



Economics of Offsets

Presentation to Carbon Offsets as a Tool for Climate Change Policy

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Offsets and Other Tools in a Market Based Policy Design

- Although governmental requirements to reduce GHG emissions may not emanate from markets
 - Public policies that create “price signals” and then allow individual regulated entities the flexibility to respond to these signals on a decentralized basis are characterized as “market based” emission control policies.
- An Emissions Cap-and-Trade Program is a Market Based Policy that includes certain complementary policy instruments:
 - **Emissions Allowances:** the number of allowances issued should equal the emissions cap
 - **Direct Abatement:** increases (decreases) the number of allowances that a regulated entity sells (buys)
 - **Offsets :** allowances created outside the directly regulated sectors
 - Offsets describes a homogeneous class of genuine emission reductions (i.e. a ton is a ton)



Offsets Provide an Important Opportunity for Least Cost Emission Abatement

- Least cost emission reduction options are an important component in a Cap-and-Trade policy.
- Limitations in eligibility of offsets as a compliance tool can cause an unnecessary increase in compliance costs
 - tantamount to leaving ‘cash on the table’ as relatively low cost abatement projects are not implemented.
- Compliance cost sensitivity is high. Cost savings from a Cap-and-Trade program, with offsets, could facilitate greater long-run emission reductions

