



Oregon Department of Environmental Quality

Quick Guide: Opportunities to Reduce Consumption-based Emissions in Oregon

Background

The most effective approach to reducing consumption-based emissions will combine policies that target consumer behavior with those that address the structural factors driving consumption across multiple scales and actors. Rather than expecting individuals to make decisions that may be expensive, difficult, and/or inconvenient, policies can change the options available to make lower-carbon consumption choices affordable and easy. This document serves as a quick-reference guide for program and policy opportunities identified within *Opportunities to Reduce Emissions Caused by Oregon's Consumption* (2024).

It includes opportunities for:

1. Transportation,
2. Built Environment,
3. Food Systems,
4. Other Products and Goods, and
5. Smart Growth.

1. Transportation

Opportunities to Reduce Emissions

Lighter Weight Vehicles

While most emissions from vehicle use stem from the combustion of fuels during use, the emissions from vehicle production are non-trivial, contributing more to emissions (2.7 million MTCO₂e in 2021). One strategy for reducing transportation related CBEs is to shift consumption to lighter weight cars. Vehicles that weigh less require less raw material and energy to produce, cause less wear on roadways and consume less fuel, which results in overall fewer emissions. Educating consumers about the benefits of lighter vehicles can influence purchasing decisions. Financial incentives, such as tax rebates for purchasing lighter-weight cars, can further encourage this transition.

Reducing Air Travel Emissions

Approximately 11% of Oregon's consumption-based transport sector emissions are from air passenger travel, and these emissions are growing over time. Oregon can reduce air travel emissions by prioritizing virtual meetings, investing in regional to national high-speed rail, or even empowering local economies through incentivizing "staycations."

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Program and Policy Options for Transportation

Consumer Education and Financial Incentives

Consumer education and financial incentives are critical components of any comprehensive strategy to combat GHG emissions from transportation. Information disclosure, such as labeling vehicles with their life cycle emissions ratings (including production), can empower consumers to make informed choices. Financial incentives, including subsidies for lighter and smaller vehicles, can make these options more accessible to a broader audience. Conversely, financial disincentives, such as higher taxes on high-emission vehicles, can discourage the purchase and use of less efficient cars. Similarly, Oregon could consider charging flight levies, adjusting airport passenger facility charges to price short-haul travel higher, implement carbon emissions-based pricing of flights, or set new aviation fuel taxes. By leveraging these tools, policymakers could influence consumer behavior and drive the market toward more sustainable options.

Government Investment and Procurement Standards

Oregon could invest in infrastructure for lower-carbon forms of long-distance travel, such as rail improvements, cyclist-friendly infrastructure, and high-speed internet to support virtual meetings. Government procurement standards and requirements could set an example for the private sector, while actively reducing CBEs. For example, the State could prohibit flights by State employees in the Eugene – Vancouver corridor and use its purchasing power to prioritize smaller and lighter-weight vehicles, paying attention to full life cycle impacts, not only emissions from fuel use. These standards can also extend to other aspects of transportation, such as contracting with airlines that demonstrate a commitment to reducing their carbon emissions.

Zoning and Land Use Policies

These are considered in later sections on Built Environment and Smart Growth.

2. Built Environment

Opportunities to Reduce Emissions

Reducing Embodied Carbon of Building and Construction Materials

Since 91% of embodied carbon emissions occur before materials reach the construction site, a product stewardship approach could present a substantial approach for reducing embodied carbon in building materials. One structural barrier to individuals being able to make carbon-friendly material choices is lack of transparency about the carbon intensity of building materials. Product stewardship that supports the implementation of product-specific Environmental Product Declarations for construction materials sold into Oregon is an example of such an approach.

This product stewardship approach could be extended in several directions. Over time, producers could be required to reduce the carbon intensity of high-impact building materials, using EPDs to demonstrate carbon reductions. Producer responsibility could also be applied at the scale of whole buildings, such as by requiring Whole-Building Life Cycle Assessment during the design stage of new buildings and setting embodied carbon targets as part of zoning or permitting requirements.

Space-Efficient House Sizes

The size of our homes plays a crucial role in energy use and consumption-based emissions, significantly impacting the environment. Larger homes use more energy and have a bigger impact on the environment, including more embodied carbon. Building bigger houses means more construction materials are needed, and

having more space often leads families to buy more stuff. Until recently, the average size of new homes in the U.S. was increasing, even though the number of people in each household stayed the same or has slowly been declining. As of 2019 in Oregon, the average square footage of newly constructed homes has started decreasing. However, there is still room to continue this trend. A DEQ study found that the environmental impact of an “extra-small” home (1149 square feet) is reduced 20-40% from that of a “medium” home (2262 square feet) across all impact categories.

