

A New Approach in Oregon's Greenhouse Gas Initiative

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Introduction

The Oregon Legislative Assembly is again considering the introduction of a price on carbon emissions as an element of an economy-wide initiative aimed at achieving the state's climate goals of achieving a 45 percent reduction in greenhouse gas emissions from 1990 levels by 2035, and 80 percent by 2050. Carbon pricing would begin in 2022. An important portion of carbon revenues will be directed to investments to help the state achieve these goals. The proposal will be considered during the state's legislative session, which this year is a short (35 day) session that begins February 3. If the proposal is enacted, the state would be the fourth jurisdiction in the world to implement comprehensive carbon pricing, joining California, Canada and Germany.

The greenhouse gas initiative is a modification of House Bill 2020, which won support in the House of Representatives in 2019. The main modifications are outlined in Legislative Concept 19 (LC19), and address transportation and industrial source emissions. Carbon pricing for transportation would be phased in across counties, beginning with metropolitan areas, rather than being implemented statewide. The compliance responsibility for onsite natural gas use will shift from some industrial sources to upstream fuel suppliers. Free allocation to energy intensive, trade exposed industrial entities will be tied to a benchmark of emissions intensity of activity in the industry.

In most other ways, the framework of last year's proposal remains in place. The proposal would require emitters of greenhouse gases (expressed as carbon dioxide equivalent) to obtain an allowance or offset

for every ton of emissions. The number of emissions allowances to be issued every year is capped and would be reduced over time. A share of allowances would be sold through an auction and a share would be given away for free. Allowances would be tradable and bankable over time. Importantly, the economy-wide emissions targets and timetable identified in last year's proposal remain the same.

This issue brief provides a description of the modifications to House Bill 2020 and an overall assessment of the carbon pricing proposal. To summarize, the changes in the transportation sector appear likely to have little or no effect on the timing and cost of emissions reductions in the state, compared to last year's proposal, while they address distributional concerns of residents in rural counties over the next few years. The changes in the industrial sector satisfy concerns of some regulated entities, do not introduce challenges for achieving emissions goals, and may offer some advantages in administration. One modification would use bill credits as a way to protect competitiveness. There is nothing inherently flawed about this, but according to the recent language of LC19, the distribution of free allowances would not adequately preserve an incentive for innovation at the eligible facilities. It is important that the bill credits be severed from the volume of emissions and be tied to productive output, creating an incentive to reduce the emissions intensity of that production activity. Sentiment to improve this language was evident at a recent legislative informational meeting.

Generally, we can expect that the carbon market that will take shape under the proposed legislation will be vibrant. The auction with a minimum price (price floor)

will be effective in identifying a price for allowances and will efficiently direct allowances to their most highly valued use in the market. The auction and the secondary allowance market will have enough participants to be competitive, and the program design is generally aligned with the guidelines of the Western Climate Initiative which could facilitate eventual linking with California and Quebec.¹ Moreover, the carbon market provides a framework for the state to improve the efficiency of its energy use and for private and public actors to make investments that will strengthen the state's economy.

Transportation

A key modification to last year's proposal is the phase-in of carbon pricing for transportation emissions. For the first three years beginning in 2022, carbon pricing for transportation fuels will be applied only in the Portland metropolitan area. In 2025, carbon pricing for transportation fuels will be broadened to cover all metropolitan areas that have delivery of at least 10 million gallons of fuel. Other cities and counties can opt into the program, and if 19 or more counties have opted in then the carbon price in transportation will be applied statewide. For areas that are not covered by carbon pricing including specific truck stops, the state will administratively retire allowances associated with fuels sold there so that the overall emissions cap is preserved.

