

# Allowance Allocation

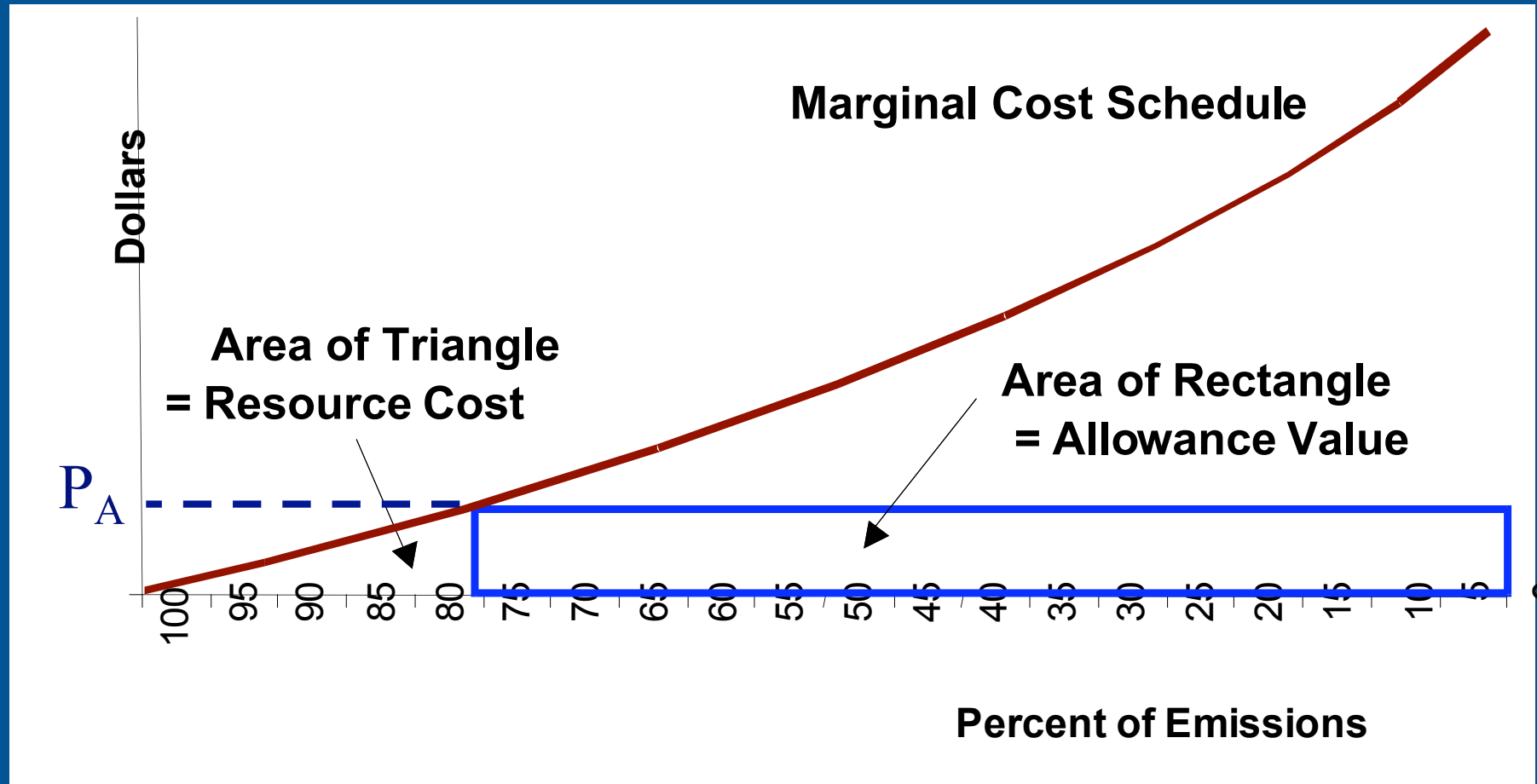
Dallas Burtraw  
*Resources for the Future*  
Burtraw@RFF.org

NEXT 10  
*GHG Allowance/Fee Revenue Allocation Workshop*

April 16, 2009

Background: Burtraw, Sweeney and Walls, “The Incidence of U.S. Climate Policy,”  
RFF DP 09-17.

# Why CO<sub>2</sub> is Different.



## Interest #1: Allocation

# Why Not Just Use Prescriptive Regulation?

## Prescriptive regulation has:

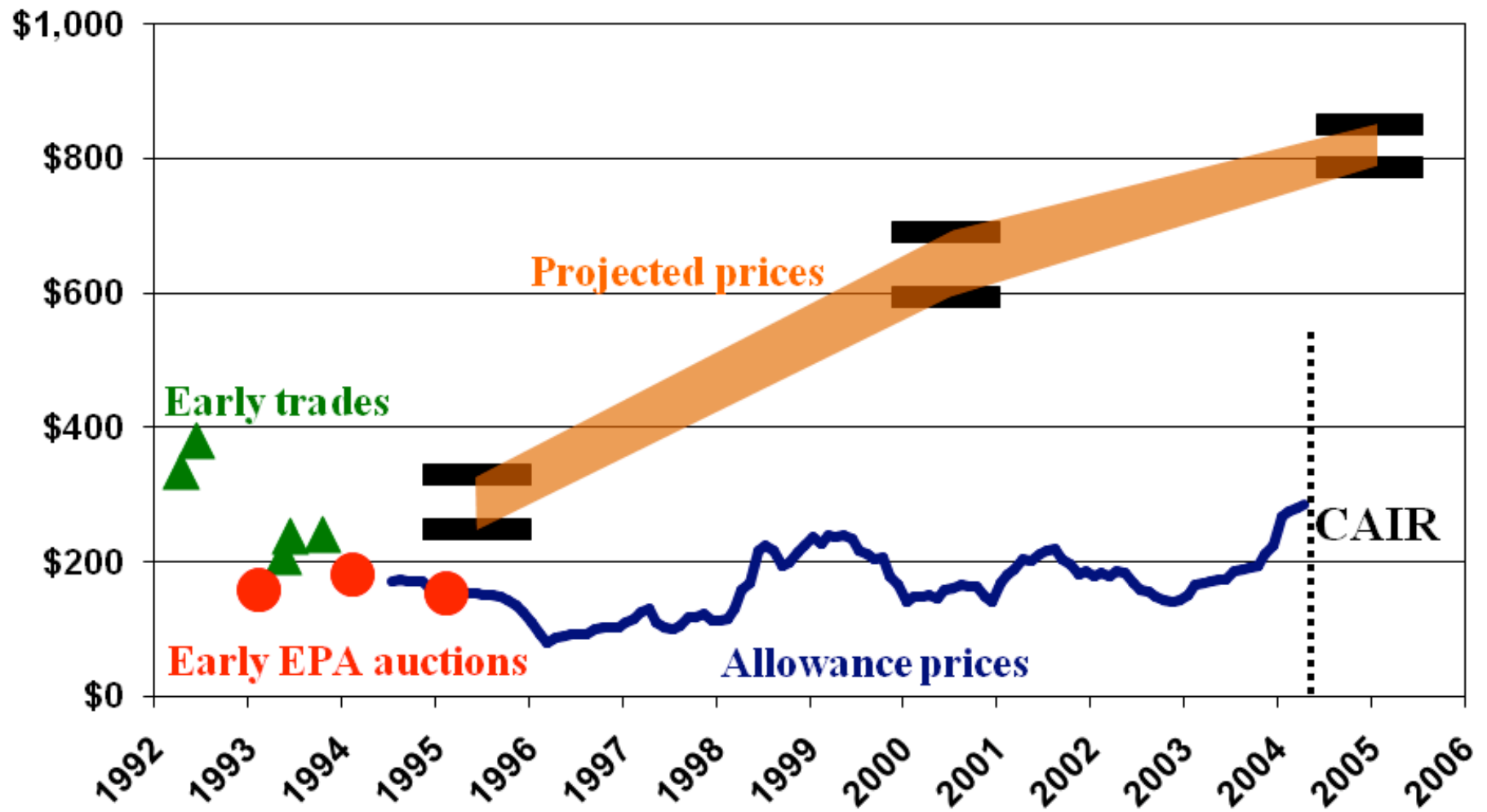
- Been very effective in many situations
  - Control or reduction options are limited or obvious
  - Control or reduction costs are reasonable
- Established what needed to be done
- Prescribed how and when for each source

