WASHINGTON POLICY CENTER

LEGISLATIVE MEMO

HB 1110 and SB 5412, the high costs and small environmental benefits of a Low-Carbon Fuel Standard.

By Todd Myers, Director, Center for the Environment February 2020

Key Findings

1. **Low-carbon fuel standards (LCFS) have been tried in British Columbia, California, and Oregon and the results consistently show high costs and small environmental benefits.**

2. **Using existing prices from California, the LCFS in Washington would cost about 36 cents per gallon of gas when fully implemented.**

3. **The LCFS is also about 29 times as expensive as other CO2-reduction projects used by Seattle City Light and publicly available, wasting 97 percent of the cost of a LCFS.**

4. **Studies from the Department of Ecology and the Puget Sound Clean Air Agency also show the LCFS is poor at reducing traditional air pollutants like particulate matter.**

5. **Data from California also demonstrate that the small reductions in particulate matter are heavily weighted to rich communities, with wealthy residents receiving twice the air pollution benefit as poor residents.**

6. **Research and the history of biofuel mandates in Washington also shows it is unlikely to generate new jobs in the state for manufacturing or farmers.**

Introduction

Governor Inslee failed to gain public support for his carbon tax initiative in 2018, so he has turned to a piecemeal approach to imposing CO2 emission limits.

Last year, the Legislature enacted a requirement that requires Washington state to use 100 percent non-CO2 electricity by 2045. The latest element of this push is an effort to reduce transportation-related emissions known as a low-carbon fuel standard (LCFS), as proposed by HB 1110 and SB 5412. This Legislative Memo shows how these bills propose a wasteful and ineffective approach based on imposing an LCFS rule that would not achieve the environmental and job-creation results its sponsors promise.

Transportation emissions account for about 43 percent of the state's CO2 emissions according to the latest inventory from the Department of Ecology.[1] An LCFS would require Washington residents to reduce the carbon-intensity of fuels they use by 20 percent in 2035.

Washington would join California, Oregon, and British Columbia in implementing an LCFS. Those jurisdictions offer some lessons for Washington legislators about the chances of meeting the goals outlined in the legislation, which include claims it would "decrease greenhouse gas and conventional air pollutant emissions, while positively impacting the state's economy."[2]

1 State of Washington Department of Ecology, "Washington State Greenhouse Gas Emissions Inventory: 1990-2015," December 2018, at https://fortress.wa.gov/ecy/publications/documents/1802043.pdf.

2 Washington State Legislature, "Engrossed Second Substitute House Bill 1110," 66th Legislature, 2019 Regular Session, at http://lawfilesext.leg.wa.gov/biennium/2019-20/Pdf/Bills/House%20Bills/1110-S2.E.pdf?q=20200213111116.

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LCFS rules fail to meet goals

An examination of the record of those three jurisdictions demonstrate the LCFS is a costly and ineffective way to reduce CO2 emissions. This was the conclusion of experts at the California Legislative Analyst's Office in 2018, when they concluded in a headline that "LCFS likely not the most cost-effective strategy to reduce GHGs."[3] Since the release of that report, the cost of the LCFS credits have increased by more than thirty percent.[4]

The data demonstrate that the LCFS is also a poor way to reduce traditional air pollutants like particulate matter (called PM 2.5). Despite the claim that LCFS rules would improve air quality for low-income and minority communities, the evidence from California shows the rules disproportionately benefit the wealthy.

There are many alternative options that would reduce CO2 more effectively and would reduce the worst sources of particulate matter. These efforts, like programs to replace wood-burning stoves that emit large amounts of particulate matter, already exist and in many cases are underfunded. To underfund successful efforts while wasting huge amounts of money on ineffective programs demonstrates a lack of seriousness by LCFS supporters about climate change and air pollution.

The cost of the LCFS

There has been significant disagreement about the current and potential cost of an LCFS for consumers. In a media briefing, Governor Inslee claimed that in Oregon, the LCFS added only one cent per gallon to the price of gas.[5] This, however, is an outdated estimate from 2018. This number comes from Oregon officials,[6] who calculate the cost based on all transactions of credits in the low-carbon fuel program over the previous year.

There are a few things to note about Governor Inslee's claim.

