Carbon Tax and Cap & Trade:
Maximizing benefits, minimizing injustice

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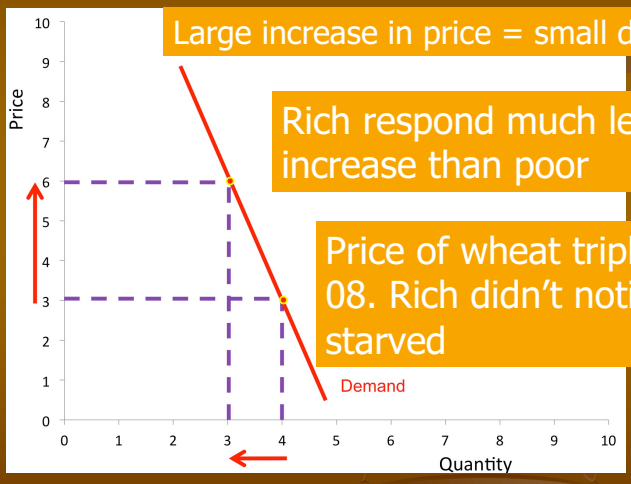
Outline of Talk

- Carbon pricing: Cap & Trade vs. Taxes
  - Tax bads, not goods
- Effectiveness and equity
- Making it equitable
- What do Vermonters want? Survey results

Carbon Tax vs. Cap and Trade

- Tax sets price, quantity adjusts
- Cap sets quantity, price adjusts
- With cap & trade, distribution of permits matters
- Both are considered 'efficient'
- Almost all economists who believe in climate change favor carbon pricing
  - Free market, conservative policy