**Challenge #1:** It requires tremendous information.

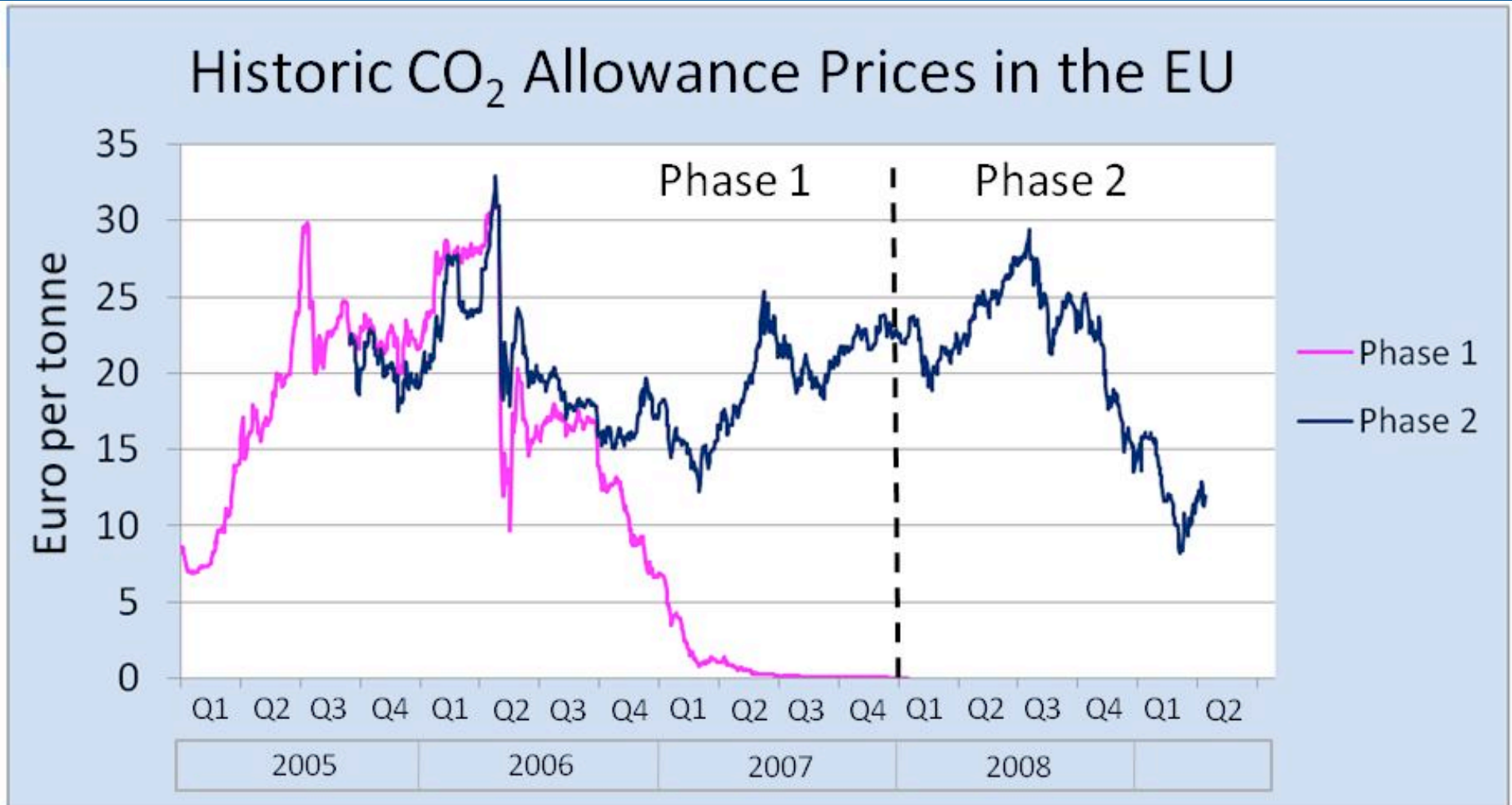
**Challenge #2:** Allocational efficiency.

It is important for the policy to self-correct,  
preferably in an predictable way

### SO<sub>2</sub> Allowance Prices (2004\$/ton)



# Price Volatility in the EU Emissions Trading Program



Source: Point Carbon



## Experience from phase I – 2005-2007

- 2005: The world's largest carbon market gets off the ground and carbon enters the boardroom (some 10,000 installations)
- Carbon market is established
- But:
  - NAP 1 (National allocation plan) not based on verified emissions
  - No banking to next phase
  - Windfall profits
- Valuable learning for authorities and companies



Climate Action

## Experience from period II- 2008-2012

- Phase 2 cap of **2.08 billion** allowances per year
  - 6.5% reduction of absolute emissions compared to 2005 verified emissions
- But:
  - cumbersome NAP process
  - long uncertainties on cap
  - no harmonised allocation between EU Member States
  - very limited auctioning (appr. 4%) (still windfall profits)
- Conclusion of review process in 2007:

*More harmonisation between EU states is needed*

**GHG Target 2020:  
-20% compared to 1990**



**-14% compared to 2005**



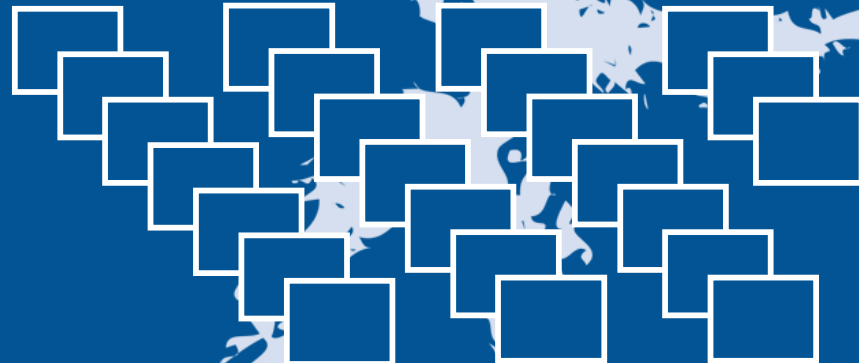
**EU ETS  
-21% compared  
to 2005**



**Non ETS sectors  
-10% compared to 2005**

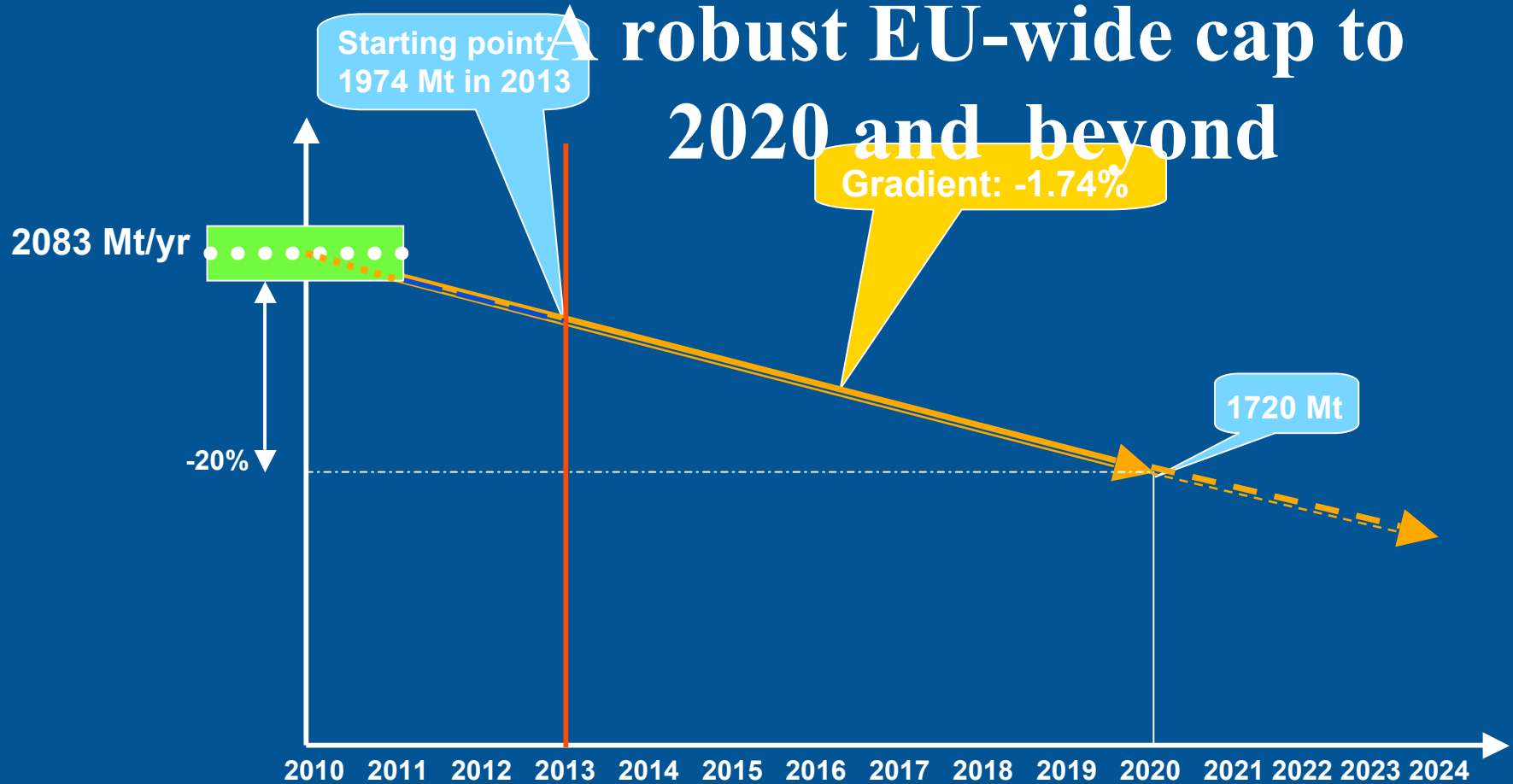


**27 Member State targets, stretching from -20% to +20%**



# Primary feature of the new ETS:

## A robust EU-wide cap to 2020 and beyond



➤ Linear factor to be reviewed by 2025

➤ Aviation to be included; will change figures correspondingly, but cap not reduced

➤ Disclaimer: all figures are provisional and do not account for new sectors in third period



RESOURCES  
FOR THE FUTURE

# Harmonised Allocation Rules

- Fully harmonised allocation rules
- Auctioning is default allocation method
- Free allocation on basis of ambitious ex-ante benchmark for industry sectors

# Auctioning as predominant allocation method

- From 2013, more than 50% of allowances (all power minus optional derogation) auctioned, gradually increasing thereafter (2nd phase: about 4% auctioned)
- In principle, auctions are Member States led
- Decision on national, regional or EU-wide auction platform/s still open
- Allowances for auctioning are assigned to Member States according to rules in legislation
- Details on auction laid down in Regulation to be adopted by June 2010

# Use of auction revenues

- Member States decide on use of all auction revenues
- 50% of revenues should be used for climate related purposes including among others

# Temporary derogation from full auctioning in power sector

- Option to derogate available to MS meeting certain conditions:
  - Grid Connectivity beyond national border
  - 30% of electricity generated by single fossil fuel and GDP/capita less than 50% of EU average
- Maximum derogation defined in Directive
- Eligible Member States to opt on
  - whether to apply for the derogation
  - scale: maximum 70% in 2013, declining thereafter
  - time: maximum until 2019
- Only installations operational or under construction by 31 December 2008 are eligible

CO<sub>2</sub> is the largest distribution of a federally-enforced property rights since the 19<sup>th</sup> century American west.

**Venus**



**NO<sub>x</sub>**  
**\$1.7 Billion**

**Earth**



**SO<sub>2</sub>**  
**\$2.7 Billion**

**Jupiter**



**Carbon 34%**  
**Reduction (Kyoto)**  
**Economy Wide**  
**\$450 Billion**

# Design Element: Allocation

## Public Policy Justifications for Assigning Allowance Value

### Government use of revenue

- General revenue
- Program goals: R&D, infrastructure, adaptation

### Compensation

- Reduce preexisting taxes
- Free allocation to incumbent firms
- Free allocation to consumers

### Owners of a “common pool resource”

- Per capita dividends

## Effect of Policies on California Electricity Industry

	Auction	OBA (MWh)	IBA (fuel)	GF*
Allowance Price	+	++	+++	+(+)
Electricity Price	+++	+	++	+++(-)
Leakage	+++	+	++++	+++(+)
Total Profit	-	-	-	+++(-)
<i>Coal</i>	-	---	--	++++(-)
<i>Gas</i>	+	++	+++	+++(-)

# BLS Consumer Expenditure Survey Data Consumption Patterns 2004-2006

Plus Changes in Transportation (CAFE) and Equilibrium  
Changes in Electricity Sector by 2015