The geographic phase-in of carbon pricing in transportation is like approaches taken in other jurisdictions that have phased in the transportation sector. For example, California began carbon pricing in 2013 for stationary sources in the power and industry sectors and phased in transportation in 2015. Germany began carbon pricing through its participation in the EU Emissions Trading System that covers the power and industry sectors and has just recently decided to introduce carbon pricing for the rest of the economy including transportation. The states in the mid-Atlantic and Northeast that organized the Regional Greenhouse Gas Initiative to cap emissions in the power sector are now considering the broadening of carbon pricing to transportation under the Transportation Climate Initiative.

The purpose of the phase-in is to reduce costs for households and firms in rural areas that may not have

many short-run opportunities to reduce emissions. In rural communities, there are limited opportunities to reduce vehicle miles traveled and the long lifetimes of vehicles combine to provide limited opportunities to reduce emissions in the short run. It is crucial, however, for the policy to signal the need to reduce emissions from transportation throughout the state in the long run.

One might ask how the phase in will affect households and businesses in urban and suburban counties. With the justification that households and businesses in rural counties have relatively little chance to reduce emissions, this reasoning suggests that if these counties faced a carbon price at the outset of the program, they would contribute little to reducing emissions, at least until there is a natural turnover in the vehicle fleet that could lead to improved efficiency. Because the statewide emissions cap is in place and all transportation emissions are covered under the cap, and because rural counties would contribute few emissions reductions if they were faced with a carbon price at the outset of the program, I expect there to be no observable effect in the market from the phased-in approach. Approximately the same emissions reductions at the same sources that would be achieved under statewide pricing of transportation would be achieved under the phased-in approach at least for the first few years of the program. Further, because emissions changes occur at the same sources, the market price of allowances will be approximately unchanged.

Consequently, in the short run the modification to last year's legislative proposal will have minimal efficiency consequences, and it addresses distributional concerns of many state legislators. The change will result in less revenue available for program-related investments. However, by 2025, 80–90 percent of fuels will be covered by a carbon price, and the revenue collected from transportation fuels are anyway restricted under Oregon's constitution for use in the vehicle right of way, which limits the creative use of these funds. In contrast, the Climate Investment Fund that will receive other revenues is a more flexible mechanism to drive investments intended to accelerate the state's energy transformation and increase resiliency to climate change

From an efficiency perspective it is important in the long run that rural communities take advantage of

opportunities to reduce emissions. The natural turnover of the vehicle fleet and various land use decisions provide opportunities for emissions reductions, and to affect this outcome it is valuable to shape the expectations that rural residents like everyone else face a carbon-constrained future. Hence starting now, for example, vehicle purchase decisions should be influenced by the expectation that carbon pricing will be evident eventually. I do not expect the critical count of 19 counties will soon opt into the pricing program any more than I would expect an individual household to agree to have itself taxed. The introduction of a carbon price is something that makes sense only if it is applied widely, and the state should set a long-term course that balances the principle of universal carbon pricing with distributional goals to help communities during the transition. I suggest the modified legislation might be strengthened without affecting distributional outcomes in the short run by firming up the expectation of eventual statewide coverage of the transportation sector.

Some observers have raised the question about whether a geographic phase-in will open an opportunity for leakage. One form of leakage stems from the administrative challenge of identifying the final point of sale for fuel when the state retires allowances associated with fuel consumed in rural counties. At present, the state appears to seek to track fuel shipments. A simpler approach might be to impose the fee on all fuels and to provide rebates to retailers for sales in rural counties. One would expect suppliers to reduce increase the price of delivered fuel commensurate with the carbon price, recognizing that retailers will receive rebates for that portion of the total fuel price.

