



Oregon

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MEMORANDUM

To: Oregon Global Warming Commission

From: Maya Buchanan, Oregon Department of Energy, Senior Climate Policy Analyst
Catherine Macdonald, Oregon Global Warming Commission, Chair

Date: November 9, 2021

Re: Transformative Integrated GHG Emissions Reduction (TIGHGER) Plan Briefing

Introduction

As discussed during our August 2021 Commission meeting, the OGWC, with the assistance of ODOE, is developing a long-range plan for meeting the state's 2035 greenhouse gas (GHG) emissions reduction goal, known as the Transformational Integrated GHG Emissions Reduction (TIGHGER) Plan.

This memorandum outlines: (1) the process used to develop a list of potential actions the state could take to meet its GHG emissions reduction and sequestration goals, (2) the modeling framework to analyze the GHG mitigation potential of actions, and (3) the remainder of the process the OGWC will use to develop the TIGHGER Plan.

At the November meeting, the OGWC will be briefed about the process and be invited to provide initial feedback on the draft list of potential actions. Please review the list of draft actions in advance of the meeting and **flag any additional actions** that you think should be analyzed. Following the meeting, the Commission will be seeking additional input on the list of actions, including:

- Hosting multiple stakeholder meetings to get input on the draft list of actions November 8-December 3, 2021.
- Seeking public comments on the draft list of actions through December 3, 2021.
- Scheduling an additional Commission meeting or creating a subcommittee to finalize the list by early December 2021.

Background

The TIGHGER Plan will serve as the [Oregon Global Warming Commission's Roadmap to 2035](#), an evaluation of additional actions the state should take to supplement existing or planned state efforts (such as the [Oregon Department of Environmental Quality's Climate Protection Program](#) and [100% Clean Electricity Bill](#)). Based on analysis and stakeholder input, the TIGHGER Plan will identify a suite of ambitious, transformative, and financially realistic economy-wide decarbonization actions and pathways for reaching Oregon's target of reducing GHG emissions by at least 45 percent below 1990 levels and increasing sequestration by at least 7.5 million metric tons of CO₂e by 2035. Please see additional details on the [TIGHGER webpage](#) and in the accompanying [2-pager](#).

Scope and Project Tasks

Overall, this project will: assess the GHG emissions reduction and sequestration potential and cost-effectiveness of individual and packages of actions, develop sector-based marginal abatement cost curves, and evaluate co-benefits that support an equitable economy wide transition to a clean energy and climate-smart natural and working lands future. The TIGHGER Plan includes the following core components:

1. With agency and stakeholder engagement, identify a comprehensive list of emissions reduction and sequestration actions to model.
2. Analyze the cost and GHG emissions reduction and increased sequestration benefits of each action using our consultant's model.
3. Develop sector-based and economy-wide marginal abatement cost curves (which show the unit cost/savings and scale of emissions reduction and increased sequestration).
4. Determine and analyze the co-benefits for each action.
5. Develop evaluation criteria and then score and rank the actions.
6. Create the TIGHGER Plan which will serve as our "Roadmap to 2035."

Once Steps 1-4 have been completed with the TIGHGER consultant's help, the Commission as the steering committee, with support from ODOE staff and additional public input, will establish evaluation criteria, score and rank the actions, and then create a roadmap to help Oregon meet its statewide GHG emissions reduction and sequestration goals for 2035. The roadmap will be submitted to the Legislature by early 2023.

Overview of Modeling Approach

Our consulting team (SSG) is using the following approach to identify and model the GHG mitigation potential of various actions.

1. Identify potential emissions reduction and sequestration actions

Potential actions for consideration will be identified from multiple distinct sources:

1. A literature review of Oregon's existing bills, regulations, policies, and actions.
2. A literature review of federal policies affecting Oregon.
3. A literature review of climate policies applicable to the Oregon context (see accompanying 'Situational Analysis' document).
4. Interviews with state agencies.
5. SSG's internal catalogue of actions based on previous work and market research.
6. Interviews and webinars with stakeholders.
7. Ideas from the Commission.

