

Comments on DEQ's Study of a Market Approach to Reducing GHG Emissions

Eric Strid ericwstrid@gmail.com 503-332-7507

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Summary: Feebates should be part of this study. Feebates could offer superior efficacy, market specificity and responsiveness, pricing options, leakage, and fairness. And potentially generate less resistance from businesses.

My perspective: I cofounded and managed a high-tech company¹ in Beaverton, through start-up and privately-held phases and took it public in 2004. I understand the challenges of technology adoptions and growing a company in dynamic, global markets. One reason semiconductors evolved so rapidly is that governments mostly stayed out of the way. Governments can easily get in the way of clean-energy deployments.

In the past nine years I have become increasingly involved in climate change issues. I remodeled two houses to be net-zero and mostly electrified my transportation. I work with a community group² to advocate personal footprint reductions and climate-repairing government policies. I believe that Oregon must adopt an overall goal of 100% clean energy by 2050, and that behavioral changes alone can achieve only about 20% of that goal. Reaching 100% clean energy physically requires upgrading lots of infrastructure—the 100,000 houses in Multnomah County without insulation³ will not become livable by simply turning down their thermostats.

Market-based approaches to upgrading infrastructure: I've become increasingly skeptical that any practical price on *current* GHG emissions can influence consumer habits enough to achieve the 20% reductions possible through behavior changes, let alone the 80% necessary through infrastructure upgrades. A practical price limit imposed by border leakage is ~\$30/MTCO_{2e}, but we'll need \$200/ton just to make gasoline cost as much as it did in 2014. Entrepreneurs are dismissive of a price on emissions because it would be lost in the price volatilities.

There are copious examples of market failures when consumers underestimate the lifetime operating costs of a product, and those costs don't include any social costs of emissions. New-car buyers consider about three years of operating costs⁴. Energy-efficient appliances often experience market failure⁵. Oregon's well-intentioned Energy Performance Score is useful information but lacks teeth to make homebuyers feel the energy implications of a purchase.

Thus the free market doesn't work for upgrading infrastructure, but I believe markets can be intelligently augmented to focus market-based incentives on infrastructure decisions. One prominent approach is vehicle feebates⁶, where gas-guzzlers are charged a fee upon purchase or initial registration in the state; and cars with higher efficiencies get a rebate. Such fees and rebates could be applied to building permits and other infrastructure, as a suite of sector-specific and revenue-neutral emission policies. Feebates create a financial incentive at the key decision points which lock in *lifetime* GHG emissions of the infrastructure.

Feebates could charge a portion of the social cost of the *lifetime* GHG emissions of a new vehicle, building, or power plant; as well as the social costs of fossil-fuel toxic emissions specific to the product^{7,8}; and also anticipate adding social costs from embodied emissions when such data becomes available. For example, \$100/ton⁹ for 150,000 miles at 20 mpg is a lifetime GHG cost of \$7500. A \$7500 fee is far more likely to affect the purchase than imagining three years of gas at \$2.50 plus a 30 cent/gallon tax. The absolute social costs could be displayed like energy

stickers on appliances, but the actual feebates would likely be phased in and throttled pragmatically (by governments, but government mustn't get in the way).

I believe most businesses would advocate for effective climate policies, but they rightly see fees on *current* emissions as a drag on their current financials. Businesses carefully weigh infrastructure decisions, and a feebate would influence those key decisions. No one should be punished for emissions over which they have little or no control, such as their legacy infrastructure. But they should be punished for investing in bad infrastructure and rewarded for investing in good infrastructure.

Feebates can be inherently progressive, since new cars and houses are usually purchased by relatively affluent families. And everyone benefits from the improved infrastructure.

Implications to DEQ's study:

- Focus on Oregon's transportation sector as the most pressing problem, and whether a vehicle feebate program should be in the 2017 transportation bill.
- Examine market-based incentives on *new purchases vs. current emissions*.
- Interview feebate experts from RMI, California, France¹⁰, and Canada¹¹.
- Analyze whether C&T can achieve the price levels necessary to radically reduce emissions.
- Analyze the current problems with CARB's C&T market¹² and California's productivity of emissions eliminated per revenue dollar spent.

More feebate issues to study:

- Infrastructure incentives imply sector-specific, and probably product category-specific, policies. Energy sectors are already constrained by layers of regulations that are problematic for one-size-fits-all policies¹³. The government must work in a catalyst mode, not choosing winners and losers. What problems can arise from directing revenue-neutral fees and rebates based upon social costs within product categories?
- Vehicle feebate leakage across borders can be managed by the state of registration, but how much leakage could occur between product categories, such as potentially choosing a pickup over a passenger car due to a smaller fee in the pickup category?
- Should feebates on infrastructure interact with fees on current emissions, such as the Clean Fuels program? Is it fair to charge for an estimate of *lifetime* emissions, and also charge for *current* emissions a decade later? Or would the sum still be lower than the full social costs?
- Are there other policies better than feebates or C&T?

Draft list of requirements for emission policies:

1. Must impose a strong enough price signal
Need \$200/ton just to get back to 2014 gasoline prices
2. Must avoid most leakage across borders
3. Must be fair across all ranges of income
4. Must effectively incentivize purchase decisions toward cleaner infrastructure
5. Must affect decisions that have low-emissions options, as opposed to taxing all emissions
6. Must encourage entrepreneurs and investors to develop and offer clean-energy solutions
7. Must be effective within the existing regulations of various sectors
Mandates fundamentally affect prices in a capped market
8. Must prioritize reductions that make the most difference ASAP
9. Should enable pricing toxic emissions from fossil fuels, in addition to pricing GHG emissions
10. Should anticipate & enable a price on embodied emissions of the subject investments

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