First, the cost of credits in the LCFS rose nearly 70 percent in 2019, increasing from a weighted average of $81.48 per metric ton (MT) of CO2 to $138.06. So, the number cited by the Governor is too low.

Second, in 2018 the Oregon LCFS required only a one percent reduction in CO2-per-gallon. This is only one tenth of the way to the ultimate requirement of a 10 percent overall reduction in CO2-per-gallon by 2025. In 2019, the rule jumped to a 1.5 percent reduction in CO2-per-gallon, a 50 percent increase in one year. This resulted to a large increase in costs. The requirement has changed since the data cited by the Governor.

Using Oregon's formula for calculating the cost to update these outdated projections, the cost of the state's LCFS rule for 2019 is about 2.4 cents per gallon. The cost per gallon more than doubled in one year at a time when the LCFS moved only five percent of the way toward the law's ultimate goal. In 2020, the requirement will increase at twice that rate, and prices are likely to continue their rapid climb.

Additionally, the total cost increase per gallon of gas when the LCFS is fully implemented in 2025 – assuming the cost is the same as it was in December 2019 – will be 16.5 cents per gallon.

The requirements proposed by HB 1110 and SB 5412 in Washington are twice the goal imposed in Oregon, so the ultimate cost per gallon to consumers would be about 28 cents per gallon.

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3 State of California Legislative Analyst's Office, "Overview of the Low Carbon Fuel Standard," June 19, 2018, page 11, at https://lao.ca.gov/handouts/resources/2018/Low_Carbon_Fuel_Standard_061918.pdf.

4 California Air Resources Board, "Monthly LCFS Credit Price and Transaction Volume," February 12, 2020, at http://ww3.arb.ca.gov/fuels/lcfs/dashboard/creditpriceserieswithoutargusopis.xlsx.

5 "Associated Press Legislative Review," TVW Public Affairs Network, January 9, 2020, at https://www.tvw.org/watch/?eventID=2020011006.

6 Oregon Department of Environmental Quality, "Data for the Clean Fuels Program," at https://www.oregon.gov/deq/aq/programs/Pages/Clean-Fuels-Data.aspx, accessed February 17, 2020.

This estimate is conservative, because the cost of LCFS credits has increased dramatically, and in neighboring California, the cost is significantly higher. The price per credit in California was $200 in January 2020, about 45 percent higher than Oregon's average cost in 2019. Using that price, the cost to consumers would be 36 cents per gallon when fully implemented.

British Columbia's rules have turned out to be even more expensive. The average price per credit in the fourth quarter of 2019 was $297 Canadian, or about $224 U.S.[7] They reach their target of 10 percent reduction in carbon-intensity, half of the Washington state goal, in 2020. At this price, Washington's LCFS would add 40 cents per gallon when fully implemented.

These estimates assume the prices will not increase any further. This is unlikely. California's credit price doubled in the past two years. Oregon's credit price nearly doubled over the same period, jumping from $84 in 2018, to $158 in the fourth quarter of 2019. British Columbia's prices increased by a smaller percentage, about 64 percent, but by a similar total amount as Oregon, increasing by $79 U.S. per metric ton.

These numbers are slightly lower than an estimate offered by the officials at the Puget Sound Clean Air Agency (PSCAA), which has an LCFS proposal of its own.[8] One key reason is that their LCFS rule would be more restrictive and they use an economic model to estimate potential costs.

My cost estimate is based on the physics of CO2 emissions produced by burning a gallon of gas. Each gallon of gas creates 19.6 pounds of CO2 when combusted, so it takes 112.4 gallons to create one MT of CO2. To see the impact of the cost per metric ton, one divides the cost of a metric ton - $200 in California's case – by 112.4 gallons, and then divides that by 10 to see what the cost would be to reduce CO2 emissions by 10 percent per gallon. Additionally, my estimates assume the price of LCFS credits will not increase above their current levels in British Columbia, California, and Oregon.

Both cost-estimate approaches have their merits, but they each demonstrate that the cost to consumers of an LCFS rule would be very high, ranging from 28 cents more per gallon to PSCAA's estimate of 57 cents.

LCFS imposes a high cost to achieve small CO2 reductions

The primary justification for imposing an LCFS rule is to reduce Washington's CO2 emissions. Advocates say HB 1110 and SB 5412 are necessary to fight the "climate crisis."