**Policy: Lieberman-Warner Stringency (\$20.87/ton)**

## Measured Effects by Households & Regions

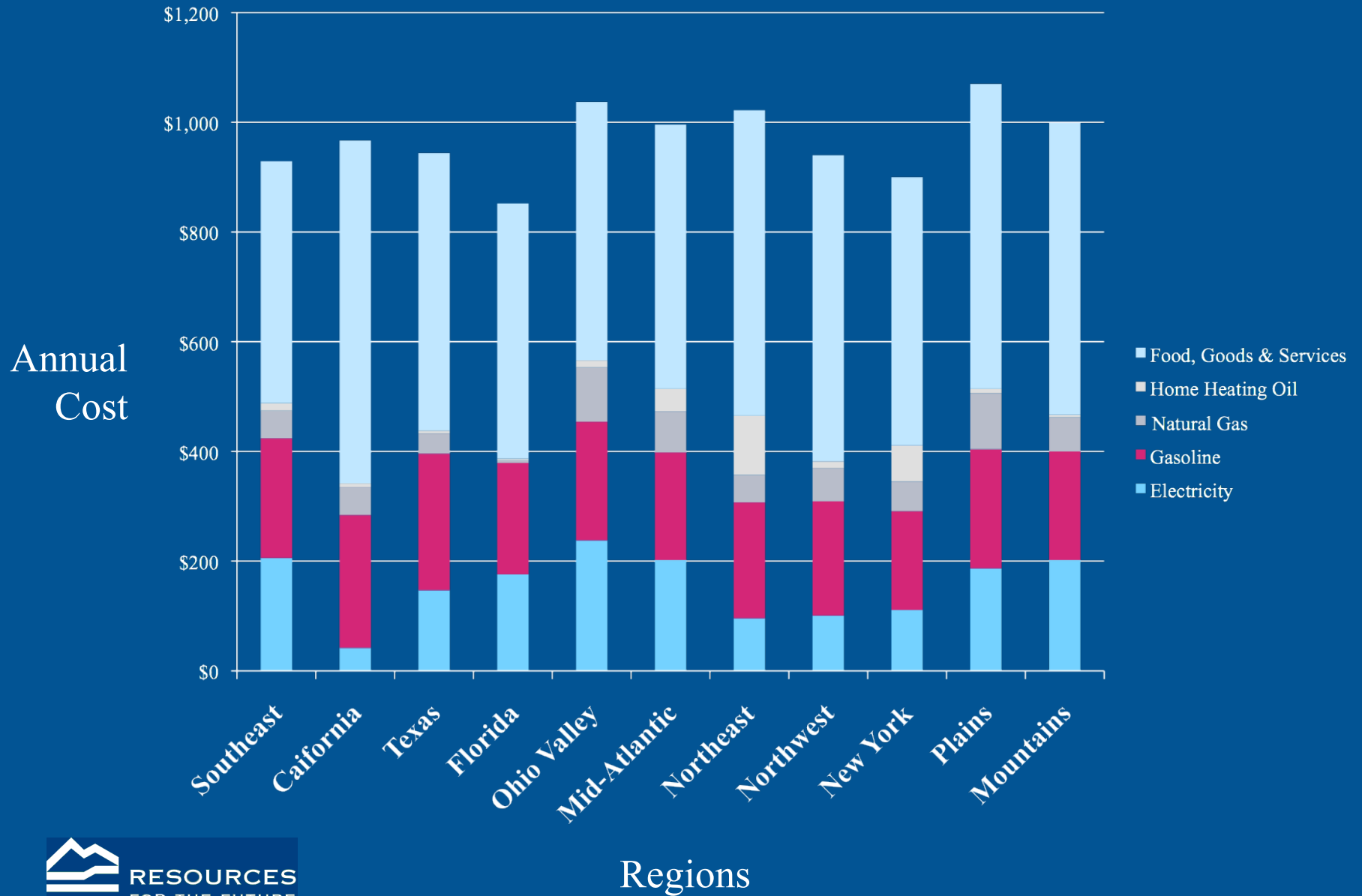
- Direct energy consumption
- Indirect energy consumption in goods and services
- Government direct emissions constant & paid for