Actions will be classified according to their policy maturity, using a scale of 'new,' 'planned,' 'implemented,' and 'underway.' **New** actions are additional actions that could help us meet our GHG emissions reduction goals, which have not yet been developed or incorporated into a State plan. An action that is **planned** is identified in a State plan, strategy, policy, or law, and is being developed with a high likelihood of being implemented. An action that is **underway** is enabled by policy or law, and as of 2020 has been deployed but is in its initial stages of implementation, or is making a difference on the ground (by currently reducing GHG reductions or increasing carbon sequestration).

In this schema, actions that are classified as implemented or underway will be included in an estimate of future business-as-usual emissions projection, while actions that are classified as planned (as of 2021) will be included in the business-as-planned emissions projection (Figure 1 below). The added emissions reduction benefits associated with new (and any planned or implemented actions that need new legislation or rulemaking to be expanded) will be evaluated under different decarbonization pathways or scenarios (e.g., reflecting different rates of technological adoption, fuel prices, extent of retrofits, etc.). ***A goal of the TIGHGER Plan is to help identify actions can be taken in addition to the work that is already underway to help reach the State's GHG emissions reduction and sequestration targets*** (e.g., see purple wedge in Figure 1 below).

Some of the actions we will identify will have direct emission reduction benefits that can be modeled. Others will be enabling actions that encourage a change in behavior/activities that lead to a reduction in GHG emissions. For example, an enabling action could be an educational program that encourages people to use less carbon intensive modes of transportation, such as public transit, which in turn results in a direct reduction in emissions. Only direct actions will be modeled.

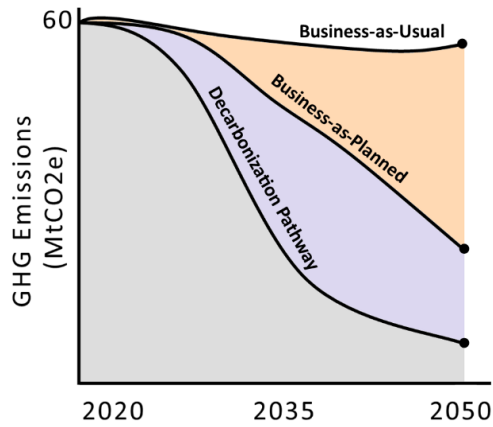


Figure 1: Conceptual illustration of the residual GHG emissions reductions gap after accounting for planned actions (“Business-as-Planned”). This TIGHGER Plan seeks to identify and analyze a strategic set of new actions that can help fill the purple gap to meet the State’s GHG emissions reduction goals.

2. Mapping to sectors

Actions will be mapped to their associated sectors in the State’s Sector-Based GHG Inventory (Figure 2) to understand the relative magnitude of the source of emissions that the action can influence. The sequestration potential for natural and working lands actions can be estimated based on the applicable land area and per acre sequestration rates.

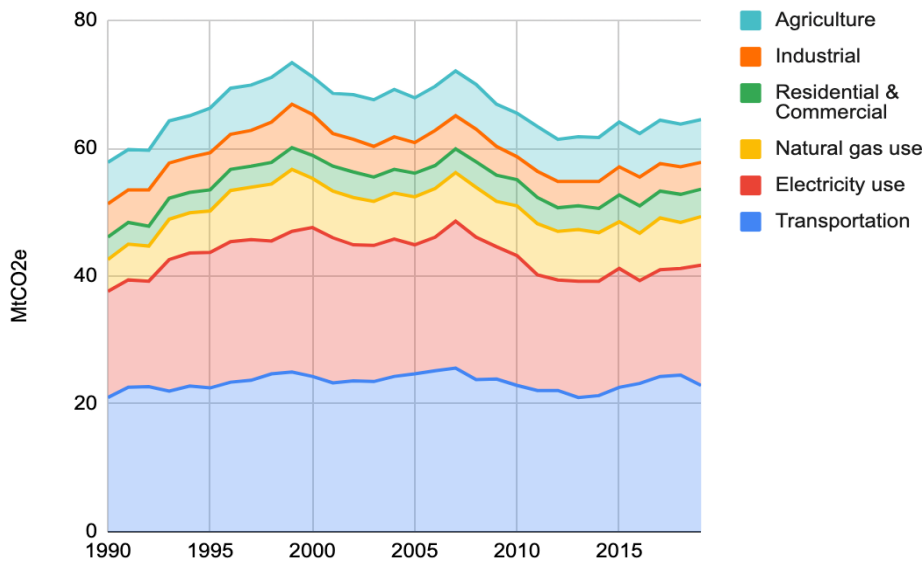


Figure 2: Oregon’s GHG emissions inventory

3. Assessing the relative impact of new actions

The relative impact of new actions will be evaluated to indicate whether they will have a low, medium, or high impact in terms of GHG emissions reductions. This assessment will be undertaken by examining the extent to which the action is expected to reduce emissions or increase sequestration. Should we end up with too many actions to model, the modelling will prioritize higher impact actions.