Whether legislators and citizens believe climate change is a current crisis or presents a smaller future risk, everyone should demand policies that yield the greatest environmental benefit for every dollar. That commonsense approach requires a metric of effectiveness. Without a metric of effectiveness, the goal of reducing CO2 is fundamentally meaningless.

For example, the same logic that would justify an expensive and costly LCFS rule would justify paying people to generate electricity by pedaling stationary bikes. It would be extremely ineffective and cost a great deal per unit of energy, but without a standard of effectiveness, such a policy could be said to meet the purpose of reducing greenhouse gases and preventing air pollution, even if the environmental benefit would be tiny.

Setting an effectiveness standard

Setting a standard for effectiveness would allow legislators to determine the best approach to reduce CO2 in the most rapid and affordable way, by comparing an LCFS rule to alternative policies. Governor Inslee's own words seem to support this approach. He claimed, "The Clean Fuel Standard is the cleanest and best opportunity we have, bar none, to reduce carbon pollution from

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7 British Columbia Ministry of Energy, Mines, and Petroleum Resources, "Low Carbon Fuel Credit Market Report: Information Bulletin RLCF-017," January 2020, at https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/electricity-alternative-energy/transportation/renewable-low-carbon-fuels/rlcf017_-_low_carbon_fuel_credit_market_report.pdf.

8 "Puget Sound Regional Transportation Fuels Analysis: Final Report," ICF, September 2019, at https://pscleanair.gov/DocumentCenter/View/3890/PSCAA_ICF_FINALReport_w_ERRATUM?bidId=

transportation in this state."[9] Unfortunately, this assessment is completely inaccurate.

For the proposed LCFS rule, we have a simple comparison since the programs in California, Oregon and British Columbia all measure cost per metric ton of CO2 reduced. As noted above, the California program costs $200 per MT of CO2e avoided, Oregon costs $158.62, and British Columbia costs $224 per MT. By way of comparison, Seattle City Light spends just $7 per MT as part of its offset program. The Bonneville Environmental Foundation offers ways to reduce CO2 that cost $10 per MT.

The LCFS cost is so high because legislators have tightly restricted the ways in which companies can reduce CO2 emissions. Unlike traditional air pollutants, where the effect is limited to the region in which the emission occurs, CO2 emissions have a global impact and all reductions in CO2 have the same global, environmental impact.

It costs 32 times as much to reduce CO2 under British Columbia's LCFS as it does for Seattle City Light to reduce the same amount of CO2. About 96 percent of the money spent under the LCFS rule is wasted compared to existing alternatives. Narrowly limiting options for compliance to projects that cost 32 times the reasonable rate are not an effective way to reduce CO2 emissions. This costly approach is inconsistent with the professed goal of reducing GHGs, especially for those who say climate change is an urgent crisis.

Research shows imposing a LCFS rule is a poor way to reduce particulate matter

Some advocates of the LCFS rule acknowledge it is a very expensive way to reduce CO2 emissions. Floyd Vergara of the National Biodiesel Board told a hearing before the Washington State Legislature this year, "I heard earlier the concern about LCFS being an inefficient approach to reducing GHGs [greenhouse gases]. I think that misses the point because the LCFS was designed to achieve both GHG's and air quality air pollutants." The implication is that although an LCFS is an expensive way to reduce CO2, we should also consider its ability to reduce traditional air pollutants like particulate matter, known as PM 2.5.

A 2014 study conducted for the Department of Ecology analyzed the impact of an LCFS rule on reducing particulate matter.[10] The report by Life Cycle Associates LLC found a reduction of PM 2.5 under the most aggressive LCFS scenario of just over one percent over ten years. The other scenarios studied found reductions of about one-half of one percent.

The study for the PSCAA found similarly small impacts, even though its proposal is more aggressive and costly than that proposed by the sponsors of HB 1110 and SB 5412. The ICF study used 2011 as a baseline, when there were 1,442 metric tons of PM 2.5 emissions in PSCAA's jurisdiction. The study shows that under the best scenario, PM 2.5 would fall to 463 metric tons of particulate emissions by 2030. By way of comparison, under the most aggressive LCFS scenario, particulate matter would fall to 430 MT of emissions. That accounts for only three percent of the reduction in PM 2.5 between 2011 and 2030. This amount, while still small, is larger than the estimate from the Department of Ecology. This is likely because the PSCAA proposal is more aggressive and imposes more cost on consumers than the one modeled by the Department of Ecology.