## Not Measured

- Hidden costs (factor cost changes)
- Employment effects

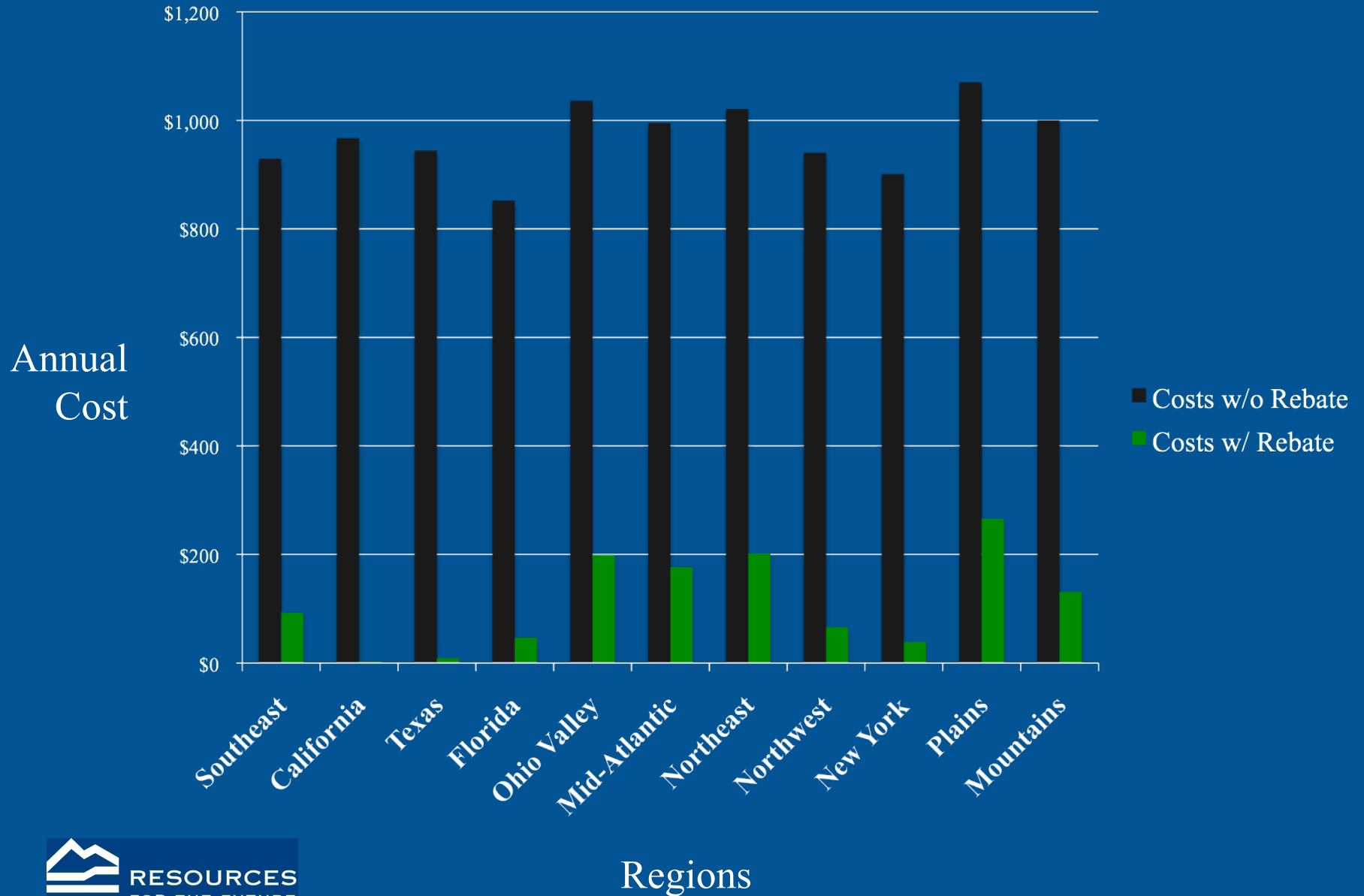
## Average By Region

### Annual Cost Impacts on Consumers of \$21 Price per Ton CO<sub>2</sub>

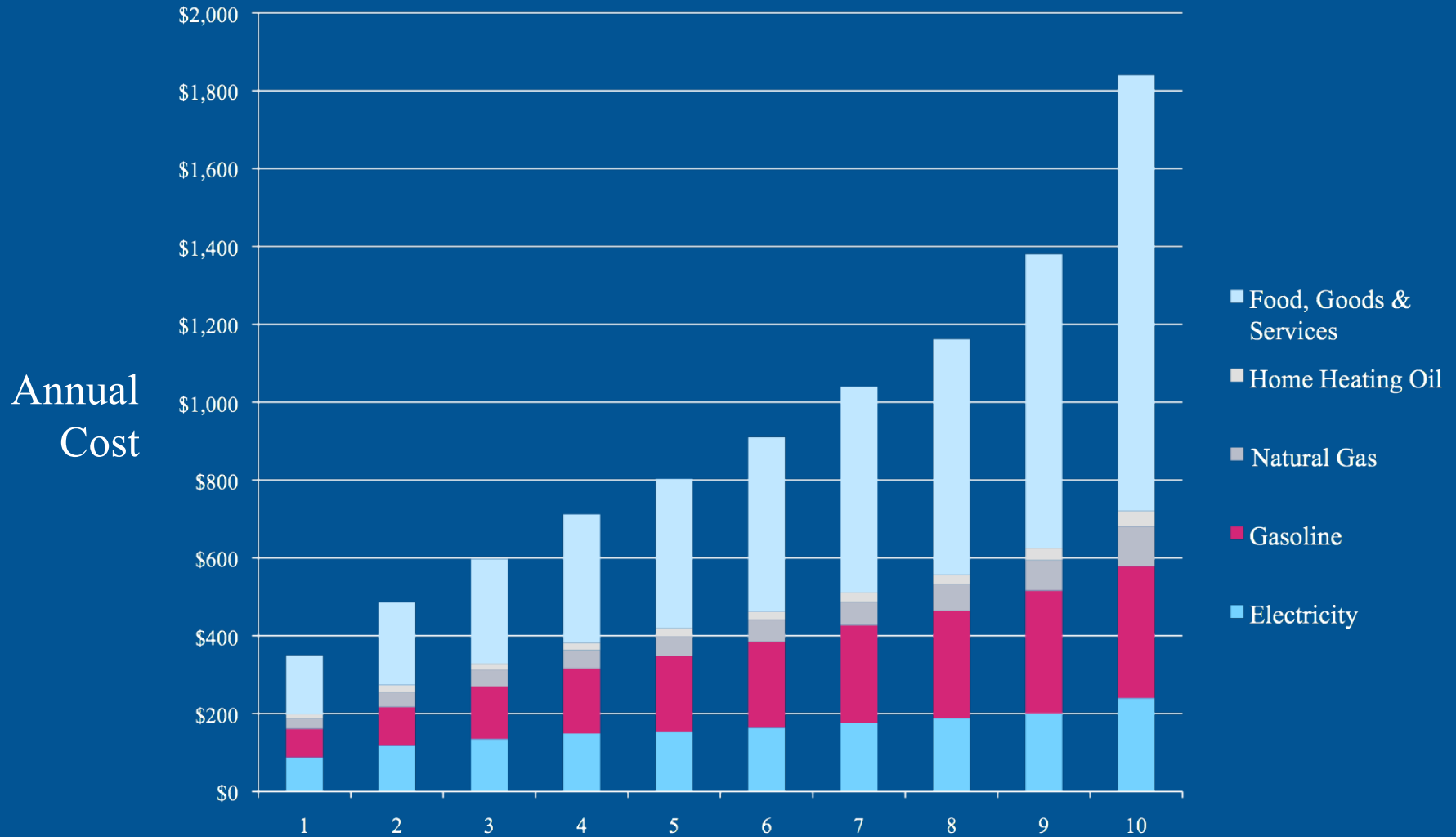


## Average By Region

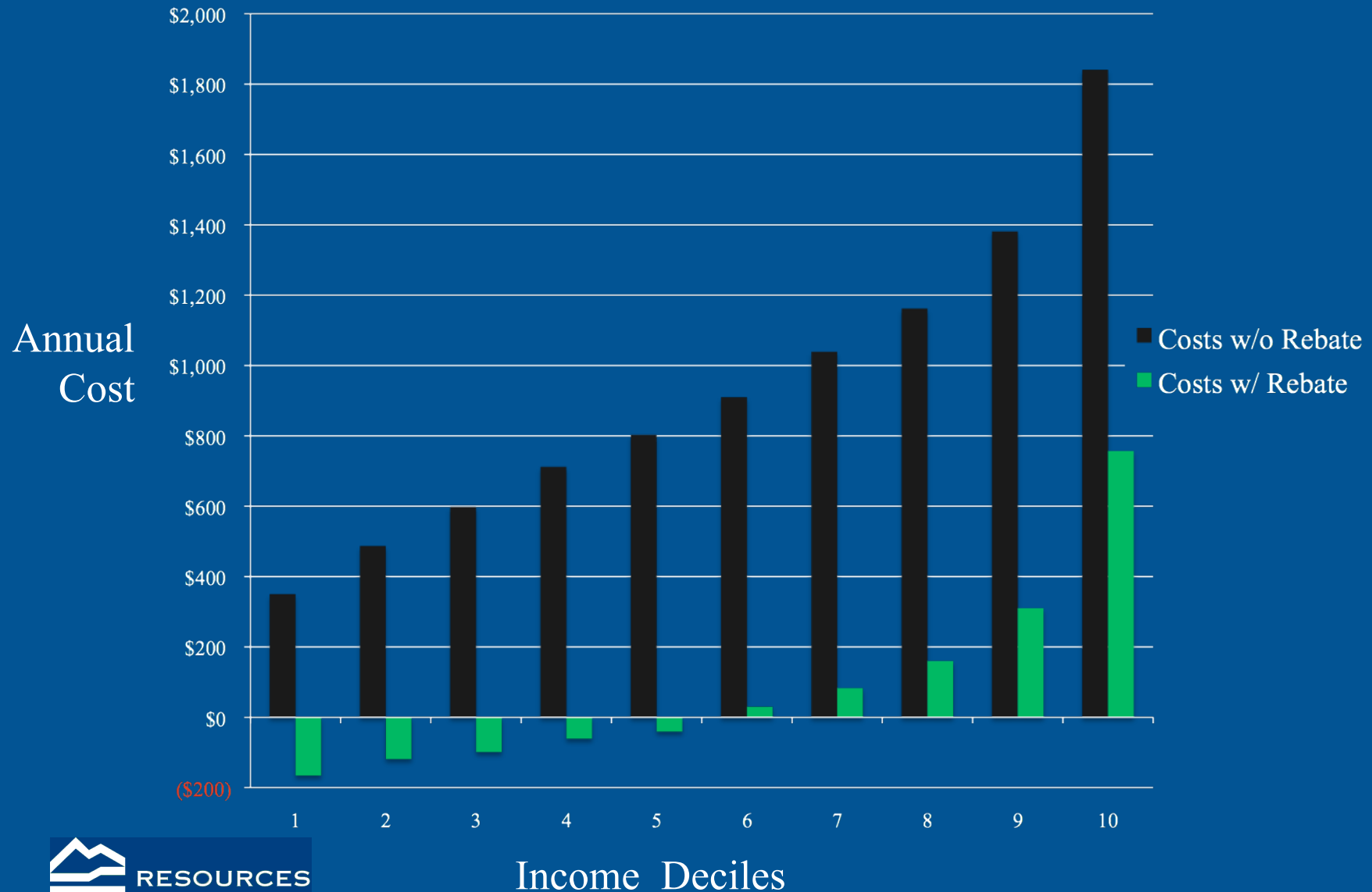
Annual Cost Impacts on Consumers of \$21 Price per Ton CO<sub>2</sub> w/ 100% Rebate (nontaxable)



