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

Income Quintile

- Motor Vehicle Fuels
- Intracity Mass Transit

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

Motor Vehicle Fuels  Intracity Mass Transit

*Estimated from Northeast regional data due to lack of data availability.
Considering Options for Use of Program Proceeds

Reduce Economic Burden

Reinforce Program Goals
Considering Options for Use of Program Proceeds

- Rebates
- Tax reductions

- Transport infrastructure
- Public transit
- Public health
- Plug-in hybrid subsidies
- EV charging
- EV subsidies

Reduce Economic Burden

Reinforce Program Goals
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

Diamonds depict overall welfare impact

Energy Expenditures  Other Expenditures  Income  Welfare Change
Illustration of Model Capabilities

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

Diamonds depict overall welfare impact

- Energy Expenditures
- Other Expenditures
- Income
- Welfare Change

Dollars

-600 -400 -200 0 200 400 600 800

1 2 3 4 5
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

Average Annual Household Expenditures, 2010-2016

- CT
- DC
- DE
- MA
- MD
- ME*
- NH
- NJ
- NY
- PA
- RI*
- VA
- VT*

Motor Vehicle Fuels  Intracity Mass Transit

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