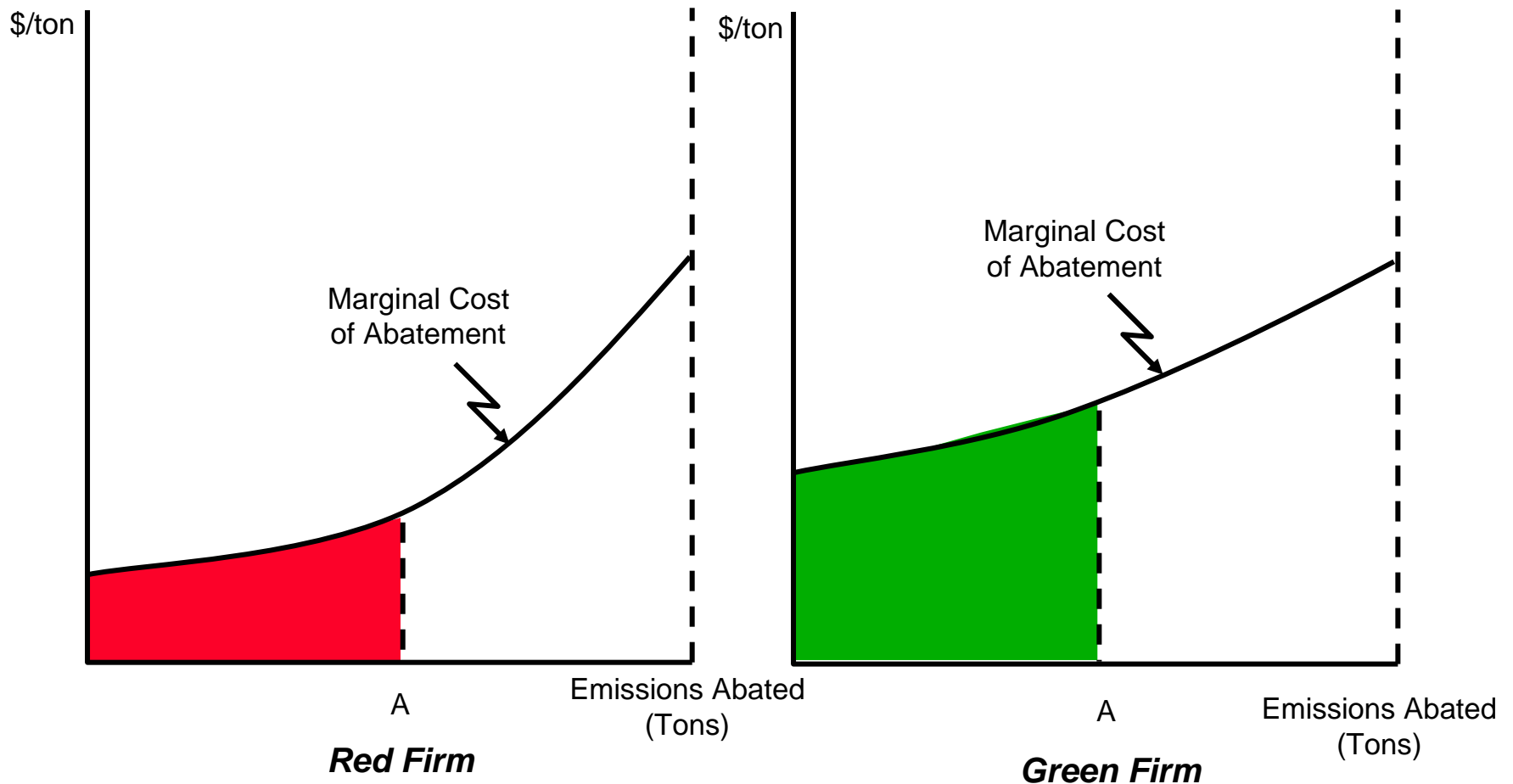
Role of Offsets in Emissions Reduction

- A Cap-and-Trade program provides regulated entities the opportunity to determine the lowest cost portfolio of abatement activities
 - Direct abatement is the process by which the regulated entity directly reduces its own emissions.
 - Allowance trading motivates regulated entities to make abatement decisions most efficiently
 - Offsets allow regulated entities to fund abatement actions outside of the regulated sector when the cost is lower than the cost of reductions within the controlled sector
- The marginal abatement from an additional dollar spent on emission reduction should be equal across all three options (equimarginality)