# Nationwide Annual Cost Impacts on Consumers of \$21 Price per Ton CO<sub>2</sub>



# Comparison of National Average Consumer Costs if 100% of Allowances Auctioned and Returned Per Capita to Every Consumer (nontaxable)



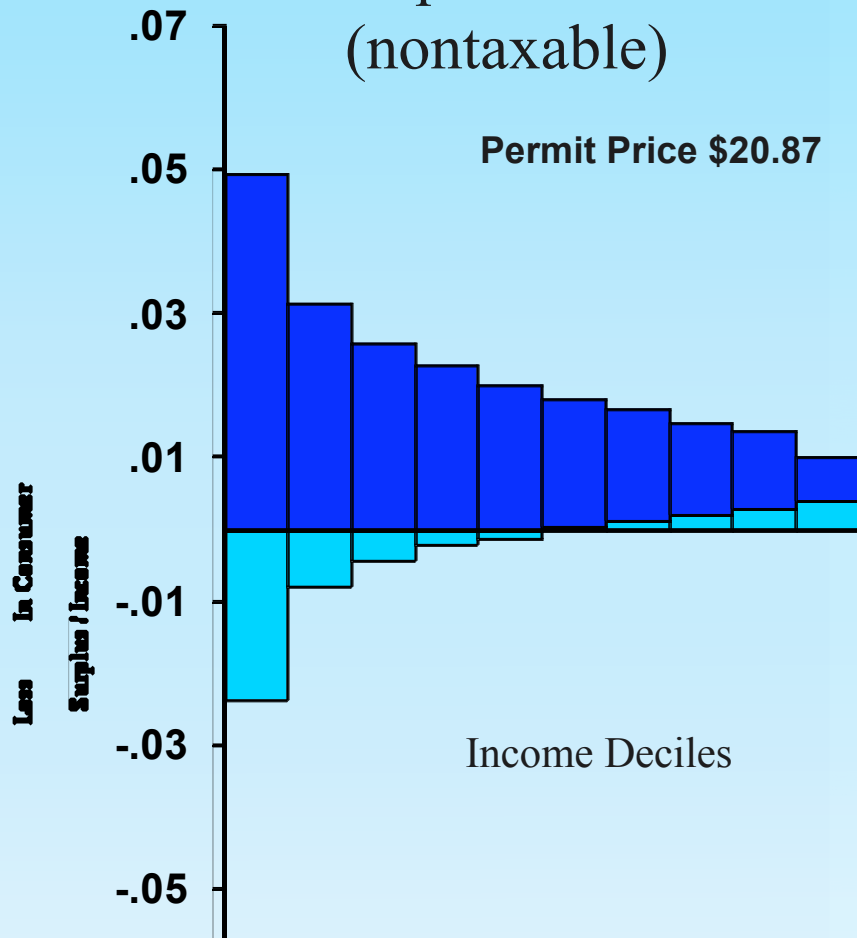
# Electricity Price Changes (2015) Depend on Technology, Regulation, Transmission

Region	States	Baseline CO2 / MWh	Change in CO2 / MWh	Retail Price Change
Southeast	AL,AR,DC, GA,LA,MS, NC,SC,TN,VA	0.22	0.037	13%
CA	CA	0.13	0.014	4%
TX	TX	0.60	0.093	8%
FL	FL	0.65	0.084	10%
Ohio Valley	IL,IN,KY,MI, MO,OH,WV,WI	0.24	0.038	19%
Mid-Atlantic	DE,MD,NJ,PA	0.29	0.065	14%
Northeast	CT,ME,MA,NH,RI	0.20	0.042	7%
Northwest	ID,MT,OR,UT,WA	0.42	0.303	10%
NY	NY	0.40	0.069	8%
Plains	KS,MN,NE,OK,SD	0.44	0.144	18%
Mountains	AZ,CO,NV	0.76	0.263	16%
NATIONAL		0.68	0.16	13%

