Analysis Finds A Clean Fuel Standard Can Significantly Reduce Pollution

Transportation is the primary source of greenhouse gas (GHG) pollution in the Puget Sound region – more than 40 percent. The Puget Sound Clean Air Agency is considering a potential Clean Fuel Standard (CFS) for the four-county Puget Sound region – King, Kitsap, Pierce, and Snohomish counties. A previous report showed that, of all the policies the Agency could consider, a CFS had the greatest potential to decrease transportation-related GHG pollution and make progress towards meeting our regional climate goal.

The Agency contracted with ICF to assess the availability of clean transportation fuels and to conduct an analysis of the economic, air quality, and health impacts of a regional Clean Fuel Standard.

The **key findings** from the analysis include:

- A Clean Fuel Standard can significantly reduce the Puget Sound region's GHG pollution – up to a 26% reduction in carbon intensity of transportation fuels by 2030.
- A Clean Fuel Standard will improve air quality and public health, especially in communities near major roadways.
- A Clean Fuel Standard is consistent with the region's economic growth. Any changes to economic productivity and employment are estimated to be very small (plus or minus one tenth of one percent).

Analysis Results

A Clean Fuel Standard can significantly reduce the Puget Sound region's GHG pollution from transportation fuels. The analysis shows that the region can transition to cleaner transportation fuels and reduce their carbon intensity up to 26% by 2030.

The standard will achieve reductions by accelerating the transition to clean fuels through the deployment of electric vehicles, liquid biofuel blending (such as ethanol, biodiesel, and renewable diesel), and renewable natural gas. Renewable jet fuel blending and refinery efficiency improvements will further reduce GHG pollution.

The analysis shows there are enough clean fuels to achieve a regional CFS with existing and anticipated fuel facilities. The region can also take advantage of Washington's abundant low-carbon electricity to help meet a CFS.

What is a Clean Fuel Standard?

A Clean Fuel Standard makes our transportation system cleaner by requiring a gradual transition from conventional fuels (such as gasoline and diesel) to cleaner transportation fuels (such as electricity and biofuels).

The standard sets an annual target carbon intensity reduction. Fuels over the target generate deficits, while fuels below the target generate credits. Credits are then traded on the open market. The standard gives fuel producers flexibility – the market decides which fuels best achieve results.

A Clean Fuel Standard will improve air quality and public health. The standard will reduce harmful fine particle pollution (PM₂.₅), especially in communities near major roadways (for example, along the I-5 corridor). Previous studies show these communities are often low-income or communities of color. PM₂.₅ pollution is linked with health impacts such as heart attacks, stroke, asthma attacks, and premature death. This analysis did not evaluate the likely additional benefits of reducing other types of transportation pollution (such as air toxics) as a result of a CFS.

The Puget Sound region's economy will continue to grow as expected with a Clean Fuel Standard. All scenarios (see below) showed a very small difference (plus or minus one tenth of one percent) in both regional economic output and employment, on top of the economic growth expected between now and 2030. The analysis demonstrates that the region's savings from switching to clean fuels, particularly electricity, would offset increased costs of investments to achieve pollution reductions.

Analysis Methodology – Scenarios

ICF conducted an inventory of available fuels (both current and forecasted) that could support a regional Clean Fuel Standard. They then developed four scenarios of how the Puget Sound region might achieve a Clean Fuel Standard with emphasis on different fuels, and modeled how the scenarios would affect the region's air pollution and public health, as well as the region's economy. Ranging from minimal to more significant changes, the scenarios included:

Scenario	Carbon intensity reduction target (below 2020 levels by 2030)	Primary changes to transportation fuel mix
A	10%	Increased biofuel blending
B	10%	Rapid vehicle electrification
C	16%	Increased biofuel blending & rapid vehicle electrification
D	20%, 26%	"All-in" scenario: increased biofuels, rapid vehicle electriciation, & refinery improvements

Analysis Methodology – Models Used and Assumptions

ICF used the Regional Economic Models Inc. (REMI) E3+ Model to estimate macroeconomic impacts of a Clean Fuel Standard. REMI has been widely used for analyses on similar clean fuel policies in California and Oregon, as well as research by a broad range of organizations, such as the National Federation of Independent Businesses.

ICF also used EPA's C-Line model to estimate changes in PM₂.₅ pollution, EPA's Environmental Benefits Mapping and Analysis Program (BenMAP) to estimate health benefits, and Argonne National Laboratory's GREET model to calculate the carbon intensity of transportation fuels.

ICF developed assumptions for model inputs, including assumptions about how fuel suppliers will comply, future prices of vehicles, and future energy prices. ICF used conservative assumptions so as not to overestimate the benefits of the proposed policy. As a result, the benefits of the policy could be greater than modeled in the analysis.

More Information

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What is carbon intensity?

Carbon intensity is the total amount of carbon dioxide (or equivalent) generated from a type of fuel. It includes the complete lifecycle of the fuel pathway (often called "wells to wheels") from production to transportation to consumption.

Carbon intensity is used to measure and compare different fuels' impact on climate change, and set targets for reductions.