Most air quality improvement go to benefit people living in wealthy communities

Although the air pollution-reduction benefits are limited, some claim it would reduce air pollution in low-income communities. Another person who testified

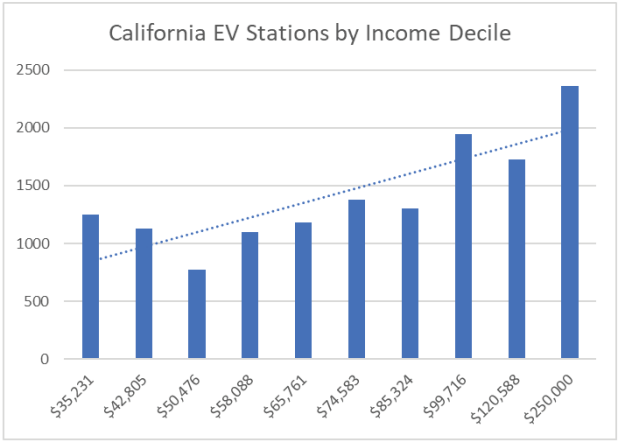
9 "Inslee in hot fight over Clean Fuel Standard to curb global warming," by Joel Connelly, *The Seattle P-I* , January 16, 2020, at https://www.seattlepi.com/local/politics/article/Inslee-in-hot-fight-over-Clean-Fuel-Standard-to-14981630.php.

10 "A Clean Fuel Standard in Washington State: Revised Analysis with Updated Assumptions," by Jennifer Point and Stefan Unnasch, Life Cycle Associates, December 12, 2014, at https://www.ofm.wa.gov/sites/default/files/public/legacy/reports/Carbon_Fuel_Standard_evaluation_2014_final.pdf.

before the State Senate committee this year in favor of an LCFS rule noted that the impacts from particulate matter are focused on "low income and communities of color particularly along the I-5 corridor and around Sea-Tac Airport, there is an undue burden of air pollution." The experience of California shows an LCFS would not effectively address this concern, and most of the benefits are likely to go to people living in wealthy communities.

To understand why this is the case, we have to look at how the LCFS works. The LCFS can reduce CO2 in several ways. Switching a fleet of trucks from gasoline to natural gas is one way an organization can get "credits" from the system. For each metric ton of CO2 that is reduced, one credit is generated. Those credits can be sold to petroleum manufacturers to help meet CO2 reduction targets. So, a food distribution company in Othello could switch its delivery fleet to natural gas, generate credits, and sell them to the oil company BP to meet the requirements for gasoline sold in Seattle. HB 1110 and SB 5412 would allow credits to be generated by promoting adoption of electric vehicles. A policy that would increase the purchase of electric vehicles in Vancouver would generate credits that could be applied to gasoline sold in Bellingham.

In each of these scenarios, there is zero particulate matter reduction in the "I-5 corridor" near Seattle or SeaTac. There is no guarantee that any of the CO2 reduction projects that would generate credits under the proposed LCFS rule would benefit the areas of concern for air pollution. Indeed, the legislation notes that the rules, "may not discriminate against fuels on the basis of having originated in another state or jurisdiction."[11] Even if the credits are generated in California, they would count in Washington state, but would do nothing to improve air quality here.



Additionally, even projects that reduce particulate matter in areas where particulate matter may be a concern are located in wealthy communities.

To test this, we examined all of the electric vehicle (EV) charging stations, as well as hydrogen and natural gas filling stations that generate LCFS credits in California using data provided on the state's LCFS information page.[12] Electric and natural gas vehicles are the primary source of PM 2.5 reduction in the LCFS system. Ethanol does little to reduce PM 2.5. The scenarios in the Puget Sound Clean Air Agency's analysis show that the scenario that is most effective at reducing average PM 2.5 is the one with the greatest number of EVs.