4. Setting the parameters of new actions

Based on literature, previous analysis, or studies by the State of Oregon or others, we will define parameters for each new action (e.g., adoption rates of technologies, extent of retrofits, carbon intensities of fuels, etc.). Parameters are aspects of the action that determine the resulting quantity of GHG emission reductions. For example, some parameters could be defined based on an 'S-curve' theory of the adoption rate of technologies (such as zero-emission vehicles or heat pumps) or uptake of climate-smart management practices in natural and working lands. Others will be established based on policy targets for renewable energy adoption or land-use plans designed to reduce vehicle miles traveled. Adoption curves describe different segments of adopters based on their proclivity to adopt new products or technologies as illustrated below (Figure 3).

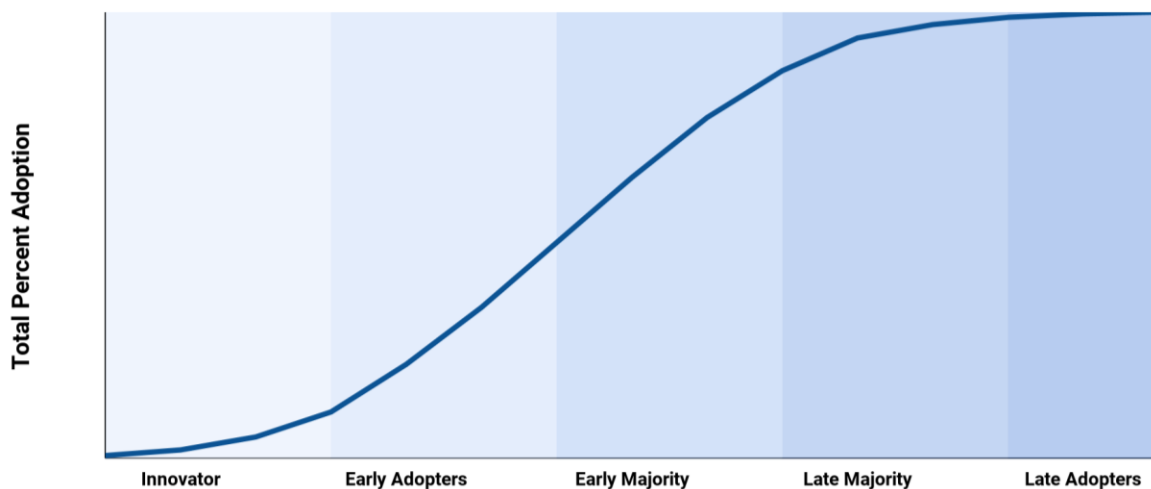


Figure 3: Illustration of an S-curve for the adoption of a new technology and practices.

5. Defining the scenarios

The consultant will prepare two different decarbonization scenarios comprised of integrated actions. The scenarios will aim to have the following characteristics:

- **Plausible.** The scenario must be believable.

- **Relevant to the key strategic issues and decisions at hand.** If the scenario would not cause a decision-maker to act differently compared to another scenario, there is little use in considering it.
- **Challenging to today's conventional wisdom.** It should make one think about different possibilities and options.
- **Divergent from each other.** Together, the scenarios should “stretch” the thinking about the future environment, so that the decisions take account of a wider range of issues.
- **Balanced.** It is useful to ensure that a group of scenarios strike a good balance between challenges and opportunities, and between risks and potential benefits.

The scenarios reflect different socio-economic future conditions (such as interest rate, employment rate, etc.). For example, the scenarios could represent a future where we speed up the pace of decarbonization, or one where we are capital-constrained, lacking resources to spend on actions, or another could be where we see rapid advances in technology.

6. Iteration

Each of the new actions will be modelled and evaluated in the decarbonization scenarios. Based on the results, the parameters for actions can be adjusted and the scenarios rerun, for example, to increase ambition if the first model run does not achieve the GHG emission reduction targets.