

Discussion of the quantitative analyses of the AB32

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(Thanks to fellow EAAC members)

Basic economics: The costs

- AB 32 is a suite of policies, it is not just a cap & trade program
 - Most modeling efforts focus on the entire suite
- Climate change policy increases the cost of greenhouse-gas-intensive activities, this leads to three types of costs:
 - 1. The increase in cost of selling these goods using cleaner technology or by buying allowances
 - These are *net* costs (which may be negative), net of any benefits from new product
 - Most of these costs will be borne by consumers, some by firms
 - 2. The costs to consumers from consuming less of the product as a results of rising prices
 - 3. The macro economic costs associated with changes in prices

The benefit side

- Climate change policies lead to benefits too
 - Three types:
 - Benefits from a cooler climate (that is the point, after all)
 - Which may also come from pushing national policies
 - Benefits from policies that actually have negative costs
 - Macroeconomic benefits from replacing distortionary taxes with revenues raised from the policy (if revenues are used in this way)
 - In principle, these benefits can be larger than the costs
 - In the presence of a *negative externality*, absent policy intervention social benefit coming from some GHG emissions are below social costs
 - Getting rid of these emissions is a net positive
 - **There may be other *market failures* that keep net cost reducing technologies out of the market**
 - Whether it is a net benefit depends on:
 - How efficient the climate change policy is
 - Whose benefits you include, as some of these benefits flow to people outside of California

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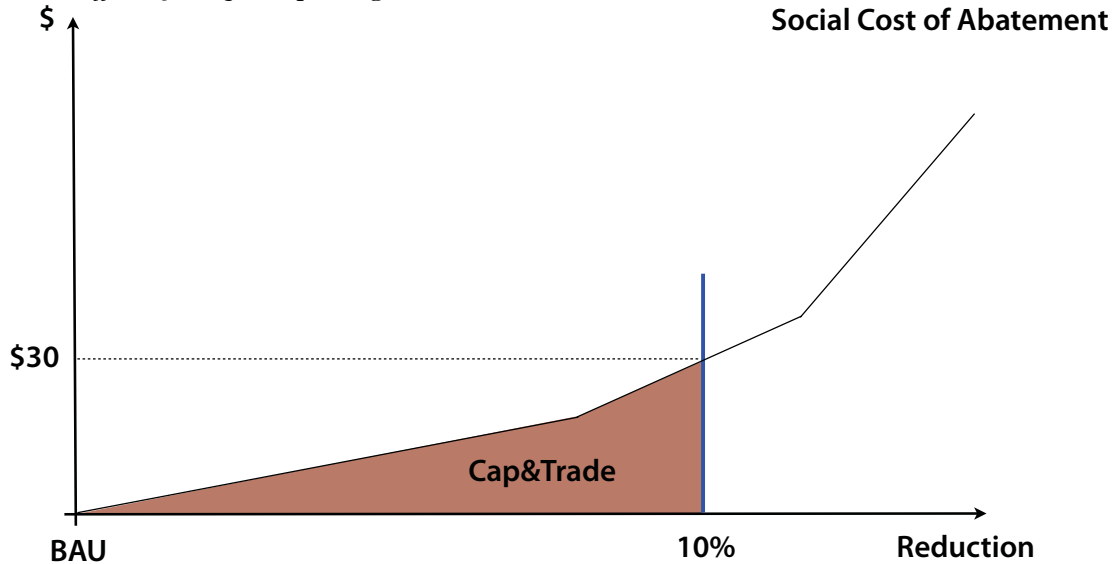
Getting under the hood of modeling efforts

- At the most basic level, modeling the costs of climate change policy requires four things:
 - 1. The technology costs associated with making cleaner products
 - 2. Demand information for goods and services that generate GHGs
 - 3. Macroeconomic model
 - 4. Model of BAU
- Other features include:
 - 1. Supply curve for offsets
 - 2. Models of leakage/reshuffling

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What are the costs?