# National Comparison

## Cap and Dividend (nontaxable)

Permit Price \$20.87



## Reduce Income Tax



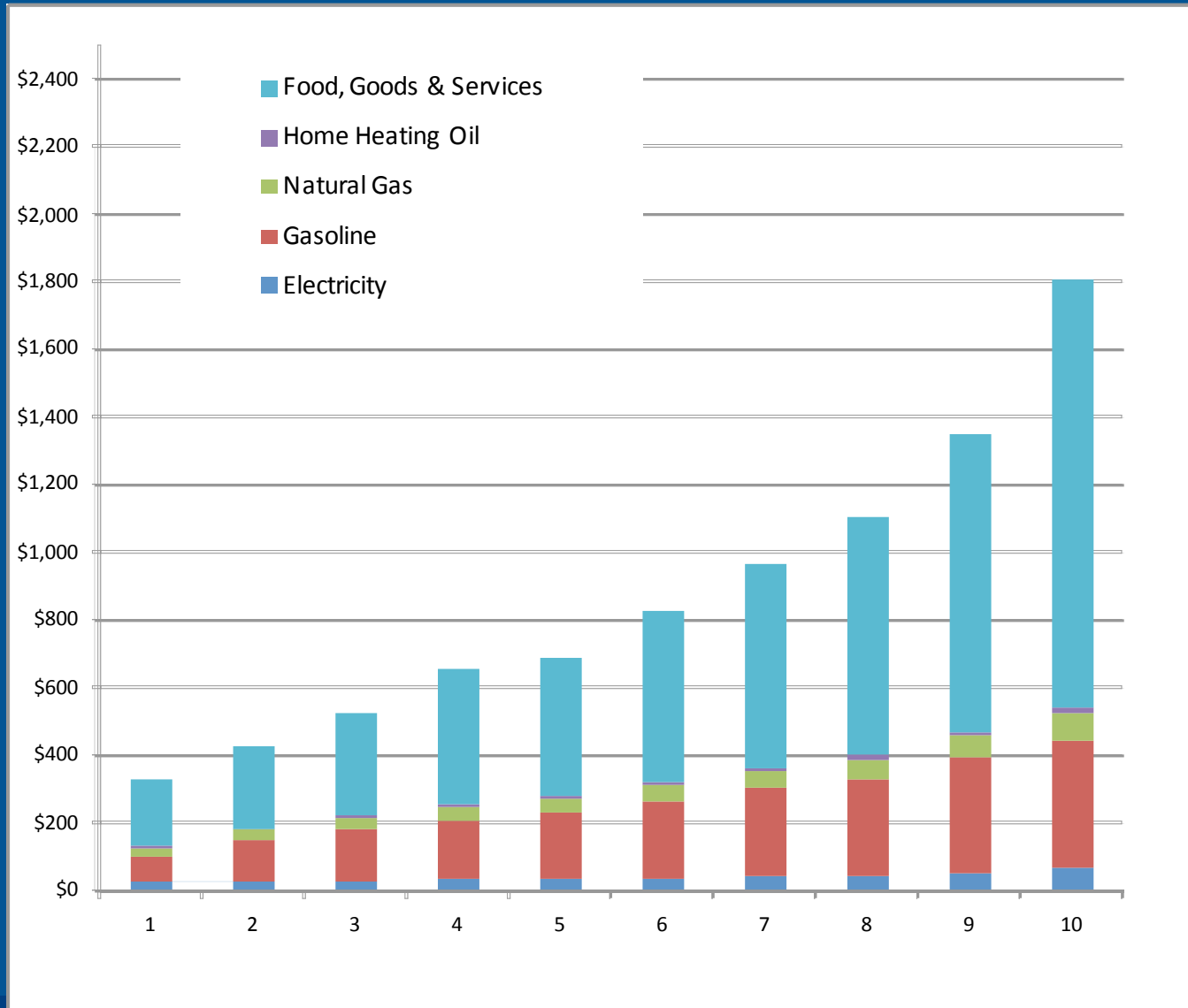
**Dark Blue: Effect of cap/tax**

**Light Blue: Net effect after accounting for revenue**

# California

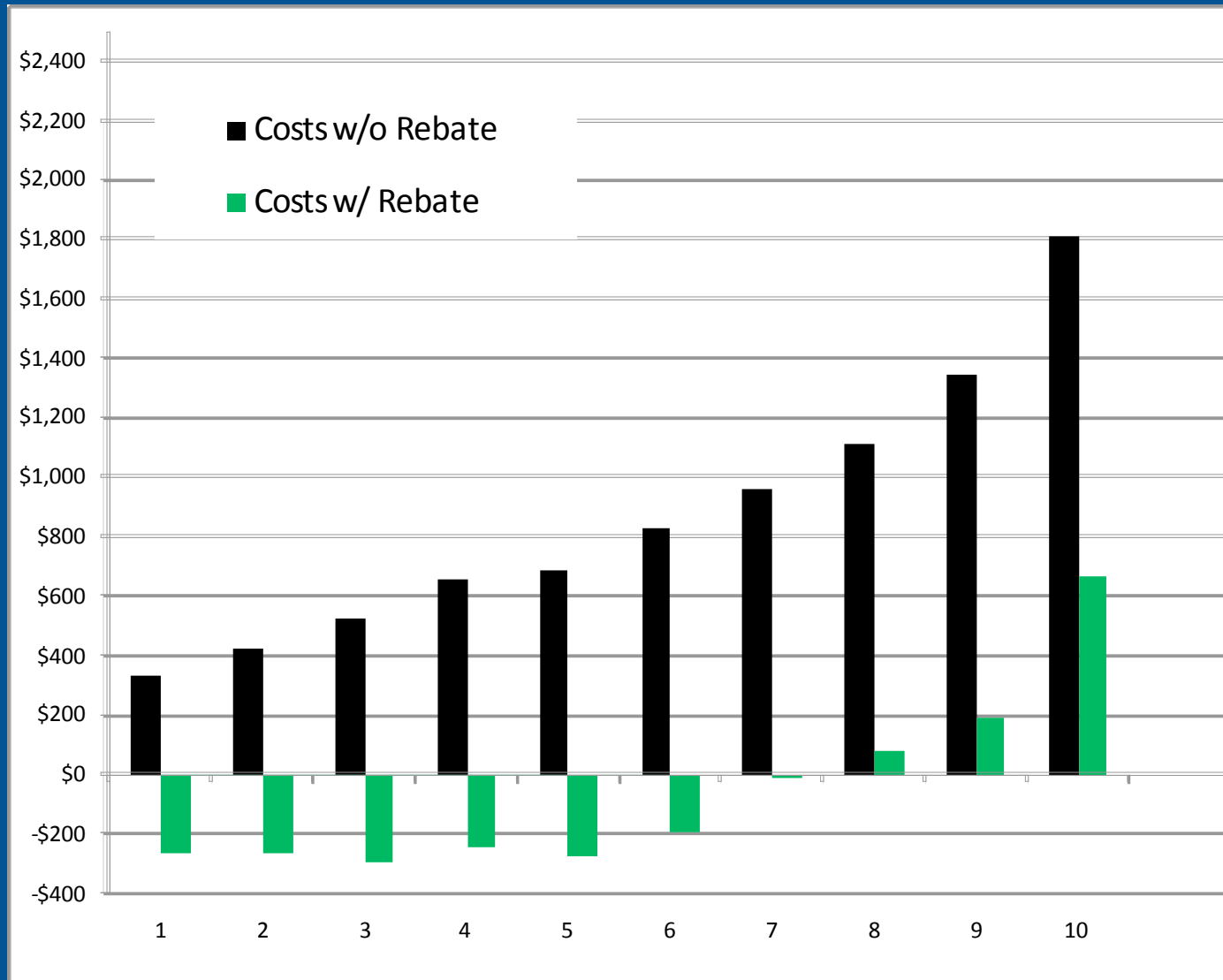
## Annual Cost Impacts on Consumers of \$21 Price per Ton CO<sub>2</sub>

Annual  
Cost



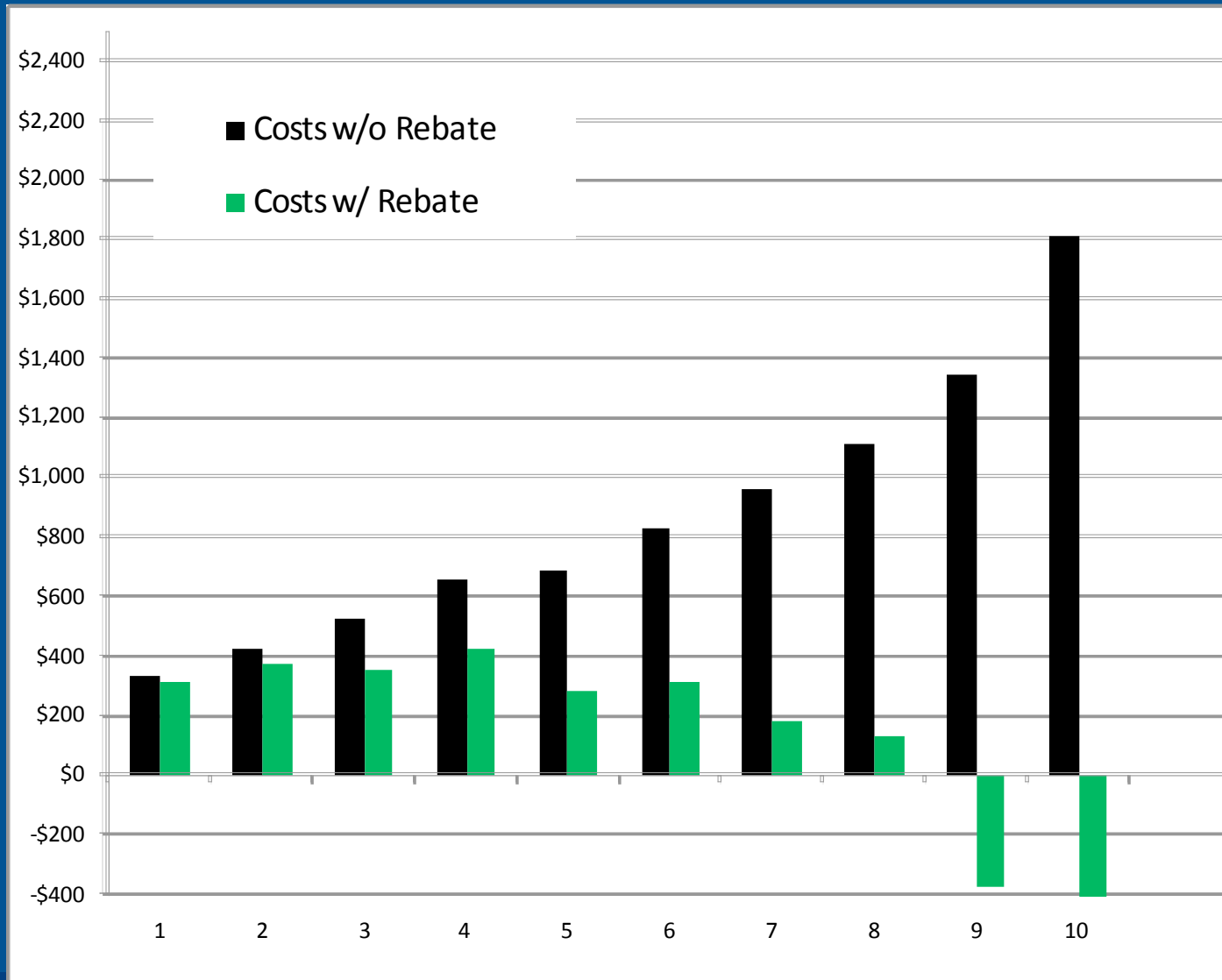
# California Consumer Costs if 100% of Allowances Auctioned and Returned Per Capita to Every Consumer (nontaxable)