 - Equimarginality should also occur for all offset projects

Equimarginality and Cost Minimization

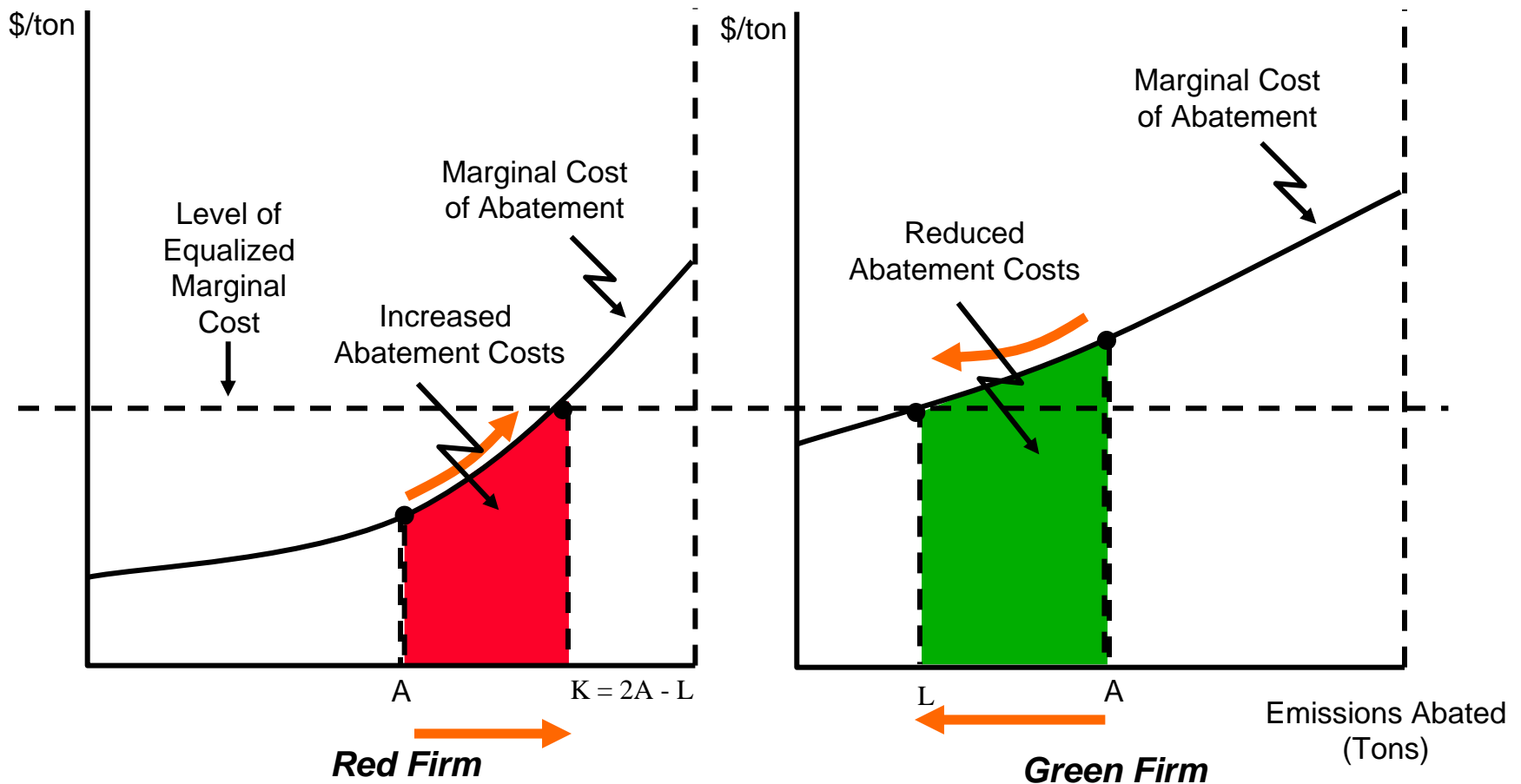
- Policies that prescribe a fixed level of abatement by all regulated entities (Equiproportionality) will not necessarily result in the greatest level of abatement at any given cost
 - Alternatively, if emissions are capped (AB 32), equiproportional abatement will not minimize total abatement cost
- Only by pure coincidence would the marginal abatement costs for all regulated entities be such that an equiproportional policy could result in least cost compliance.

