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## *Arguments for Auctioning Carbon Permits*

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- A carbon cap and trade system will have the same impact on energy prices for any given level of emission reduction regardless of how the permits are distributed.
- With free allocation of permits, or “grandfathering,” energy producers receive a lump-sum transfer of wealth from energy consumers. The whole economic story will be the direct cost to consumers of increased energy prices.
- With auctioning of permits, the government collects the revenues. If the government puts these revenues to economically productive use (e.g., decreasing income taxes or investing in public goods), this will partially offset the impact of the higher energy prices.

In discussions over how best to implement mandatory restrictions on carbon, the most commonly discussed option is a cap and trade system. One critical economic question surrounding cap and trade is how to distribute the permits, which represent a limited right to emit carbon. There are two main competing mechanisms: sale of the permits (usually through an auction of some type) and free allocations to polluters, often called “grandfathering” (usually based on past emissions levels, output levels, or carbon intensity). The economic answer to the question of how to distribute the permits is clear and unambiguous: the permits should be auctioned.

### **1. Price Equivalence**

Restricting carbon emissions will raise energy prices. As a byproduct of fossil-based energy consumption, restricting emissions will either require energy producers to produce less energy or to undertake some type of costly action to abate their emissions. These two general types of effects will reduce the amount of energy producers will be willing to sell at any given price or, equivalently, raise the price for which they sell any given quantity of energy. Market mechanisms, such as carbon taxes or cap and trade systems, are generally preferred because they are widely believed to be the least costly method of achieving a given level of reduction. What is important to note is that carbon taxes and cap and trade systems both put a price on emissions – the impact of any given level of carbon price (via a tax or a permit) is the same no matter how it is implemented. I.e., a carbon tax, cap and

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<sup>1</sup> Economics for Equity and the Environment Network (E3) is a nationwide network of economists developing arguments for environmental protection with a social equity focus. For more information, please contact Kristen Sheeran, Director, at [ksheeran@e3network.org](mailto:ksheeran@e3network.org). E3 is a program of Ecotrust.



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trade with grandfathered permits, and cap and trade with auctioning will all impose the same energy price impact for any given level of emission reduction.

There appears to be much misunderstanding about the implications of grandfathering vs. auctioning permits, with many claiming that grandfathering or other free allocation systems will not have the same impacts on energy prices as auctioning. This is incorrect. Imagine the following situation: last year, the U.S. emitted 100 tons of CO<sub>2</sub>, and this year, it will restrict its emissions to 90 tons via a cap and trade system. There appears to be no disagreement that selling the permits to emitters will cause energy prices to rise: as the cost of production rises, producers will pass some or all of those increased costs on to their customers.

To see that this is identically true under free allocations, assume that the permits are allocated for free, and consider the decision that must be made by a producer who did not receive enough free permits to cover all of the pollution he or she would have otherwise emitted. She must either: (1) buy a permit from another polluter in the secondary market, (2) undertake costly abatement activity (e.g., increasing conversion efficiency at an electricity plant), or (3) cut output. Under either option 1 or 2, her costs per unit will rise. If she is going to sell the units she produced without losing money, she will have to raise the price of her output. Because prices are set at the margin (i.e., the price of the last unit sold in a market is the price that all units sold receive), the price of all output from all producers will increase by the same amount. The result is that even those producers who received free permit allocations will price their output exactly as if they had to pay for the permits.

The third option for our unlucky producer is to cut output. If she believes that she cannot increase her selling price enough to cover the cost so of either option 1 or 2 above, then she will have to cut output to reduce her pollution enough to fit under the cap. Like any other reduction in supply, this will cause prices to rise. Again, because all units will sell for the same price, this price increase will accrue to units sold with the benefit of free allocations. In all three cases, producers who receive free permits will price their output exactly as if they had received no free permits.

## **2. Opportunity Cost**

Because energy is a critical input to economic activity, increased energy prices will tend to slow economic growth. Given that the immediate impact on energy prices and the initial direct impact on economic growth of a cap and trade system is identical regardless of how the permits are distributed, the economic question is now the ultimate disposition of the burden of the price increase, and how much of the reduction in economic growth can be ameliorated.



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Under grandfathering, polluters receive a lump-sum distribution of valuable assets. This represents a pure wealth transfer from energy consumers to energy producers. There is no incentive attached to this transfer, and thus produces little or no change in marginal behavior; i.e., it neither increases nor decreases the incentives for economic activity. The direct cost of the cap and trade system via increased energy prices will be the whole economic story.<sup>2</sup>

With auctioning, however, the government will collect the revenues and can put them to economically productive use. Here, the term “economically productive” means a use that changes the marginal incentives for economic activity. Two commonly cited examples are reducing existing taxes and investment in energy efficiency. Since taxes discourage economic activity, reducing taxes increases economic activity. A simple example is the payroll tax, or FICA, which is collected to fund Social Security and Medicare. Because it lowers the economic returns to working, it discourages some work on the margin. Because it increases the cost of hiring, it also discourages employers from hiring. Though the magnitude of the effect is uncertain, there is no doubt that reducing the federal payroll tax would increase employment. Using permit auction revenues to reduce FICA taxes would thus increase employment and economic growth beyond what they would be under a grandfathered system. Whether or not the resulting increase in economic activity would be enough to offset the direct economic costs of the system is also uncertain.

Energy efficiency falls into a class of goods called “public goods,” i.e., goods that can be consumed by more than one person simultaneously. Markets tend to yield suboptimal investments in efficiency research and development. Using auction revenues to fund energy efficiency, or any other public good for that matter, would produce economic gains. The increase in energy prices would increase the economic return to energy efficiency, all else equal. Whether it would be more economically wise than reducing taxes or investing in other public goods is an open question.

It is important to note that it is equally possible for the government to put the money to unproductive uses. Over-investment in public goods is economically wasteful no matter what the source of revenue, and there is thus nothing automatically beneficial about auctioning as opposed to grandfathering. Lump-sum or per-capita redistribution of auction revenues is one such unproductive use. Since it only provides an incentive to be alive (for which there is already ample incentive), it does not encourage economic activity that would not have occurred anyway. There may be other arguments in favor of such distributions or

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<sup>2</sup> The long-run impacts on behavior can be significant and costly, however. Given the large sums of money at stake, grandfathering will tend to lead to rent-seeking behavior, e.g. lobbying by producers for a large share of the free allocation; and, depending on how the allocation system deals with new entrants, free allocations can result in more new polluting facilities (if not pollution) than would an equivalent auction-based system.



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over-investments in public goods, but they are not based on increasing incentives for economic growth.