

## Program Development to Reduce Greenhouse Gas Emissions: Illustrative Scenarios

Meeting Date: Dec. 2, 2020



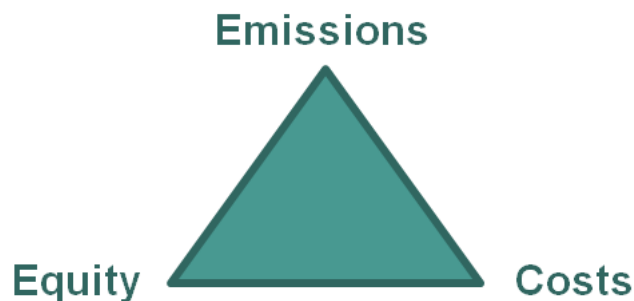
State of Oregon  
Department of  
Environmental  
Quality

### Introduction

The Oregon Department of Environmental Quality is developing a new program to reduce greenhouse gas emissions in Oregon. Climate change is already impacting Oregon's environment, outdoor recreation, air and water quality, as well as our economy, and most vulnerable communities. Without major reductions in global greenhouse gas emissions, it is increasingly likely that society will face more severe impacts and potentially irreversible changes. Global reductions in greenhouse gas emissions can slow the speed of future climate change and associated public health, environmental, and economic impacts, which means Oregonians have to do our part to avoid the most catastrophic effects of climate change.

DEQ is conducting public meetings and gathering public input to help identify and frame key issues for development of an ambitious new program to reduce greenhouse gas emissions in Oregon. DEQ, informed by extensive public engagement in the summer and fall of 2020, has identified the following primary program goals:

- Achieve significant greenhouse gas emissions reductions
- Prioritize equity by promoting benefits and alleviating burdens for environmental justice and impacted communities
- Contain costs for businesses and consumers



DEQ seeks to design a program that achieves greenhouse gas emissions reduction targets without sacrificing equitable outcomes and while limiting costs to consumers. DEQ has developed three illustrative scenarios to demonstrate the relationship between these goals. The scenarios were created to examine the tradeoffs inherent in various program design element decisions and as such, they should be interpreted qualitatively.

These scenarios are informed by input received during technical workshops and town hall meetings convened in the summer and fall of 2020. DEQ has not made program or policy design decisions and the scenarios described below are not specific proposals or the only options for structuring the program.

DEQ will hold a virtual meeting on Dec. 2, 2020 to request feedback on these scenarios. DEQ will also accept written comments submitted to [CapandReduce@deq.state.or.us](mailto:CapandReduce@deq.state.or.us) by Dec. 9, 2020. Specifically, the agency is interested in:

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Greenhouse Gas  
Programs  
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[www.oregon.gov/DEQ](http://www.oregon.gov/DEQ)

DEQ is a leader in restoring, maintaining and enhancing the quality of Oregon's air, land and water.

1. Which program design choices in these scenarios best achieve the program goal for:
  - Equity?
  - Emissions?
  - Costs?
2. What other choices could more effectively meet the program goal for:
  - Equity?
  - Emissions?
  - Costs?
3. What tradeoffs or other tensions between design choices are not illustrated by the scenarios?

## Summary

This document describes three different design scenarios to compare different program design choices and show the relationships between those choices and the key program goals. An important outcome from these scenario comparisons is identifying the tradeoffs that emerge from the different program design choices. The major tradeoffs identified in this exercise relate to:

- Total emissions reductions
- Direct emissions reductions by regulated entities
- Availability of compliance flexibility mechanisms
- Benefits for impacted communities in Oregon
- Costs to businesses and consumers
- Risk of leakage of businesses and emissions to outside of Oregon

**Scenario 1** illustrates a steep emissions reduction trajectory, enabled by broad ability to trade compliance instruments and use alternative compliance instruments to contain costs to businesses and consumers. A high level of compliance flexibility is allowed and leverages existing offset registries, including offsets outside of Oregon to achieve the steep cap trajectory.

**Scenario 2** illustrates a less steep cap trajectory than Scenario 1, with trading, ability to use alternative compliance instruments, and a compliance instrument reserve to contain costs to businesses and consumers. DEQ-created protocols provide alternative compliance options that achieve emissions reductions and benefit environmental justice and impacted communities in Oregon.

**Scenario 3** illustrates emissions reductions primarily achieved directly by regulated entities, with no allowable alternative compliance options and limited ability to trade compliance instruments. As a result, there is a less steep cap trajectory than Scenario 2 to ensure compliance is achievable, and a compliance instrument reserve is used to contain costs to businesses and consumers.

This table summarizes the key differences in the program design elements for the three scenarios, each of which are described in greater detail below.