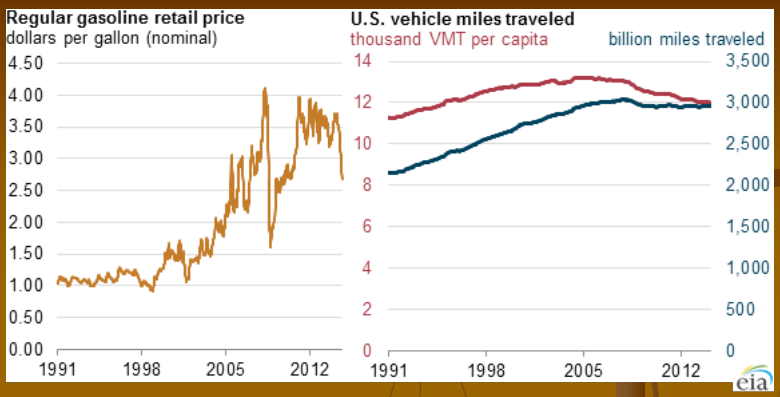
Necessities



Large increase in price = small decrease in demand

Rich respond much less to price increase than poor

Price of wheat tripled in 2007-08. Rich didn't notice, poor starved

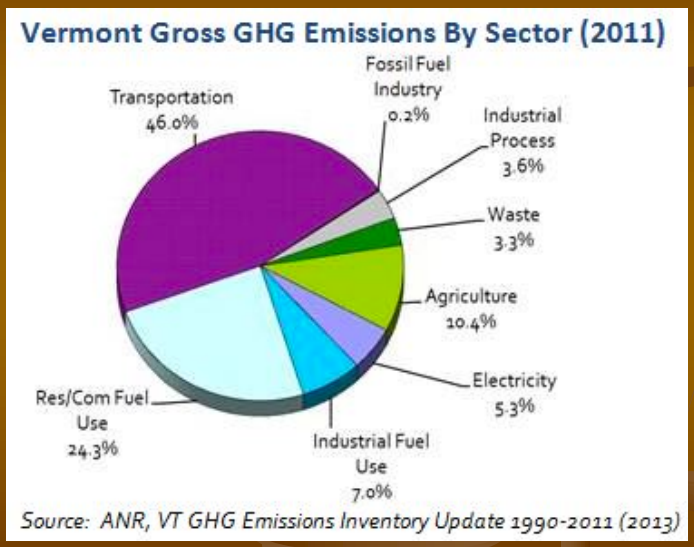


33%-100% increase in price of gas to decrease consumption by 1% in short run

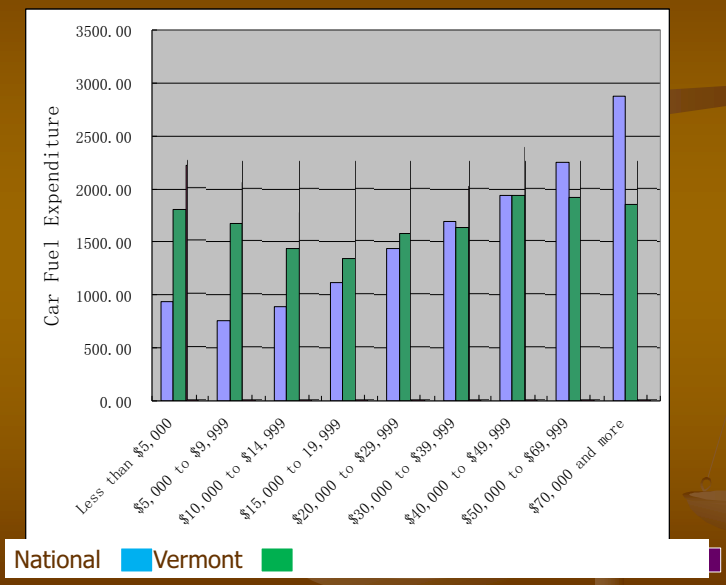
Larger effect in long run

https://www.eia.gov/todayinenergy/detail.php?id=19191

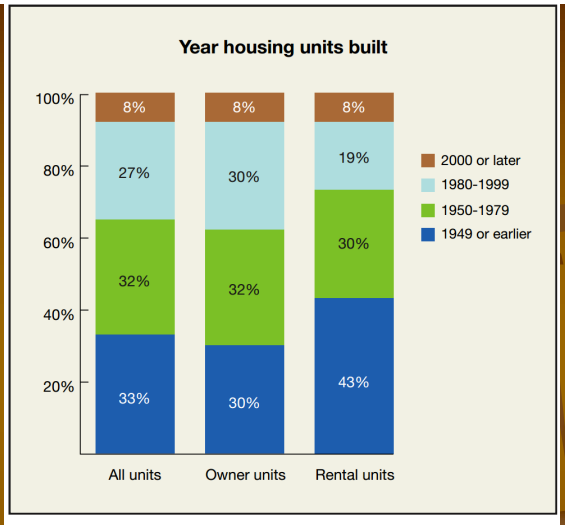
Where do GHGs come from?



Car Fuel Expenditures by Income



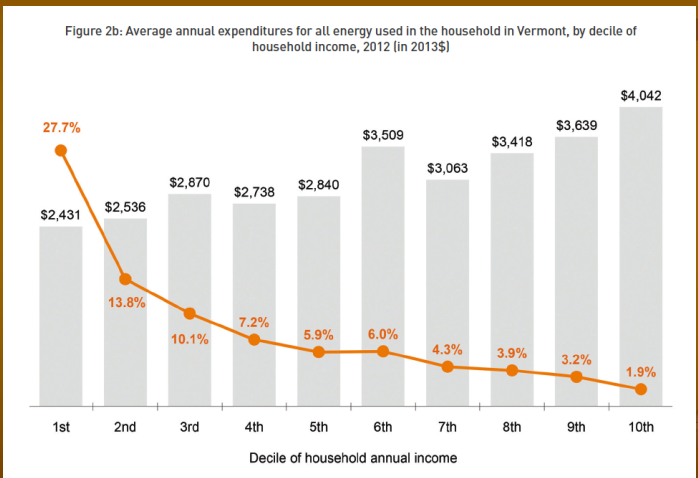
Data from 2009 National Household Travel Survey



SOURCE: VHFA ANALYSIS OF ESTIMATES FROM U.S. CENSUS BUREAU, AMERICAN COMMUNITY SURVEY 2007, TABLE B25036

"Many homes were constructed before high energy costs made many energy conservation practices and products cost effective."
2010 VERMONT HOUSING NEEDS ASSESSMENT

Highly Regressive



http://www-assets.vermontlaw.edu/Assets/iee/VLS%20IEE%20Energy%20Burden%20Report.pdf

Income inequality increasing fastest in New England

Table 1: Changes in Average Household Income, New England and the Nation*

New England

	Average Household Income 2004	Percent Change 1989-2004
Lowest-Income Quintile	12,437	-5.1%
Quintile 2	34,291	-2.1%
Quintile 3	57,310	1.7%
Quintile 4	87,043	6.2
Highest-Income Quintile	184,828	19.8%
Top 5 percent	336,819	26.9%