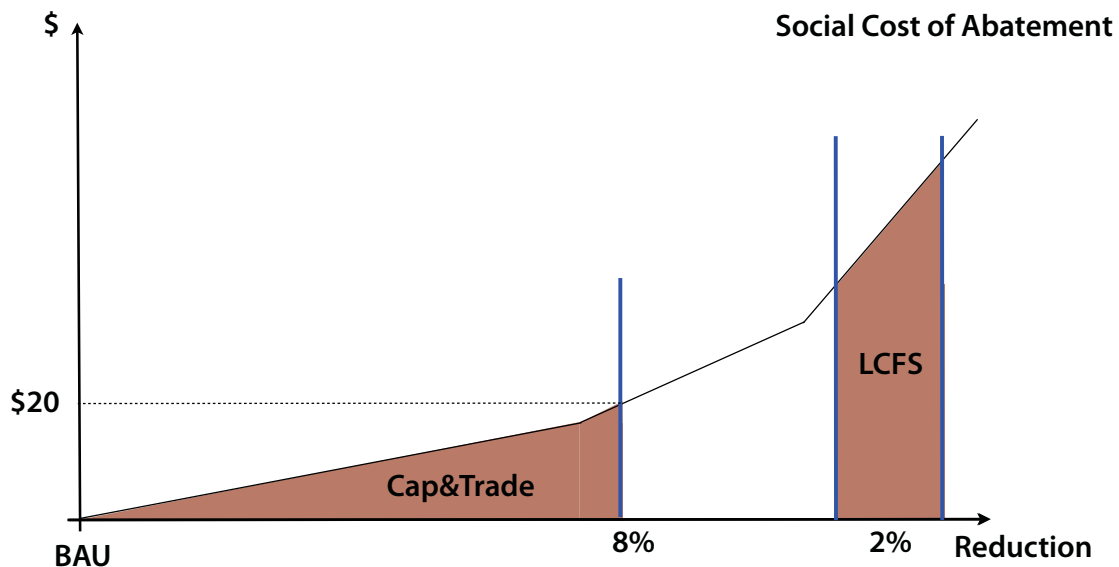
- **Social marginal abatement curve** will encompass both increases in the cost of production and consumer welfare from consuming less
- *Efficiency*: requires picking the lowest fruit first...



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Efficiency not guaranteed

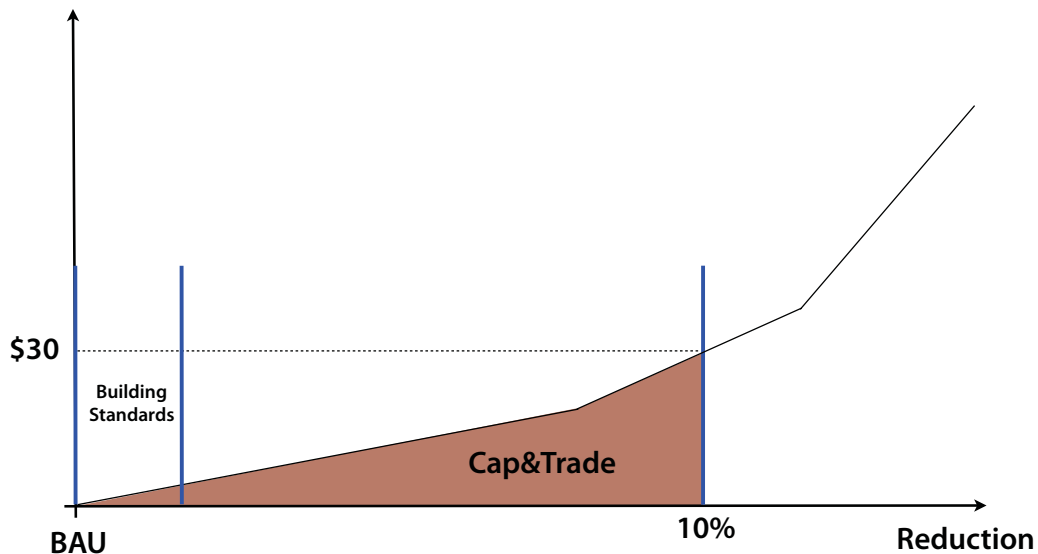
- Complementary measures may not be the lowest hanging fruit



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The presence of other market failures