<b>Program Design Element</b>	<b>Scenario 1</b>	<b>Scenario 2</b>	<b>Scenario 3</b>
<i>Initial cap level</i>	Set based on a level lower than recently reported emissions	Set based on recently reported emissions	
<i>Cap trajectory</i>	Steep decline over time	Less steep than Scenario 1	Less steep than Scenario 2
<i>Basis for compliance instrument distribution</i>	Fixed proportion of cap based on recently reported emissions	Initial distribution is a proportion of cap based on recently reported emissions; proportion is regularly updated with new data	Initial distribution is a proportion of cap based on recently reported emissions; proportion is regularly updated with new data and based on emissions reduction plans
<i>Ability to trade instruments</i>	Yes		Yes; in certain instances
<i>Ability to use alternative compliance instruments</i>	Yes; significant	Yes	None; emissions reductions must be directly achieved by regulated entities
<i>Types of allowable alternative compliance options</i>	Out-of-scope emissions reductions through existing offset registries/protocols	DEQ-authorized protocols that reduce emissions and provide co-benefits to Oregon communities, which may include in-scope emissions reductions	None; emissions reductions must be directly achieved by regulated entities
<i>Compliance instrument reserve</i>	No reserve	Yes; set aside from within the cap and accessible based on certain criteria	

### **Common assumptions**

DEQ holds constant several program design decisions across the illustrative scenarios presented below. Based on public feedback and DEQ deliberation, DEQ believes the program design decisions described in this section would likely achieve the best outcomes for meeting the key program goals and are therefore applied consistently. However, future policy proposals may include a different decision for these common assumptions if future public input or additional analysis suggests that it is warranted.

Each scenario includes emissions caps that are an absolute amount of allowable metric tons of carbon dioxide equivalent, i.e. mass-based standards. DEQ has heard strong preference for

mass-based standards, which are easier to quantify, more suited for tracking progress toward goals, and may more directly achieve emissions reductions when compared to intensity-based standards.

Public and stakeholder input on compliance flexibility varied widely, ranging from a preference for numerous compliance options for regulated entities to a preference for limits on individual sources. DEQ believes at least some flexibility helps balance the key program goals and improve compliance feasibility. Therefore, each of the illustrative scenarios includes program elements that provide compliance flexibility.

The flexibility included in the scenarios includes emissions caps across regulated sectors, rather than individual limits for regulated entities. The scenarios also include distribution of compliance instruments that represent allowable greenhouse gas emissions. Regulated entities can trade these instruments, though differences in trading are detailed by scenario below. However, the compliance instrument distribution method does not account for the different product output levels of each regulated entity. While there are advantages to distributing compliance instruments based on output, DEQ does not currently have the necessary output data from regulated entities to use this as the basis for distributing compliance instruments, but could consider ways to collect new information in the future to support this type of design.

Each scenario also allows for banking of compliance instruments over time. This encourages regulated entities to reduce emissions in early years and save unused compliance instruments for use in future years when it may be more difficult to reduce emissions as the cap declines. The same level of total emissions reduction is achieved over time, but may encourage or allow more flexibility for implementing larger projects to reduce emissions. Banking also helps to lower risk and uncertainty for regulated entities.

### **Assumptions not defined in the scenarios**

There are many decisions relevant to the program that are not fully described in these illustrative scenarios, including but not limited to, program start and end dates, regulated greenhouse gases and sources of emissions, points of regulation, emissions thresholds to determine individual regulated entities, and the length of a compliance period. These program elements can be defined in countless ways, and to a large degree, could be applied the same across each scenario. Therefore, DEQ believes these types of decisions would not substantively impact the illustrative scenarios design or fundamental tradeoffs discussed.

DEQ has held technical workshops and town hall meetings to describe options around the program elements not defined in these illustrative scenarios. Proposals and decisions regarding these and all other elements will continue to be discussed and evaluated during the rulemaking process planned for 2021.

### **Scenario 1**

Scenario 1 includes a steep emissions cap trajectory with a high level of compliance flexibility for how those emissions reductions are achieved. Maximizing flexibility would be necessary to achieve steep emissions reductions while minimizing risk of businesses relocating out of state, along with their emissions. However, the largest and least-costly options for emissions reductions, such as carbon sequestration in public forests, may not be located near impacted communities in Oregon. While this scenario likely achieves a high level of greenhouse gas emissions reductions, it may miss opportunities to direct benefits toward some communities in the state. However, by allowing a large degree of compliance flexibility, it helps to keep costs, such as fuel costs, low for consumers.

**Initial cap level:** The initial cap level in this scenario is set low relative to recently reported emissions. This may encourage early investment in clean energy and other emissions-reducing technology, although it may also result in significant leakage or high costs to consumers if the program doesn't also provide sufficient compliance flexibility. The lower initial cap sets a course for a steep trajectory sooner, which meets a key program goal of achieving significant reductions.