United States

	Average Household Income 2004	Percent Change 1989-2004
Lowest-Income Quintile	10,744	4.0%
Quintile 2	28,300	2.6%
Quintile 3	47,326	3.5%
Quintile 4	73,167	6.6%
Highest-Income Quintile	156,795	17.0
Top 5 percent	282,276	20.0%

Source: U.S. Census, Public Use Micro Data, 1990 and 2000. American Community Survey, 2005
*All percentage change figures have been adjusted for inflation.

https://www.bostonfed.org/commdev/c&b/2007/fall/Gittell_Rudokas_New_%20England_income_gap.pdf

…and (almost) fastest in Vermont

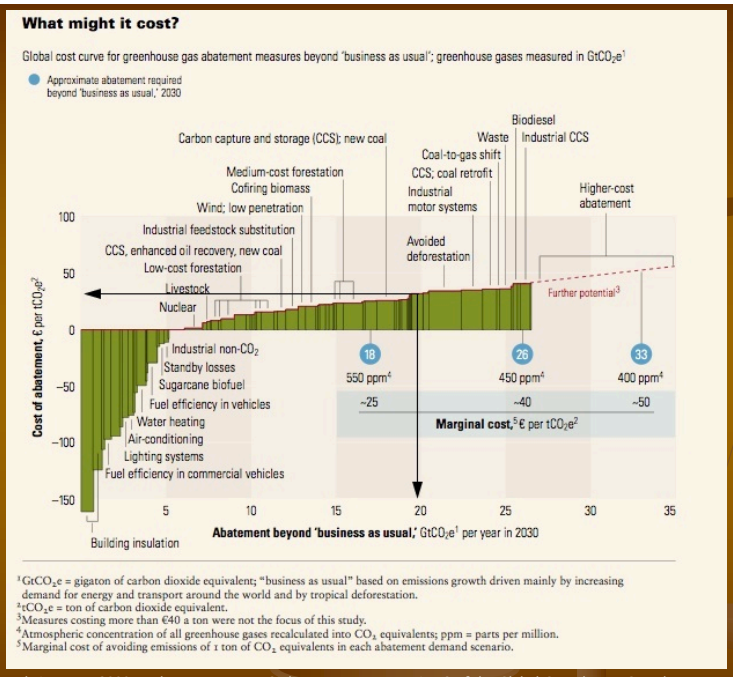
Table 3: Measuring Increased Income Disparity*

	Gini 1989	Rank	Gini 2004	Rank	Gini 1989-2004	Rank
Connecticut	0.414	27	0.477	3	0.063	1
Vermont	0.390	47	0.439	31	0.049	2
New Jersey	0.416	25	0.459	11	0.044	3
California	0.424	19	0.467	6	0.043	4
Massachusetts	0.420	22	0.462	10	0.042	5
New Hampshire	0.375	50	0.409	48	0.034	13
Rhode Island	0.414	26	0.448	22	0.034	14
Maine	0.399	43	0.426	40	0.027	22
Kentucky	0.448	5	0.455	16	0.008	46
Idaho	0.409	34	0.414	46	0.005	47
Arkansas	0.444	7	0.447	24	0.003	48
Mississippi	0.464	2	0.466	7	0.002	49
Wyoming	0.402	41	0.402	50	0.001	50

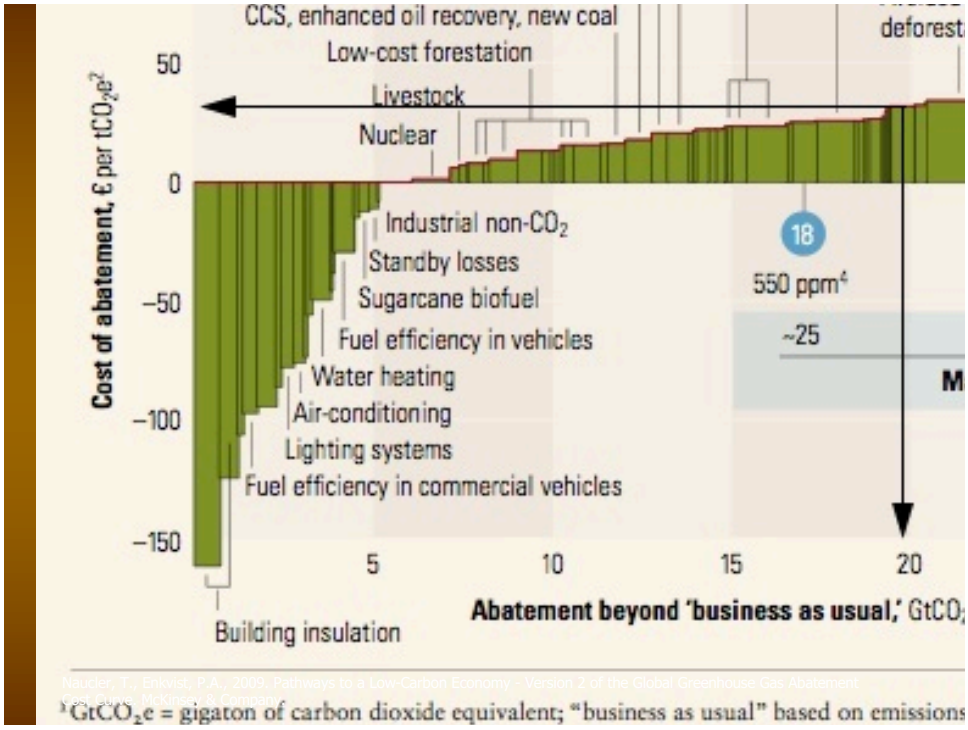
Top ranks denote highest inequality and highest increase in inequality