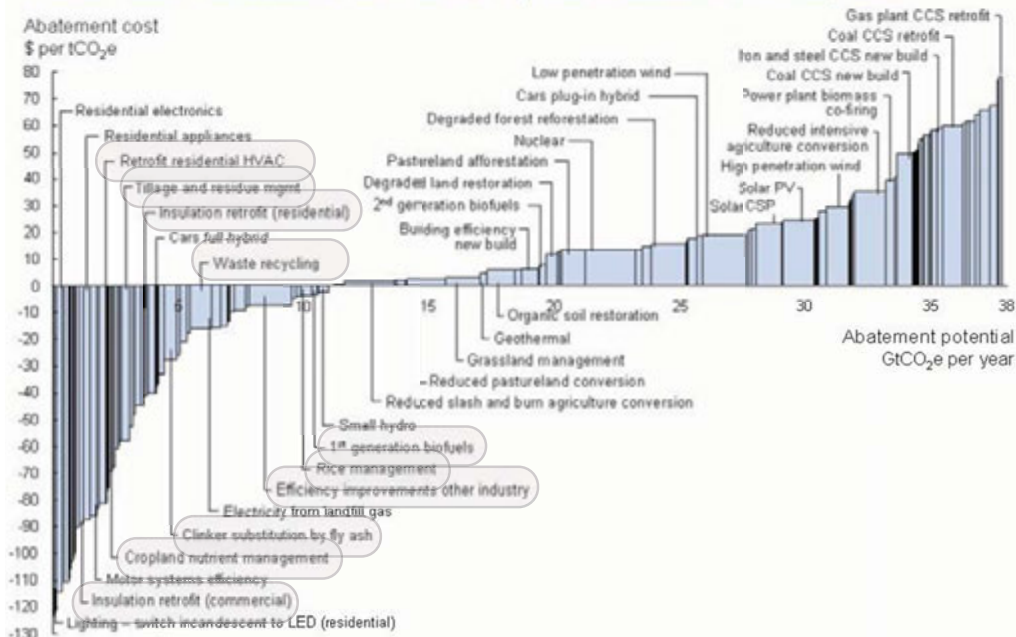
- The argument for complementary measures:
 - Some low hanging fruit may not be picked under just pricing the externality
 - In principle, some of this fruit might have negative costs



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Free lunch? Unlikely. Stresses importance of tech cost curves

Global GHG abatement cost curve beyond business-as-usual, 2030



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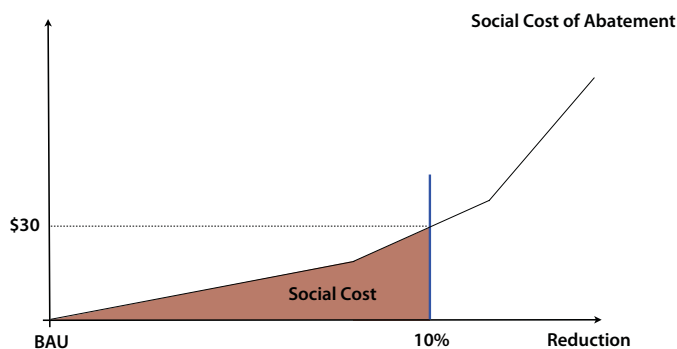
My “priors” going into EAAC

- Don't trust any of the modeling
 - Coming up with technology cost curves is difficult
 - Easy to overstate things like learning by doing, technological progress, etc.
 - Estimating demand and supply curves is difficult
 - Estimating LR demand and supply curves next to impossible
 - Often 100s of equations, with equations coming from empirical exercises that were...uh...less than ideal
 - Macro models! Come on...
- Costs of AB32, especially the C&T component likely to be small
 - **Enough “play in the system” to restrict allowance prices**
- Most of the complementary measures are probably outside of the allowance price in terms of their costs per ton
 - But, as is typical in the policy arena these are more politically palatable as they hide the costs better
- Value of AB32 is in (a) influencing federal policy (b) the ability to auction allowances and reduce **distortionary** taxes

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Why C&T small effect? A \$30/ton price of CO₂

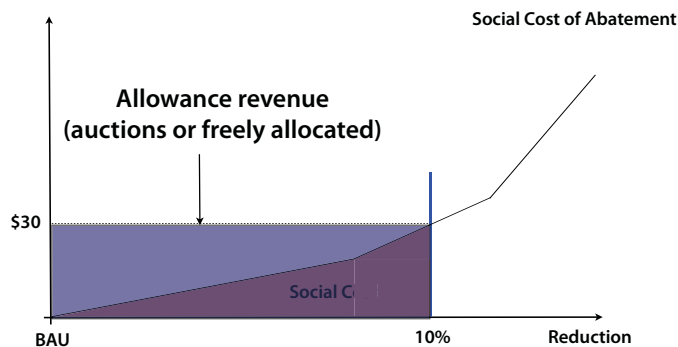
- Increase gasoline prices by 10 percent
- If all of this gets added to marginal price, worst case scenario (or, best case):
 - Increase electricity price by 10%
 - Increase natural gas prices by 15%
- Remember, this is **not** the cost to society
 - This is the rectangle, not the triangle



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My “posteriors” coming out of EAAC

- Comforted by the relative agreement between ARB and CRA
 - Can point to explicit assumptions that might drive the differences
- A fall in GSP of 1.0 to 2.0 percent seems reasonable but may be high,
 - *Ignore the potential benefits from distortionary tax reductions*
 - Long run demand elasticities likely too low
- Costs of some complementary measures (LCFS, Paley II, VMT reductions) likely too low

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Why the differences between ARB/CRA?