**Cap trajectory:** There is a rapid decrease in the cap to achieve large emissions reductions. The steeper trajectory meets a key program goal of achieving significant reductions. The lower initial cap and the steeper trajectory may also encourage early investment in clean energy and other emissions-reducing technology, but may also potentially result in business relocation or higher costs to consumers if the program doesn't also provide sufficient compliance flexibility.

**Basis for compliance instrument distribution:** Given the high level of compliance flexibility in this scenario, a fairly simple approach is used for distribution of compliance instruments. Each regulated entity receives an amount of compliance instruments that is proportional to their recently reported emissions. For example, if an entity produced 1 percent of regulated emissions in a baseline period, then the entity receives 1 percent of compliance instruments from the overall multi-sector cap. The number of compliance instruments distributed to each entity each year decreases as the cap decreases.

This does not provide flexibility for adjustment of an individual entity's share from year to year, essentially fixing in place the relative market shares of different entities in the program or sector based on historic data. This can create an incentive for early reductions because the regulated entity has greater potential for surplus that could be sold later years. However, it can also be disruptive in sectors or industries where market shares are highly variable from year to year.

**Ability to trade instruments:** Regulated entities have flexibility to trade compliance instruments, including across sectors and geographic regions. Trading allows regulated entities to collectively find the least-cost emissions reduction opportunities, and constraints placed on trading would limit the affordability and possibly the achievability of emissions reductions. However, few limitations on trading may mean that the pace of direct emissions reductions by some regulated entities may be slower than others.

**Ability to use alternative compliance instruments:** Regulated entities have significant flexibility to use alternative compliance instruments to comply with the low cap and steep trajectory. There is an initial limit on the percentage of compliance that can be achieved with alternative compliance instruments, but that percentage may be increased if necessary, such as in response to high prices or low supply in the secondary market. This significant flexibility may mean that the pace of direct emissions reductions by some regulated entities may be slower than others.

**Types of allowable alternative compliance options:** Regulated entities have the ability to use existing offset protocols and registries (such as the Climate Action Reserve or American Carbon Registry) for greenhouse gas emissions reduction and removal projects, such as forestry offsets, including for emissions reductions outside of Oregon. Allowing projects from existing protocols and registries to generate alternative compliance instruments is a simple and cost-effective way to produce alternative compliance options at the scale necessary to achieve compliance with a low cap and steep cap trajectory. However, using existing offset protocols and registries likely means that DEQ would have less ability to focus alternative compliance options on driving benefits toward impacted communities.

**Compliance instrument reserve:** This scenario does not include a compliance instrument reserve. All compliance instruments, with a total amount equal to the cap, are distributed to

regulated entities. Rather than distributing from a reserve to mitigate higher price or low supply in the secondary market, this scenario includes greater allowable use of alternative compliance options for flexibility.

## Scenario 2

Scenario 2 includes less steep emissions reductions than Scenario 1 and commensurate compliance flexibility. Some limits around alternative compliance options have the potential to promote equity by directing benefits toward impacted communities in Oregon, however this scenario likely misses some opportunities for reducing overall greenhouse gas emissions.

**Initial cap level:** The initial cap is based on emissions from recently reported data. This could result in a less stringent cap at the outset of the program.

**Cap trajectory:** The cap decreases annually at a pace that is less steep when compared to Scenario 1 to reflect the fewer compliance flexibilities.

**Basis for compliance instrument distribution:** As in Scenario 1, each regulated entity initially receives an amount of compliance instruments that is proportional to their recently reported emissions. For example, if an entity was responsible for 1 percent of regulated emissions in a baseline period, then the entity receives 1 percent of compliance instruments under the cap.

Unlike Scenario 1, over time, DEQ would adjust the proportion of compliance instruments received by each regulated entity based on updated data to account for changes in emissions by each entity over time. As the cap decreases, the total number of compliance instruments decreases as well, but by adjusting the percentage received by individual regulated entities, the amount distributed to each entity is adaptable to dynamic markets (such as the fuel sector where market shares are highly variable from year to year). Adjusting the distribution methodology over time may better reflect program impacts and may also provide additional flexibility as other compliance flexibility mechanisms are limited.

**Ability to trade instruments:** As in Scenario 1, regulated entities have significant flexibility to trade compliance instruments, such as across sectors and geographic regions. Trading allows regulated entities to collectively find the least-cost emissions reduction opportunities, and constraints placed on trading would limit the affordability and possibly achievability of emissions reductions. However, few limitations on trading may mean that the pace of direct emissions reductions by some regulated entities may be slower than others.