Enhance the Utilization of Existing Buildings

Enhancing the utilization of already existing buildings would result in a reduced need for new construction, leading to a reduction of emissions from production of new building materials. Oregon has a substantial amount of vacant building stock, with a 29.7% vacancy rate for office buildings in Portland, and a 47% vacancy rate in upper stories of downtown retail buildings in “main street communities” across Oregon. Converting these otherwise empty spaces into residential and/or alternative uses when housing is not a viable option could both reduce the need for building materials while also addressing an ongoing need for greater housing availability in walkable, economic centers. A similar approach could be the conversion of large single-family homes into multi-family unit homes by adding internal accessory dwelling units, or converting to duplexes. Additionally, given the rise of hybrid and remote work, there are opportunities to be more efficient with commercial office space. Tenants could reduce the footprint of their lease or share a space with another tenant.

Program and Policy Options for Built Environment

Information Disclosure

Oregon could take substantial steps by assisting, incentivizing, and/or mandating manufacturers to provide item-specific Environmental Product Declarations for construction materials. Projects could also be required to complete a Life Cycle Analysis as a condition of permitting. These approaches could drive transparency and promote sustainable practices in the construction industry. Evidence suggests that providing such information could influence both consumer decisions and producer behavior. Producers may be inclined to take proactive measures to minimize impacts before disclosing the information.

Product Regulation and Standards

As stated earlier in this chapter, 91% of CBEs associated with built environment are generated before the construction materials are placed into use. Product regulation and standards may offer the greatest potential to reduce consumption-based emissions, as they would address CBEs of construction materials at the source.

Financial Incentives

The State and local governments could offer financial assistance by providing tax rebates, permitting waivers, or density bonuses that incentivize the development of new buildings that meet or exceed carbon benchmarks, as well as incentives for the reutilization of existing buildings, where appropriate. The State could also incentivize the development of smaller housing by lowering taxes or development fees for homes that meet defined standards. The State could also incentivize hybrid and remote work policies that allow for better utilization of existing commercial office space.

Zoning and Land Use Policies

Zoning and land use policies have significant potential. Oregon could continue to expand HB 2001 (2019) to additional jurisdictions in order to provide zoning for more multi-unit dwellings. Additional zoning considerations such as easing minimum housing size restrictions; setting maximum house size limits; easing

allowable densities, height, and mix; and easing parking mandates could also contribute meaningful, structural support for reducing CBEs in the built environment.

3. Food Systems

Opportunities to Reduce Emissions

Decarbonizing Foods Sold into Oregon

As awareness of climate change and environmental sustainability grows, there is an increasing demand for *low-carbon foods*, which involve low emissions per dollar value. Changes in agricultural and production processes can decrease the carbon emissions associated with specific products. For example, modifying feed for cattle, rotational grazing, and improved manure management can reduce the emissions of meat and dairy production.

Reduce Wasting of Food

A large portion of food-related emissions comes from food that is produced but never eaten. An estimated *38% of all food produced in or imported into the U.S. is never eaten*. Both the federal government and the State of Oregon have committed to cutting food waste in half by 2030.

Food waste reduction can be accomplished in many ways. Waste recovery and disposal avoidance strategies, such as composting and anaerobic digestion, are widely understood. However, their GHG reduction potential is relatively small because they only reduce landfill emissions. The emissions associated with producing foods are many times higher, so strategies that reduce food loss at the source, such as waste avoidance and packaging improvements, offer far greater potential for emissions reduction and economic benefit. Source reduction of food waste has 6 to 7 times the GHG reduction potential of keeping food waste out of landfills, according to EPA's Waste Reduction Model (WARM). There are also co-benefits in related reductions in chemical pesticides, fertilizers, water and land use.

Food waste can be subdivided into the location at which the waste occurs: household, manufacturing, food service, and retail. *About 60% of food waste occurs at the household level*, which is why Oregon has committed resources to better understand household behaviors. Nonetheless *manufacturers, food retailers and food service providers play key roles in the generation of food waste* – not only in their own operations, but in their influence on households. Food marketing practices, like packaging that prevents consumers from purchasing amounts of food appropriate for their households, or buy one-get one free sales, can contribute to food waste associated with over-purchasing. Changing such practices could be a resource-effective approach to achieve CBE reductions at multiple levels of scale.