A second form of leakage could occur if drivers in counties that are covered by the program were to drive to rural counties to purchase gasoline. This possibility exists at the California and Quebec borders already, where carbon pricing for transportation is in place, and at the borders of states that have differing gas sales taxes. There is not much evidence one way or the other about whether leakage across state borders occurs due to carbon pricing, but there is evidence about behavior in similar situations among states that have varying fuel taxes.² In this setting, evidence suggests that there may

be less than full pass-through of a state gas tax into fuel prices near the border of the state, and consequently profit margins at stations near the border may decrease as station owners attempt to offset the opportunity for drivers to leave to fill up their tanks outside the state. Conversely, stations on the other side of the border may increase prices to capture windfalls associated with the price difference at the border. This price change in turn mitigates some of the shopping activity and price differences and should be further restricted by the relatively competitive aspect of retail gasoline. By analogy in the Oregon setting, it is possible that stations near the borders of counties that introduce carbon pricing will not completely pass through the carbon price, and stations near the borders in neighboring counties without carbon pricing may see some increase in gas prices. Over time, differences in state gas taxes appear to affect entry and exit of gas stations, leading to more stations on the side of the border with lower taxes. Consequently, expectations about the length of the phase-in period for carbon pricing could affect the extent of price differences and cross-border shopping. However, two factors mitigate this concern in Oregon. One is that the state already has differences in local gas taxes across counties with little evidence of leakage happening. Second, and the reason there is little evidence of leakage currently, the population of rural counties spans thousands of square miles with no important clustering of population or economic activity in these counties at their borders.

Industry

The second key modification to House Bill 2020 is a shift in the point of regulation for some entities in the industrial sector. Emissions associated with natural gas combustion at large industrial sources will be regulated upstream, with compliance responsibility resting with the fuel supplier, rather than the downstream industry, with the rare exception in cases where an industrial facility is connected directly to an interstate pipeline. This shift in the point of regulation should result in the carbon allowance cost being embodied in the delivered cost of fuel for downstream industry, providing a similar price-driven incentive to make investments and adjust behavior to reduce energy use and associated emissions.

The shift in compliance responsibility may provide administrative advantages by reducing the points of compliance. However, removing compliance responsibility from the downstream industry may reduce the saliency of the program for industry, affecting organizational behavior differently, leading to different compliance investments downstream.³ From an economic perspective, however, the change should have little effect one way or the other.

Even with this modification, specific industrial regulated entities continue to qualify as energy intensive, trade exposed industries. Free allocation of emissions allowances associated with their natural gas use will be consigned for sale in the auction, with revenues returned to the Public Utility Commission and delegated for utilities to provide relief for the affected entities. Eligibility requires audits and investments in energy efficiency at these facilities.

Industries that qualify as energy intensive and trade exposed also will be awarded free allowances associated with other emissions associated with the manufacturing process. This allocation will be made to these qualifying industries based on an emissions rate benchmark typically for specific products or groups of products.

The principle that determines the efficacy of this compensation scheme is whether compliance entities that receive free allowances or allowance value retain an incentive to reduce emissions. If the free allocation were tethered to a volumetric measure of fuel use and associated emissions, then the compliance entity would not have an incentive to reduce emissions. Paradoxically, they may have an incentive not to because it would lead to a reduction in future allocations⁴ while incurring a cost that is not born by its competitors.⁵ It is important that the free allocation take a different approach by severing the free allocation from the volume of emissions or the emissions intensity for products at a *specific facility* and tethering it instead to a benchmark reflecting best practice in *the industry*. Increasingly over time, the state could look beyond the state borders to identify best practice globally. This is a key principle in order to successfully enable and encourage emissions reductions in the industrial sector. The language in LC19 does not yet fully resolve this issue, but there is an apparent intent to clarify that the provision to protect

competitiveness also preserve incentives to reduce emissions. This is done by the requirement that facilities adopt all improvements with a 5-year payback or less identified by an energy audit and adopt improvements with longer payback periods that are rendered more affordable through access to a new no interest loan fund the state would create for this purpose. Indeed, such an amendment may be a win-win for industry by positioning it advantageously for carbon constraints that can be expected at the federal level in the future.