Equiproportional Abatement May Seem Fair...



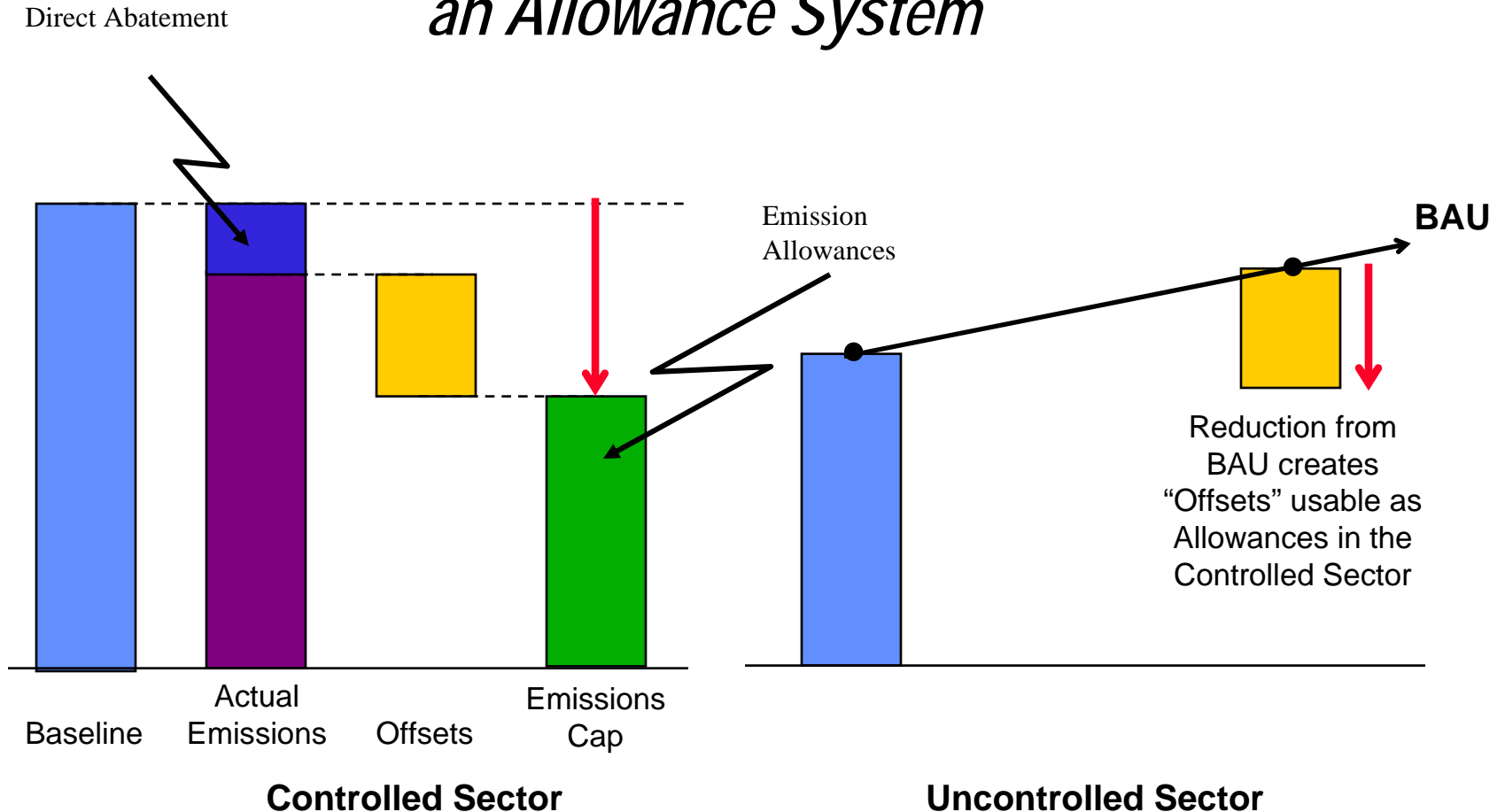
A policy that mandates that both regulated entities reduce emissions by the same level (A) will result in 2A total reduction in emissions. This policy tool passes the fairness test, but it does not minimize compliance expense.

... But Equiproportional Abatement Is Not Economically Efficient (i.e., Lowest Cost)