*Ranking among 50 states. Based author calculations.

Progressive and Effective Carbon Policy



Naucler, T., Enkvist, P.A., 2009. Pathways to a Low-Carbon Economy - Version 2 of the Global Greenhouse Gas Abatement Cost Curve. McKinsey & Company.



Leveraging the Revenue

- Energy efficiency investments triple revenue:
  - $1 invested yields $3-4[1]
  - Greater emissions reductions
- But people don't invest
  - Lack of capital
  - Ignorance
  - Implicit discount rates[2]

[1]RGGI Inc., 2011. Investment of Proceeds from RGGI CO2 Allowances. Regional Greenhouse Gas Initiative. Online: www.rggi.org/docs/Investment_of_RGGI_Allowance_Proceeds.pdf.

[2]Howarth, R.B., Cutler, J.C., 2004. Discount Rates and Energy Efficiency Gap, Encyclopedia of Energy. Elsevier, New York, pp. 817-822

Progressive Expenditures

- E.g. Europe
- Dividends moderately progressive (less so in Vermont)
- Efficiency investments highly progressive
  - Poor have least efficient housing, oldest cars, longest commutes
  - 3-4 times the money to divvy up
  - Greater emissions reductions

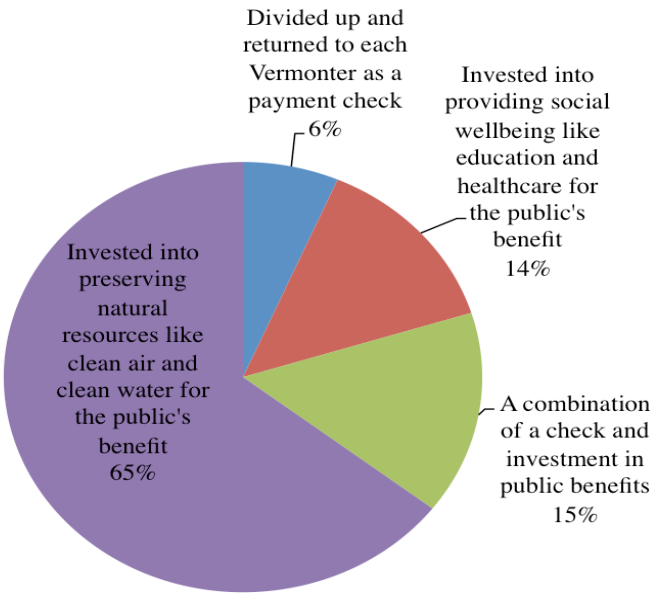
What do Vermonters Want?

Vermonters Attitudes Towards Pollution Fees (Vermonter poll, 2010)

"I believe that…"	Percent in Agreement
…the atmosphere is threatened by pollution	78.1%
…Vermont's atmosphere is a resource that belongs to all Vermonters equally	95.2%
…individuals or companies should be charged money if they pollute the atmosphere	82.5%
…all of the above are true	66.7%

Kirk, D., 2010. Allocating Vermont's Trust; Dividends Or Public Investment From Carbon Cap And Auction Revenues, Community Development and Applied Economics. University of Vermont, Burlington, p. 113.

How Should Revenue be Spent?



Summary and Conclusions

- Carbon pricing is efficient and necessary, but inequitable
- Investing revenue in energy efficiency yields greater emissions reductions and greater equity
- Vermonters support both policies