Effects in the Carbon Market

The modifications described above to House Bill 2020, which was introduced in the 2019 legislative session, will have limited effects in the carbon market. The modifications will lead to fewer participants by shifting the point of compliance for some industrial sources upstream to their fuel suppliers. However, there will remain in the market an ample number of compliance entities with footprints in different sectors of the economy to ensure there is a competitive carbon market. The number of compliance entities is comparable to the number that participated at the outset of the California carbon trading program and is more than participate currently in the Regional Greenhouse Gas Initiative. The cost containment features of the market design contribute further to provide guardrails on the potential outcome in the carbon market.

An especially valuable element of the program design is the role of the emissions auction. The auction provides a marketplace for compliance entities to acquire allowances when they are first introduced. In the carbon market, a higher allowance price will lead compliance entities to find ways to reduce their emissions, and a lower allowance price will enable them to produce emissions. However, in a new market its participants may not be knowledgeable about what is considered a fair market price. History in other carbon markets as well as robust scholarship demonstrate that under a variety of initial conditions an auction does a good job of identifying a market clearing price⁶—that is a price that balances the supply of emissions allowances with demand directing allowances to their highest valued uses. The secondary market provides an ongoing

opportunity for allowances to be traded, enabling adjustments to a firm's compliance behavior. The auction can also provide safeguards against potential market manipulation by making purchasing behavior transparent and anti-competitive behavior less feasible.⁷

A second and equally important element of the market design is the provision for cost containment that is built into the price floor and cost containment reserve. The cost containment reserve is a provision for the sale of additional allowances at a price that exceeds ex ante expectations. If the price rises to the trigger price level, additional allowances become available, which in turn dampens the allowance price. The cost containment reserve can be populated without exceeding the state's emissions cap by populating the reserve with allowances that are drawn from future year emissions budgets.

The cost containment reserve is typically the feature that appeals to compliance entities who may fear that prices in the market may rise to unacceptable levels. However, the more important feature may be the price floor, which is implemented as a minimum price the auction below which allowances will not be sold. If there is insufficient demand to sell all the allowances at a price at or above the price floor then supply is constrained, which in turn supports the market price. In previous trading programs it has consistently been observed that prices in the market are lower than anticipated, often falling in real terms.⁸ Low prices have an advantage in suggesting that costs are low, but they also undermine the role of the market in the long run. Consequently, a minimum price has been the more important feature contributing to the success of programs previously.

The cost containment features of the market are just a couple of the ways that market design can reduce the potential volatility of market prices and reduce uncertainty for compliance entities. The opportunity for emissions banking over time is a very important mechanism to smooth costs and increase the ability for firms to plan their compliance investments.

The investment of carbon market proceeds to reinforce the goals of the program also helps to reduce costs. Investments will be made in reducing transportation sector emissions, although these investments may be affected by legal decisions regarding the use of

revenue from carbon pricing in transportation. Natural gas transportation activities will receive an initial free allocation equal to about 60 percent of their emissions. Outside the transportation sector, 60 percent of emissions associated with natural gas use also will be distributed for free to the natural gas utility, with this amount declining every year at the same rate of decline as the economy-wide cap. These allowances are to be consigned to the auction with revenues used to benefit consumers. Of the remaining allowance value, about ten percent of allowance proceeds will be used for the benefit of tribes. Twenty-five percent will be directed to the benefit of natural and working lands, providing investments in resiliency and potentially emissions reductions. Twenty-five percent is directed to forest and wildfire mitigation. Twenty percent is directed to local government, and twenty percent is directed to other state agencies.

Offsets provide another potential way to bring low-cost emissions reductions into service. Up to eight percent of a regulated facility's compliance obligation can be met with offsets. Finally, another key factor affecting the market is the possibility for linking the Oregon market with other carbon pricing programs through the Western Climate Initiative. Oregon's program design makes such linking plausible, although reconciliation of some differences between Oregon's approach and that of the Western Climate Initiative have to be addressed. The expectation of potential linking with a larger carbon market provides additional influence and discipline on allowance prices and compliance activities in the short run.