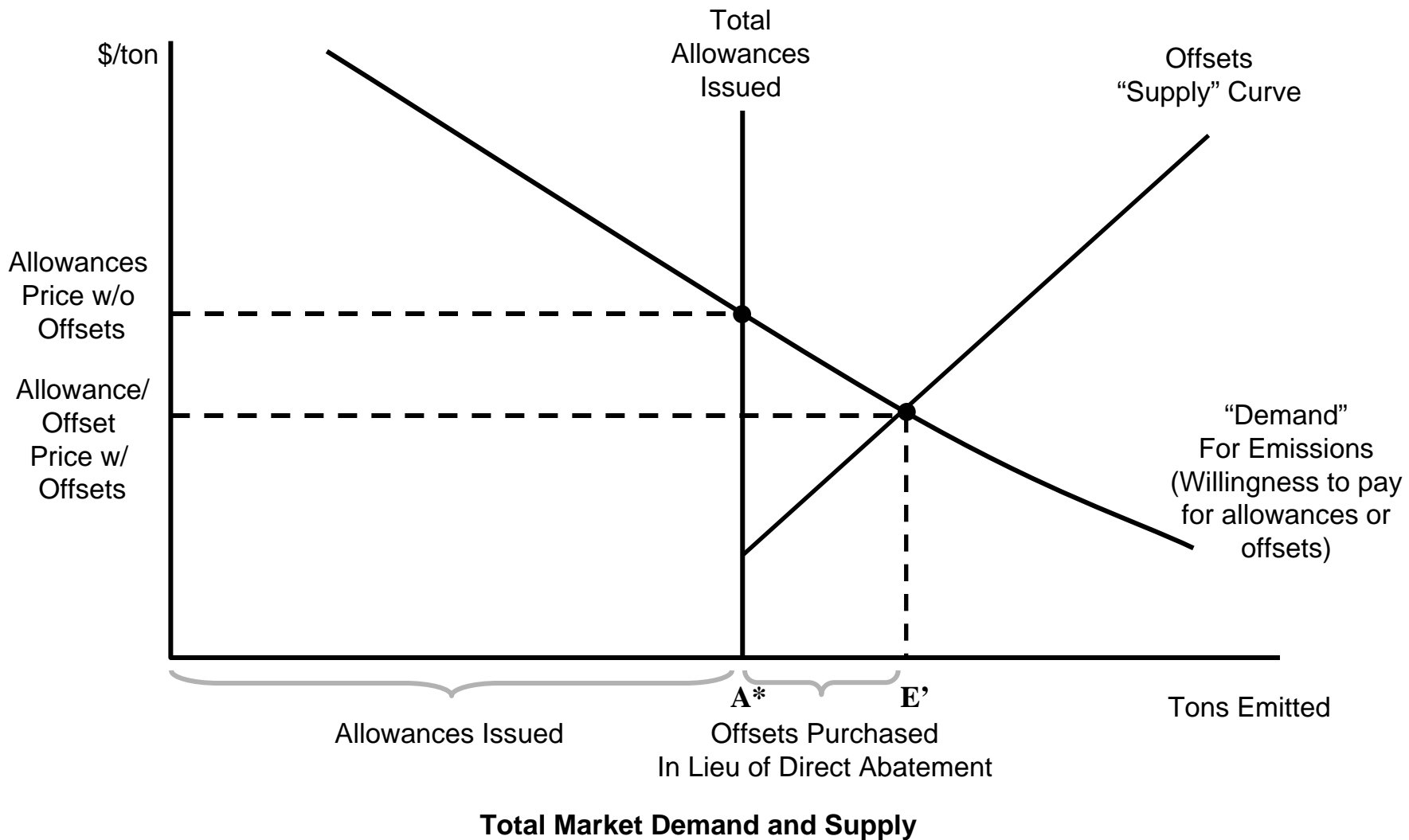
Compelling both the Red and Green regulated entities to each reduce 'A' emissions is not efficient. At level A, the Green firm is reducing too much while the Red firm is not reducing enough. Abatement costs will fall if the Green firm reduces 'L' emissions and purchases allowances from the Red firm. This allowance purchase funds emission reductions by the Red firm beyond 'A'. This exchange will continue until the marginal cost of abatement is the same for both firms. The result is that 2A emissions are abated.

Integration of Offsets Into an Allowance System



- Emission reductions in the uncontrolled sector create “currency” substitutable for allowances in the controlled sector
- Offsets that reduce emissions in the Uncontrolled sector below the BAU case are considered Additional.