Annual  
Cost



# California Consumer Costs if 100% of Allowances Auctioned and Used to Reduce Federal Income Tax

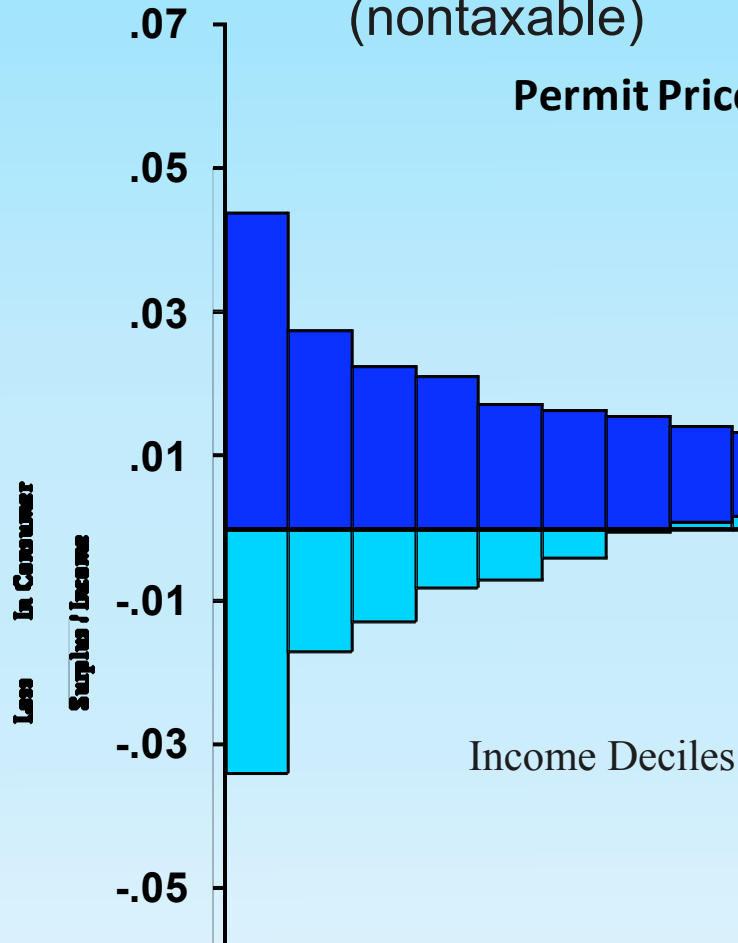
Annual Cost



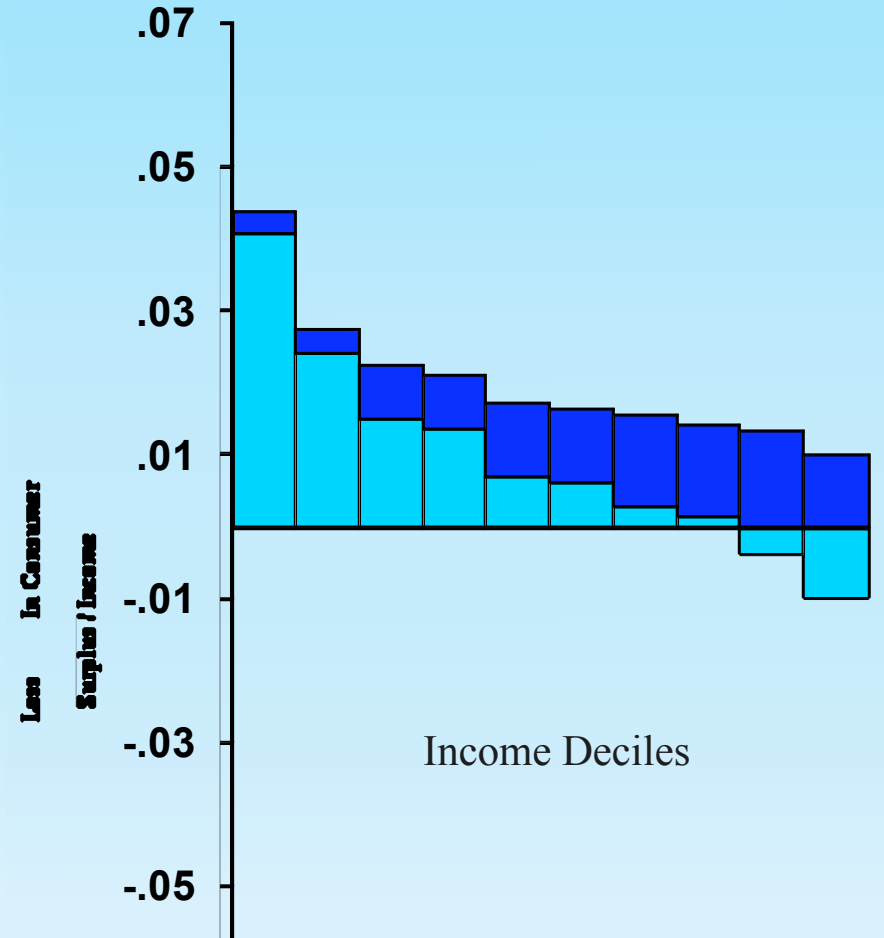
# California Comparison

Cap and Dividend  
(nontaxable)

Permit Price: 20.87



Reduce Income Tax



**Dark Blue: Effect of cap/tax**

**Light Blue: Net effect after accounting for revenue**

# Conclusions

- Policy options have differences for regions and income groups.
- Property rights to CO<sub>2</sub> convey tremendous value.
- The distribution of the value can remedy impacts on low income households and regional differences

Thank you!