Climate-Friendly Diets: Reducing Meat and Dairy Consumption

In SEI's wedge analysis, the largest potential for reducing the CBEs of food comes from shifting meat and dairy consumption to less emissions-intensive foods, such as fruits, vegetables, legumes, and more. The production of meat and dairy involves substantial agricultural inputs, including feed crops, which contribute to emissions through deforestation, fertilizer use, as well as methane emissions from livestock. In 2021, meat and dairy consumption accounted for *5.6% of Oregon's total consumption-based emissions* and approximately *39% of emissions within the category of food* alone.

For the purpose of mitigating consumption-based emissions, reducing the consumption of meat and dairy products is a pivotal challenge. However, the challenge may be eased by existing consumer trends. Research indicates that beef consumption is declining in younger age groups and fluid milk consumption has been declining over a scale of decades.

Oregon could ensure that the transition to a low-carbon food system is fair and inclusive by incorporating a framework that encourages *Just Transition* – providing adequate resources and support to those most affected by the changes. This could include financial assistance for farmers adopting new practices, retraining programs for workers in traditional meat and dairy industries, and investments in community-based food systems. Such changes could help mitigate the economic disruptions already resulting from the trends away from beef and dairy consumption.

Program and Policy Options for Food Systems

Information Disclosure

By adopting or approving specific standards for assessment and disclosure of environmental impacts, Oregon could ensure that consumers are better equipped to make decisions about the food they consume. This approach can help shift both consumer and producer behavior towards more sustainable options, as evidence suggests that producers that evaluate and disclose impacts are also more likely to reduce them. Additionally, this approach could deepen the understanding of low-carbon food items for an increasing population of consumers. A growing pool of evidence suggests that including carbon footprint information on restaurant menus, for example, can meaningfully shift consumer behaviors. A simple way to help reduce household and retail level food waste would be requiring standardized food date labeling on food products.

Financial Incentives

Oregon could offer financial assistance to food producers for decarbonization efforts. This support could be direct, through grants or tax credits for Oregon farmers to improve emissions-intensive practices, or indirect, such as vouchers for lower-income households to access carbon-friendly diet choices. As some evidence suggests that lack of adequate refrigeration contributes to food waste in lower-income households, another approach could be to subsidize the purchase of effective and efficient refrigeration.

Public Procurement Standards and Requirements

Government procurement standards can influence food purchasing for institutions such as public school, hospitals, and provision of meals at government-led events such as meetings, workshops and public occasions. Oregon could experience similar success to New York City's public hospitals, which cut GHG emissions of government-purchased foods by 36% by making plant-rich entrees the default choice for patients. Some traditionally carbon-intensive foods can be produced in lower-emitting ways, such as low carbon milk. If these carry a higher price tag, Oregon could provide funds to school districts and other public institutions to enable them to buy the lower-carbon options.

Product Standards and Regulations

Establishing product standards for foods sold into Oregon could play a major role in reducing food-related CBEs. Some pathways to facilitate this change could include requiring meat and dairy products sold in Oregon to meet GHG-intensity benchmarks, or requiring comparable, plant-based products to be offered alongside high-emission foods. Also, setting standards for food marketing—package sizes more appropriate to smaller households and changing "buy one, get one free" approaches, for example—could reduce household food waste.

4. Other Products and Goods

Opportunities to Reduce Emissions

Methods to reduce emissions from appliances, electronics, and clothing include actions like maintaining and repairing items, extending lifespans through upgrades, sharing or renting, buying used goods, and reducing unnecessary purchases. Greater impact lies with producers, who can enhance opportunities for repair and renting, improve durability, and lower pre-purchase impacts, making all consumer choices more sustainable.

Program and Policy Options for Other Products and Goods

Outreach and Education

The State could provide more information to consumers about environmental impacts and opportunities to reduce them, or it could require producers to perform that function.

Information Disclosure

Oregon could require greater disclosure of information to consumers, in accordance with standards that the State could adopt or approve. For example, major appliances and electronics could include a “repairability index” indicating how repairable items are based on availability of spare parts, technical documents, and ease of disassembly. Textiles could be marketed with eco-labels that disclose supply chain information. There is some evidence that such information could shift both consumer choices and producer actions, with producers more likely to take proactive steps to reduce impacts prior to disclosure.