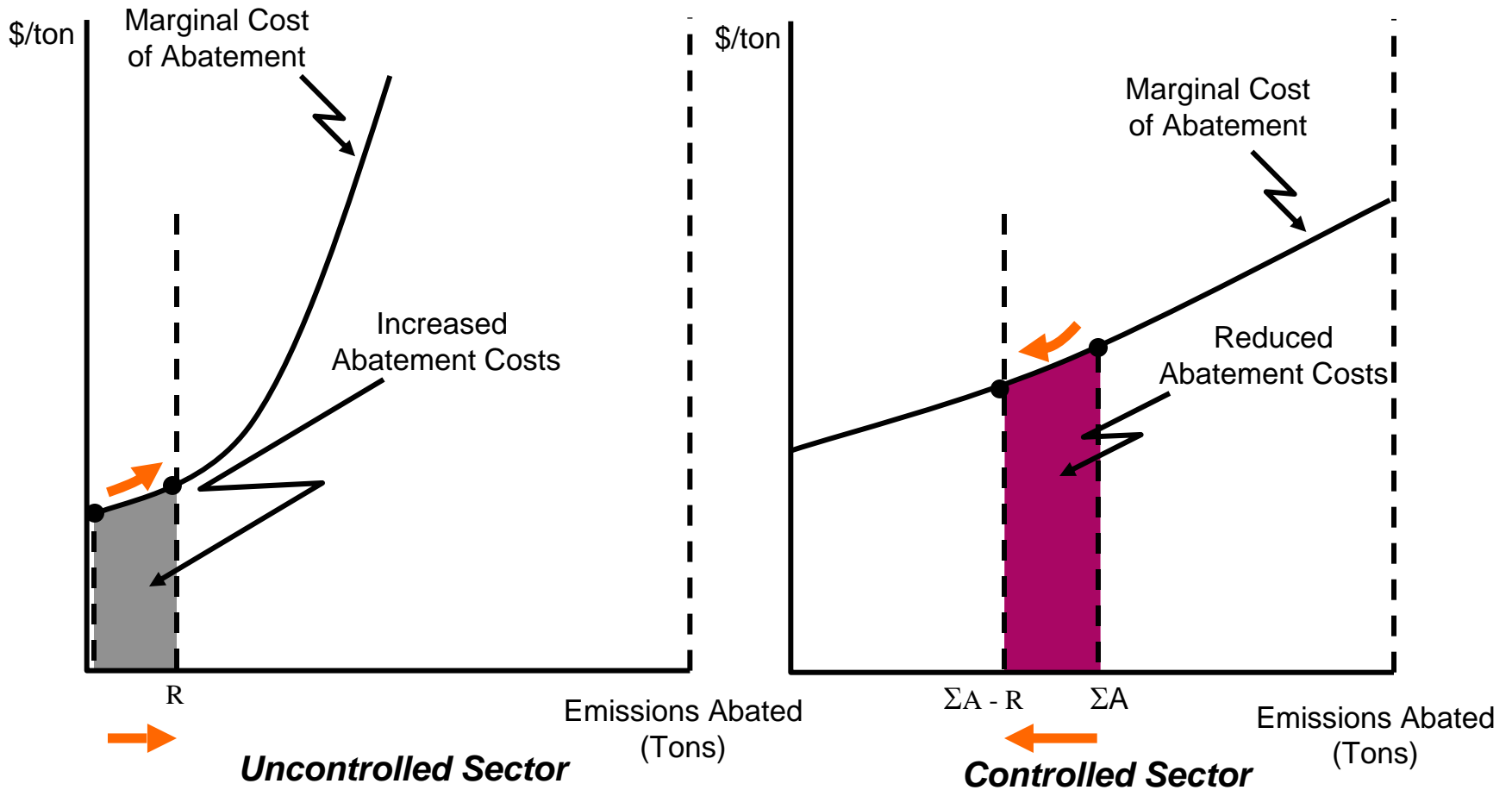
Offsets: Basic Economics



A Ton is a Ton

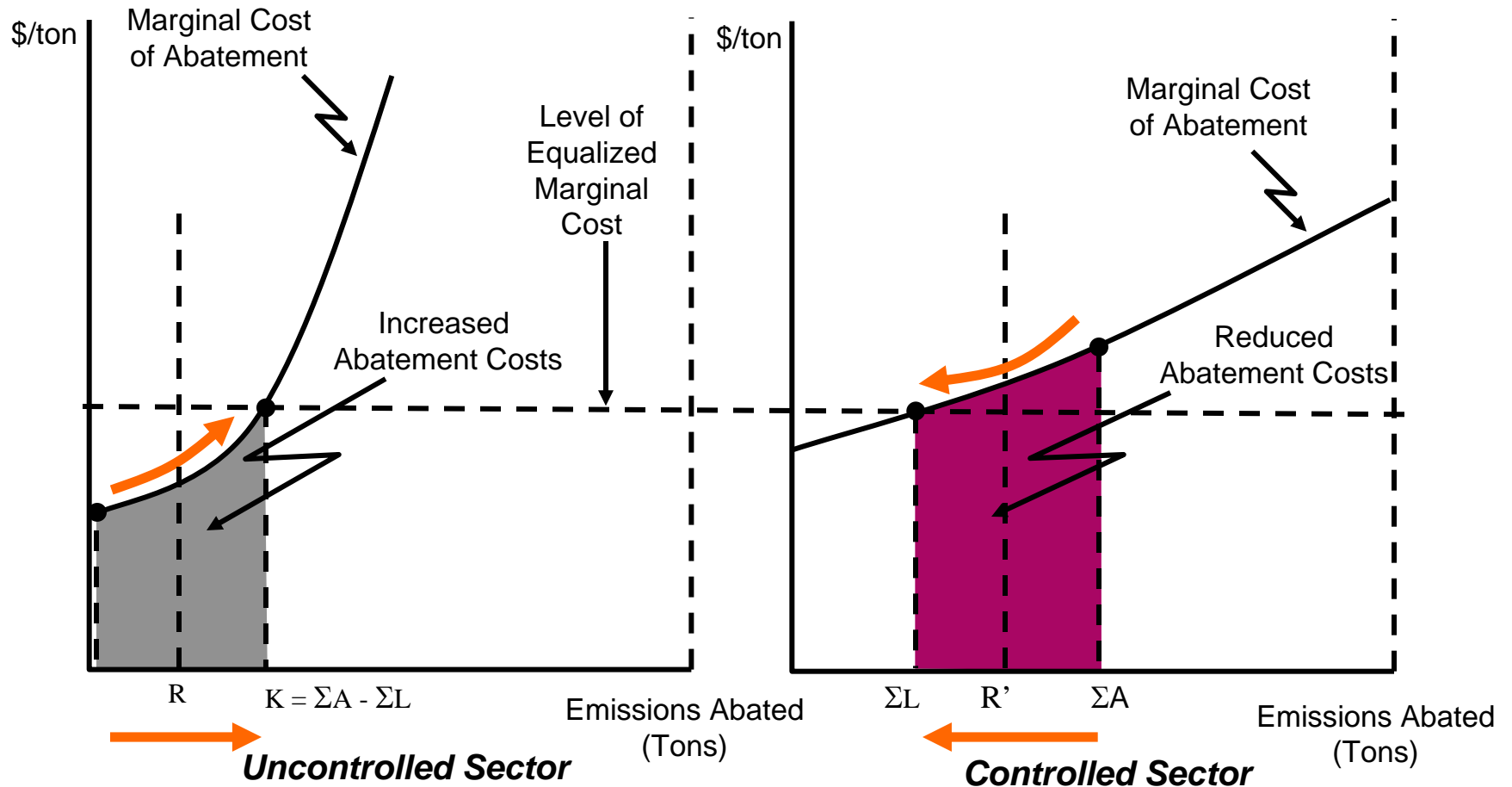
- Offset limitations effectively assign preferred emissions status to a specific sector or geographic region.
 - A ton of emissions reduction provides the same atmospheric benefit regardless of the geographic or sectoral origin of the reduction.
 - The light is never better in the other room
 - Any other environmental benefits should be evaluated independently.
 - Policy awareness of additional costs of restrictions
 - Appropriate externality or distributional evaluations can follow.

Equimarginality in Offsets



The use of R offsets from the uncontrolled sector reduces the total cost of abatement as compared to a “no-offset” scenario. However, if the level of permitted offsets from the uncontrolled sector is restricted to R offsets, the controlled sector will need to abate $(\Sigma A - R)$ offsets in order to achieve the regulated ΣA level of emission reduction. This will result in a higher compliance cost than in the unrestricted scenario.

Equimarginality in Offsets



If the level of offsets from the uncontrolled sector is not restricted to an arbitrary level the controlled sector will choose a portfolio of emission reductions both in the controlled and the uncontrolled sectors such that the marginal cost of abatement is equal across the two sectors. This would facilitate the regulated ΣA level of emission reductions at the lowest possible cost.



Thank You

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