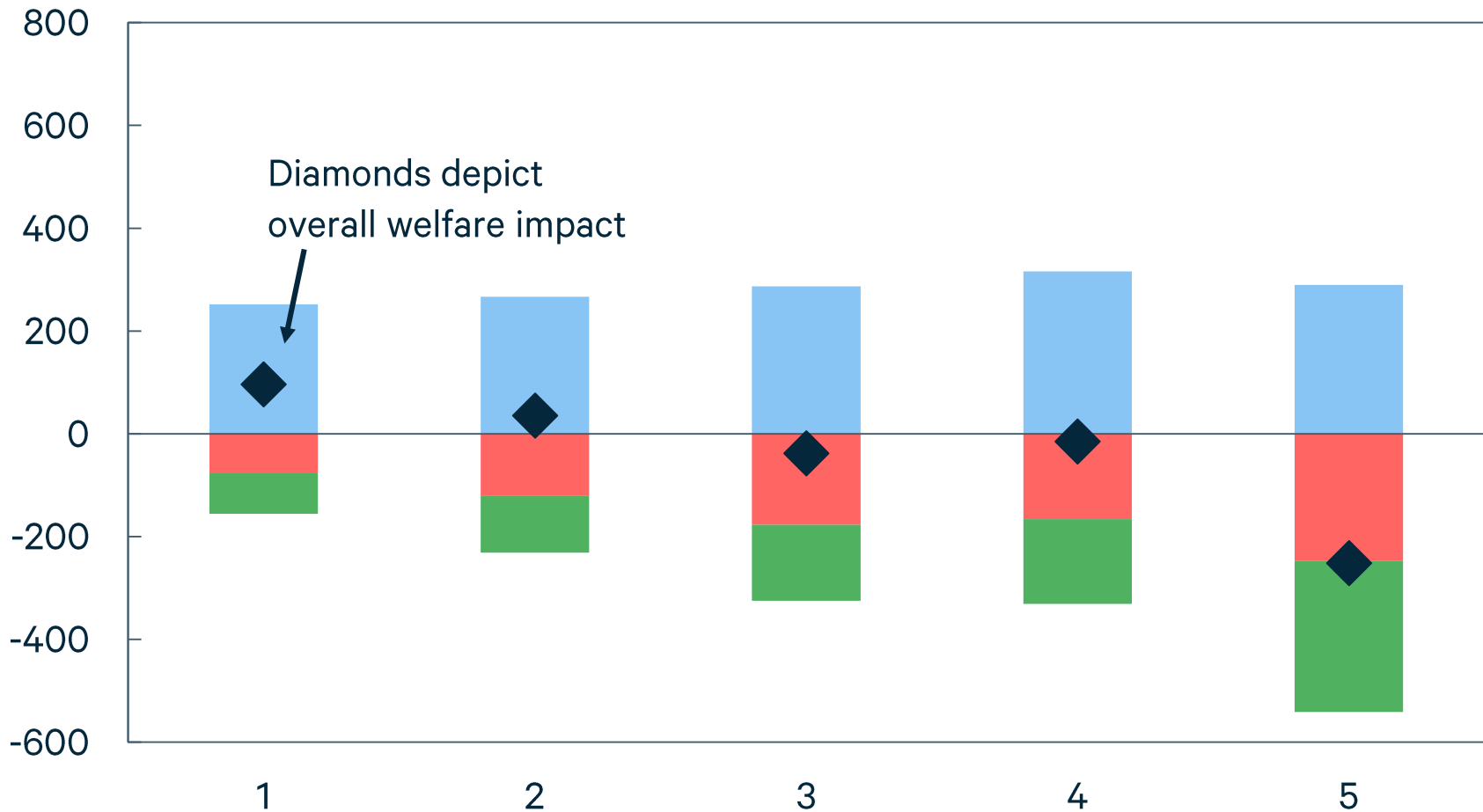


# Illustration of Model Capabilities

Average Economic Welfare Change by Income Quintile

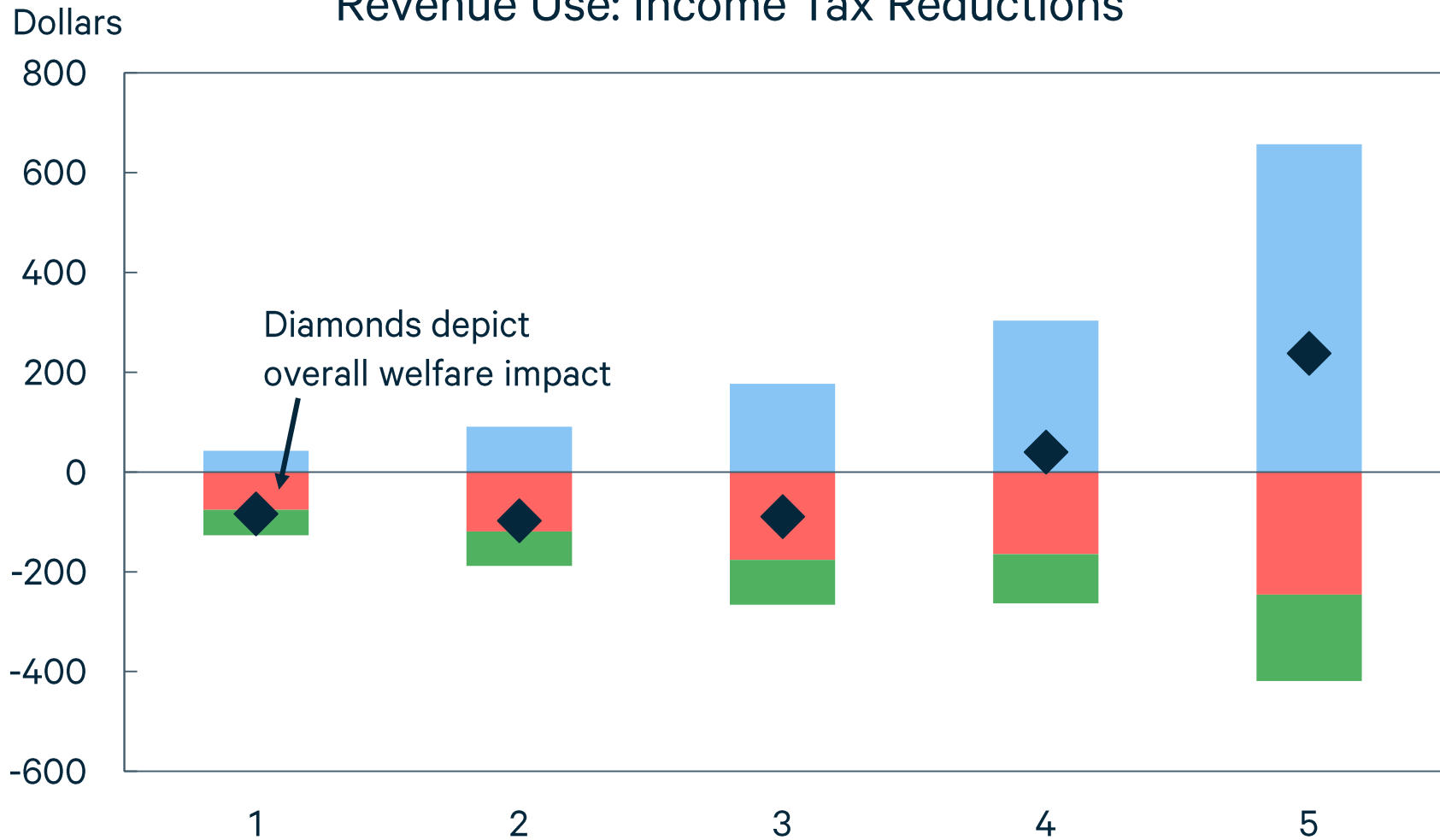
Revenue Use: Lump-Sum Rebates

Dollars



# Illustration of Model Capabilities

Average Economic Welfare Change by Income Quintile  
Revenue Use: Income Tax Reductions



# Additional Considerations for Program Design

- Returning revenue to households does not guarantee progressive results (income tax reductions can create regressive outcomes)
- Rebates can be targeted or delivered to all households
- How are rebates delivered to households?
- Importance of **auctioning** allowances



# Major Takeaways

- Use of revenue is the most important tool to ensure that cap-and-invest does not place a burden on most vulnerable households
- Modeling the distribution of economic impacts can predict how different investment options affect households
- States should evaluate the performance of their investments
- Distribution modeling is a tool to inform debate but is not a substitute for community engagement





# Thank you.

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# Expenditures are lower in more urban states