**Ability to use alternative compliance instruments:** Regulated entities have flexibility to use alternative compliance instruments to comply with the cap, with a limit on the percentage of compliance that can be achieved with alternative compliance instruments. This provides some flexibility to regulated entities to achieve compliance while still encouraging in-scope reductions.

**Types of allowable alternative compliance options:** Rather than using existing registries, this scenario includes DEQ-authorized protocols that reduce emissions and provide co-benefits to Oregon communities. These protocols would direct investments toward Oregon communities, with a particular focus on environmental justice and impacted communities. For example, DEQ could authorize investments in electric infrastructure such as electric vehicle charging stations, home heating systems that don't use fossil fuels or funding assistance to transit districts updating to cleaner fleets.

These greenhouse gas emissions reductions might be within the scope of the program (e.g. reducing transportation emissions even though transportation fuels are covered by the program). While this could moderate the additional emissions reductions these investments accrue, it might also increase benefits to Oregon communities by driving investments that improve access to cleaner technologies.

**Compliance instrument reserve:** This scenario includes a compliance instrument reserve set aside from under the cap. Distribution from the reserve would be based on criteria set by DEQ such as secondary market prices. A reserve helps provide compliance flexibility by increasing supply and could help contain costs for businesses and consumers.

### Scenario 3

Scenario 3 primarily achieves emissions reductions directly by regulated entities, with little compliance flexibility. To ensure compliance is achievable and to minimize cost impacts to consumers, the scenario has a less steep cap trajectory than Scenario 2 and a compliance instrument reserve. Additionally, as this scenario affords little flexibility to gas utilities and is likely to raise fuel costs, an exemption or financial assistance program would be provided for natural gas emissions from low-income households.

**Initial cap level:** As in Scenario 2, the initial cap is based on emissions from recently reported data. This could result in a less stringent cap at the outset of the program.

**Cap trajectory:** In this scenario, the cap decreases annually at a gradual pace. The pace is intended to focus emissions reductions in the regulated sectors. The gradual pace may limit potential relocation of businesses and emissions to outside of Oregon, but may result in missed opportunities for achievable emissions reductions that do not occur because they are not required.

**Basis for compliance instrument distribution:** As in Scenario 2, each regulated entity initially receives an amount of compliance instruments that is proportional to their recently reported emissions. For example, if an entity was responsible for 1 percent of regulated emissions in a baseline period, then the entity receives 1 percent of compliance instruments under the cap. Over time, DEQ would adjust the proportion of compliance instruments received by each regulated entity based on updated data to account for changes in emissions by each entity over time. As the cap decreases over time, the total number of compliance instruments decreases as well, but by adjusting the percentage received by individual regulated entities, the amount distributed to each entity is adaptable to dynamic markets (such as the fuel sector where market shares are highly variable from year to year).

Unlike Scenario 2, DEQ could also adjust the proportion of compliance instruments received by each regulated entity based on other requirements, such as development of long-term emissions reduction plans. These plans could include analysis of the feasibility of emissions reductions and a schedule for implementation of different emissions reductions strategies. Allocation of compliance instruments could be based on the amount of emissions that would occur if following the plan.

**Ability to trade instruments:** As this scenario prioritizes direct emissions reductions by regulated entities, there are some limitations on ability to trade compliance instruments. The limitations could include specific requirements regulated entities need to meet prior to buying or selling compliance instruments. For example, a regulated entity may need to develop a long-term emissions reduction plan, or stationary sources with emissions that may impact local communities may be limited to trading only with nearby regulated entities to ensure nearby reductions. The ability to trade compliance instruments creates an incentive for regulated entities to reduce emissions and sell their compliance instruments. The limitation on the ability to trade is also a limitation on this incentive, meaning there could be some regulated entities with opportunities to reduce emissions that do not make those reductions.

**Ability to use alternative compliance instruments:** With a gradual cap decline and prioritization of direct emissions reductions by regulated entities, this scenario does not allow for the use of alternative compliance instruments. All compliance must be achieved with DEQ-

distributed compliance instruments from under the cap. By prioritizing direct emissions reductions this approach possibly results in benefits for local communities, such as those near transportation corridors, but provides less compliance flexibility.

***Types of allowable alternative compliance options:*** None.

***Compliance instrument reserve:*** As in Scenario 2, this scenario includes a compliance instrument reserve set aside from under the cap. Distribution from the reserve would be based on criteria such as secondary market prices. A reserve helps provide more compliance flexibility by increasing supply and could help contain costs for businesses and consumers.

### **Alternative formats**

DEQ can provide documents in an alternate format or in a language other than English upon request. Call DEQ at 800-452-4011 or email [deqinfo@deq.state.or.us](mailto:deqinfo@deq.state.or.us).