We matched those locations to median household income data provided by the U.S. Census, sorted by census tract. If the goal is to reduce PM 2.5 in low-income communities, as was claimed in the hearing, then policymakers want EVs to be located in low-income communities. As California's experience demonstrates, the reality on the ground is exactly the opposite.

The wealthiest 10 percent of census tracts have the most EV charging stations and natural gas filling stations in the state. The census tracts representing the top 30 percent of income earners have 43 percent of the charging stations. By way of contrast, the census tracts with the poorest 30 percent of income earners have only 22 percent of the EV stations. Rich people receive twice as much the benefit as people living in poor communities.

11 Washington State Legislature, "Senate Bill 5412," 66th Legislature, 2019 Regular Session, at http://lawfilesext.leg.wa.gov/biennium/2019-20/Pdf/Bills/Senate%20Bills/5412.pdf?q=20200127090329.

12 "Low Carbon Fuel Standards (LCFS) Credit Recipients," California Air Resources Board, at https://webmaps.arb.ca.gov/lcfs/.

Despite the rhetoric from some LCFS advocates, the health benefits of the rule go to the rich, not the poor. Poor communities get the smallest portion of an already small reduction in particulate matter.

Job creation

Finally, some advocates of the LCFS argue it would create jobs by expanding demand for biofuels. Similar arguments were made when Washington state adopted the 10 percent biofuel mandate. Despite those promises, Washington state farmers did not see their market increase, and the promised jobs never materialized.

Existing biofuel producers make a strange argument in favor of imposing the LCFS rule, saying Washington should join the other states because, while they currently sell their products in California and Oregon, they want to sell them in Washington state. In other words, Washington state receives the benefit of the sales, adding to our economy, but does not have to pay the additional cost for those expensive fuels.

By requiring Washington residents to buy biofuels, Washington residents would have to pay more, reducing any benefit to Washington's economy. Of course, Washington biofuel manufacturers do not care to whom they sell. If the price they could receive in California were higher than in Washington state, they would sell their products there. Their interest is only in increasing the legal requirements that force people to buy a product that consumers would not purchase without state government coercion.

Economic analysis also demonstrates that passing HB 1110 and SB 5412 would not create jobs. PSCAA's analysis estimated the impact of the renewable fuel sector and found it would have no impact. First, they noted that farmers would not see increased demand for feedstocks such as canola, corn, wheat straw, and other crops. The ICF study found, "a low carbon fuel policy is unlikely to induce more consumption of canola oil as a biodiesel feedstock," and "the agricultural feedstocks…are unlikely to be developed as a resource for low carbon transportation fuels production in the region."[13]

It also notes that imposing the LCFS rule is unlikely to generate investment in new renewable natural gas manufacturing. The report says, "it is unlikely that the introduction of a low carbon fuel standard in the study region will induce investment into these projects beyond what is currently planned."[14]

The ICF study assumed the LCFS would be imposed only in King, Kitsap, Pierce, and Snohomish counties, so the modeling is not identical to the statewide proposal. However, those four counties represent a significant percentage of Washington's fuel market and provide some indication of how limited the potential for job creation is.

Conclusion

Advocates of the LCFS argue that their goal is to reduce CO2 emissions and particulate matter pollution. By their own metrics, however, the policy proposed by HB 1110 and SB 5412 would be ineffective at meeting those goals. At existing prices, the LCFS in California costs more than 28 times as much as effective alternative policies that reduce CO2, like methane capture. The proposed bills would also perform poorly at reducing particulate matter, delivering small reductions in PM 2.5, and would primarily benefit people living in wealthy communities.

The state of California Legislative Analyst Office has come to similar conclusions because the data are quite clear. Although advocates of the LCFS argue the rule is needed to fight the "climate crisis," their support for a policy that does not effectively reduce emissions in a timely or meaningful way calls into question their own seriousness. If a patient is sick, we do not give them healing crystals. Similarly, the more serious one thinks climate change is, the more one should demand that public policies be effective. The proposed HB 110 and SB 5412 LCFS rule fails that test.

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13 Puget Sound Regional Transportation Fuels Analysis: Final Report," ICF, September 2019, page 22, at https://pscleanair.gov/DocumentCenter/View/3890/PSCAA_ICF_FINALReport_w_ERRATUM?bidId=

14 Ibid.