Conclusion

The modifications to Oregon House Bill 2020 will not affect near-term emissions outcomes in the state, while addressing important concerns of some rural communities and compliance entities. I do not expect the modification to affect allowance prices, or the mitigation activities that will drive emissions reductions, at least in the short term, so long as rebates are not calculated volumetric measures of fuel use or emissions. This last point is one that appears to deserve further consideration by the legislature. The program design, including the changes proposed in

the modified legislation, points toward a viable market. Overall, the role for carbon pricing enhances the cost effectiveness of policies to achieve the state's climate policy goals and enables program-related investments that should help reduce costs, strengthen resiliency, and support the state's economy. When carbon pricing is implemented in 2022, the anticipated emissions reductions will be achieved without any specific impacts that are noticeable to the vast majority of Oregon households and businesses. There should be virtually zero disruptions in employment, but over time one can expect there will be accelerated opportunities for job creation in clean energy, technology, forest and agriculture activities. Oregon's legislative decision is likely to influence policy outcomes in other states and internationally.

Notes

- 1 Guidelines in the Western Climate Initiative differ from Oregon's LC19 by including the entire transportation fuels sector, and describe the point of compliance obligation (surrendering allowances) for natural gas combustion at the source.
- 2 Doyle, J. and K. Samphantharak, 2013. "\$2.00 Gas! Studying the Effects of a Gas Tax Moratorium," *Journal of Public Economics*, 104: 79-80; Hurtado, C. 2019. "Behavioral Responses to Spatial Tax Notches in the Retail Gasoline Market," University of Richmond. I thank Josh Linn for identifying this literature.
- 3 Hennlock, M., Löfgren, Å., Wollbrant, C., 2016. Prices vs standards and firm behavior. University of Gothenburg.
- 4 Harstad, B. and G. S. Eskeland (2010). "Trading for the Future: Signaling in Permit Markets." *Journal of Public Economics* 94: 749-760.
- 5 Further, if efforts to reduce emissions in a three-year period over which the emissions intensity benchmark is calculated leads to a reduction in free allocation in the next multi-year period, this may introduce a risk for the firm that exogenous circumstances might require an increase in emissions in the future. LC19 describes the possibility for adjustments to the emissions intensity benchmark in the case of events beyond the firm's control.
- 6 Dallas Burtraw, Jacob Goeree, Charles Holt, Erica Myers, Karen Palmer and William Shobe. 2011. "Price Discovery in Emissions Permit Auctions," 2011, in *Experiments on Energy, the Environment, and Sustainability*, ed: R.

Mark Isaac and Douglas A. Norton, in *Series: Research in Experimental Economics*, 14: 11-36, Bingley, United Kingdom: Emerald Group Publishing Limited.

- Dallas Burtraw, Jacob Goeree, Charles Holt, Karen Palmer, William Shobe. 2010. "An Experimental Study of Auctions versus Grandfathering to Assign Pollution Permits," 2010. *Journal of the European Economic Association*, 8(2-3):514-525.
- William Shobe, Karen Palmer, Erica Myers, Charles Holt, Jacob Goeree and Dallas Burtraw, 2010. "An Experimental Analysis of Auctioning Emissions Allowances under a Loose Cap," 2010. *Agriculture and Resource Economics Review*, 39(2): 162-175.
- 7 Dallas Burtraw, Jacob Goeree, Charles A Holt, Erica Myers, Karen Palmer and William Shobe. 2009. "Collusion in Auctions for Emissions Permits: An Experimental Analysis. *Journal of Public Policy Analysis and Management*, 28(4):672-691.
 - 8 Dallas Burtraw and Amelia Keyes. 2018. "Recognizing Gravity as a Strong Force in Atmosphere Emissions Markets," *Agricultural and Resource Economics Review*, 47(2): 201-219.

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