- Obviously different models
 - May come from this
 - Doesn't appear to come from different technology supply curves
- More fundamentally, ARB assumes there are additional market failures that lead consumers/firms to undervalue future cost savings
 - E.g., consumers don't correctly account for future fuel savings when purchasing vehicles/appliances
- This is an unsettled topic in economics
 - Empirical evidence mixed, although the best paper out there (uh..my own) suggests consumers correctly value fuel economy savings
 - These issues can exist elsewhere (e.g., insulation, appliances, etc.)

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Notes on other studies

- Tanton
 - Misleading discussion, double counts "costs"
 - For example, firm A will have to buy \$X in permits
 - Consumers of A will have to pay \$X more
 - *This provides no information about economic costs!*
 - Costs to consumers ignore adjustments, I think
 - This will overstate costs
- Brattle study
 - Reasonable. Ignores macro-economic effects and indirect demand effects
- Varshney study
 - Shouldn't be taken seriously

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What we need more of...

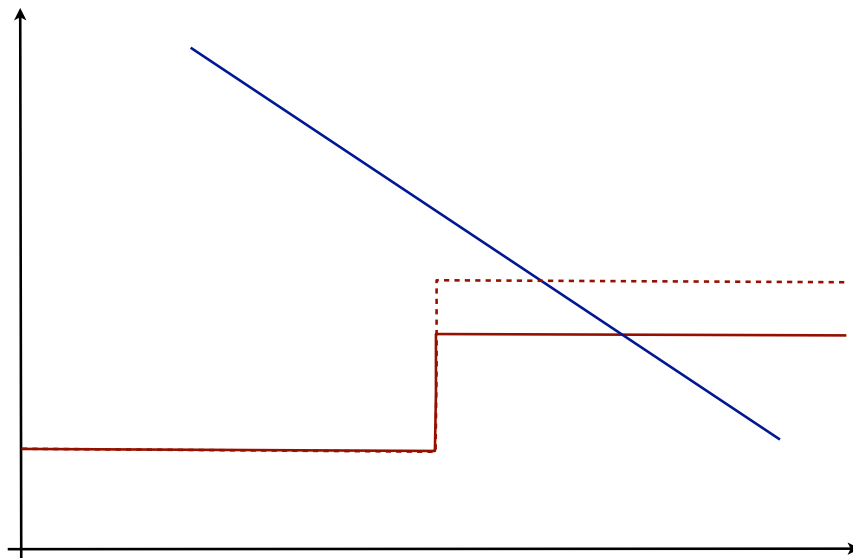
- Transparency!
 - Even as an EAAC member, it was not possible to see all of the underlying assumptions
- Discussion of key parameters/sources
- Confidence intervals
- Studies that focus on the costs to consumers need to understand that this is impossible to discuss without knowing allocations

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- extras

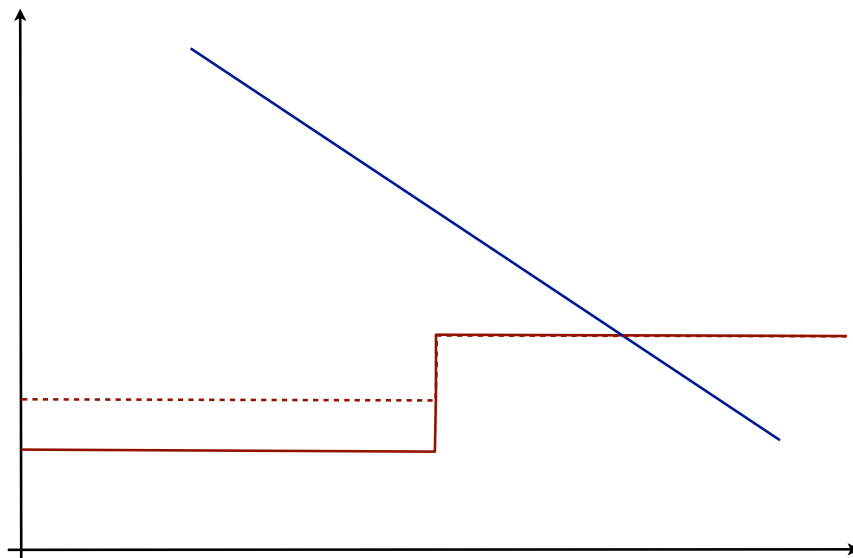
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Case 1: California firms marginal



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Case 2: Out-of-state firms marginal



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