Financial Incentives

The State could offer financial assistance to support businesses providing services that extend the lifespan of products, such as appliance and electronic repair. Financial assistance could be direct, such as grants or tax credits to businesses, or indirect, such as vouchers to help lower-income households access appliance repair, or financial incentives to build careers in repair.

Product Regulation and Standards

Product regulation and standards may offer the greatest potential to reduce consumption-based emissions. Consistent with the “product stewardship” approach discussed previously, Oregon could:

- Establish binding requirements for products, such as standards related to lifespan or repairability.
- Require high-cost durable goods to be sold with extended warranties, as is now required in the European Union.
- Require evaluation and disclosure of life cycle impacts (including climate change) in accordance with standards established or approved by the State.
- Require producers to join a producer responsibility organization that could deliver services, such as a centralized repair hotline and reduced-cost repair services, with priority for lower-income residents.
- Evaluate the recently adopted Right to Repair law, SB 542 (2023) and consider future improvements or modifications as warranted.

Specific to clothing, Oregon could borrow additional ideas from recent legislative initiatives in other states. New York’s proposed Fashion Sustainability and Social Accountability Act would require large apparel and footwear companies to track and reduce environmental impacts across their supply chains.

Public Investments

The State could invest in lending libraries for tools, lawn, and office equipment, as well as similar products that individual households use only infrequently. More broadly, investments in cultural, recreational and educational facilities and programs may reduce use of electronic goods by providing residents with other forms of activities.

Public Procurement Standards and Requirements

The State could lead by example in State procurement practices by supporting reuse, repair and durability considerations, as well as requiring or incenting disclosure and reduction of life cycle impacts.

5. Smart Growth

Opportunities to Reduce Emissions

Walkable communities are more compact than suburban developments, but residential density alone has a weak effect on consumption-based emissions. Emissions savings and co-benefits arise when everyday resources like schools, shops, and parks are close enough to access without driving.

The wedge in SEI's technical report illustrates some impacts smart-growth policies are associated with:

- Decreased mileage traveled in private vehicles, which decreases emissions from direct burning of fuel.
- A reduced need for private cars, which means household can own fewer vehicles, reducing the emissions associated with producing vehicles. Currently Oregon averages 2.1 vehicles per household, according to Census sources, but under smart growth it is possible for that number to decline.
- A possible decline in impacts related to the purchase of goods, because smaller dwellings are able to hold fewer material items.

Program and Policy Options for Smart Growth

Since walkable communities can take on many different forms, a diverse set of program and policy options can contribute to their creation. In general, these programs and policies work to:

- a) concentrate new development, whether greenfield or infill, in areas which already have developed resources such as schools, shopping, and transit; and
- b) encourage connection between both new and existing resources via planning principles, infrastructure, and transportation.

Existing Policies

Oregon has at least two significant existing statewide policies promoting these principles. First is Oregon's decades-old policy of "urban growth boundaries" which requires that expansion of cities occur within designated boundaries, thereby protecting forests, farms, and rangeland. Second is the newer "Climate-Friendly and Equitable Communities" (CFEC) program coordinated by Oregon's Department of Land Conservation and Development.

Rules designed to implement the CFEC apply to eight metropolitan areas of the state, where they require:

- Updated land use and transportation planning, following certain guidelines.
- Lightened or eliminated parking requirements.
- Local governments to allow certain types of buildings and developments.

- Explicit planning for walkability and connection.

Though CFEC rules provide strong direction, its impacts on the state’s consumption-based emissions totals are likely to be modest in the next few decades, according to SEI’s wedge analysis. This finding is due to several factors. CFEC is limited to eight metropolitan areas, mostly affects new development, and communities change slowly.

Possible Future Policies and Programs

Zoning and land use policies like CFEC’s could be strengthened, according to SEI’s technical report, by several additional kinds of actions.

Financial Incentives

Financial incentives could be used to increase development compatible with smart growth and walkability. Such incentives could take varied forms, for example, density bonuses, split-rate property taxes, congestion pricing on transportation, and lower development fees. For example, Portland’s move to eliminate systems development charges for new accessory dwelling units spurred a spike in development.

Public Investments

Public investments in infrastructure and services could create the connections necessary for a walkable community. Such investments include choice of location for government offices, schools, and public housing; increased transit service; and improved infrastructure for non-motorized transportation, such as bike lanes and pedestrian crossings.

More information

To learn more, [please visit our website](#) at: tinyurl.com/OR-DEQ-CBE.

Contact

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