

Dear Beth,

You inquired as to how economists translate a given price per ton of carbon into a cost per gallon of gasoline. I hope the explanation below and references will help. The translation is actually very straightforward.

The expected price of a carbon allowance trading in the California/Quebec market in 2021 is \$16.77. If we assume \$16.77 per allowance in Oregon' market in 2021, fuel distributors will incur an additional \$16.77 cost per ton of carbon dioxide equivalent for the carbon content of fuel sold in Oregon. To translate this additional cost per ton of carbon dioxide equivalent to gallons of gasoline, you multiply the carbon intensity of the average gallon of gas in the U.S. (.009 metric tons of CO₂e per gallon) times the carbon allowance price. This is how analysts arrive at an estimate of roughly \$.1509 per gallon for a carbon price of \$16.77. (Sometimes, people just round up and make the assumption that every \$1 in carbon cost per ton equates to \$.01 per gallon of gasoline for the fuel distributor).

The fuels sector is typically a sector where costs are passed through to end users/consumers. The price customers pay at the pump per gallon of gasoline, however, is determined by many factors, most importantly, the global market for oil, conditions impacting refineries, weather, seasonality, etc. Gas prices regularly rise and fall by more than \$.16 per gallon.

It is also important to note that there are mitigating factors that can lower the cost of compliance for fuels distributors in Oregon. First, they may purchase offsets for 8% of their compliance obligation. An offset typically sells at a discount compared to allowances. Second, Oregon has a higher ethanol blend requirement (E10), and that lowers the carbon intensity of gasoline sold in Oregon relative to a national average. Lastly, as more Oregonians transition from low efficiency vehicles to higher efficiency vehicles or electric vehicles, or reduce their vehicle miles traveled, the demand for gasoline in Oregon should decline, and that may result in lower gasoline prices down the line.

Sources:

EPA emission factors for fossil fuels:

https://www.epa.gov/sites/production/files/2015-07/documents/emission-factors_2014.pdf

https://www.oregon.gov/gov/Documents/CPO_BEAR_HB2020_Economic_Assessment.pdf

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