

Climate Protection Program

Program Development to Reduce Greenhouse Gas Emissions: Modeling Study

Dec. 18, 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. DEQ is conducting public meetings and gathering public input to help identify and frame key issues. DEQ, informed by extensive public engagement, 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 is contracting with ICF, a global consulting and technology services provider, for specialized economic, greenhouse gas and co-pollutant emissions modeling to study design options for the new program to reduce emissions in Oregon. ICF will model different policy scenarios, as instructed by DEQ, to analyze potential effects on:

- Forecasted greenhouse gas emissions
- Air quality and public health co-benefits
- Economic effects on regulated entities, businesses, consumers, and Oregon's economy

ICF will use different modeling tools to forecast emissions and project program effects on public health and the economy. This study is intended to inform the overall program design as well as the fiscal impacts analysis conducted as part of formal rulemaking.

Study timeline

The study will start with a “business as usual” or “reference” case to represent the effects of current regulations, requirements and programs. This reference case serves as a baseline to compare to policy scenarios as it represents what a future may look like in the absence of a new program. In early November 2020, DEQ held an open comment period requesting public feedback on the initial inputs and assumptions to be considered for the reference case. Next, various policy scenarios will be modeled and compared to the reference case. These policy scenarios will be developed beginning in early 2021 and will reflect different options for the program design and implementation and will be informed by the Rulemaking Advisory Committee and rulemaking process. More information about this modeling effort will be made available on DEQ’s website (www.oregon.gov/deq/ghgp/Pages/modelingstudy.aspx).

Committee meetings will begin in January 2021, where there will be an opportunity to provide input on the design of the modeled policy scenarios. All meetings are open to the public and each meeting will provide an opportunity for the public to comment. Initial results of the modeling study are expected in early 2021, with final results expected in spring 2021.

Office of Greenhouse Gas Programs

700 NE Multnomah St.
Suite 600
Portland, OR 97232
Phone: 503-229-5696
800-452-4011
Fax: 503-229-6124

www.oregon.gov/DEQ

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

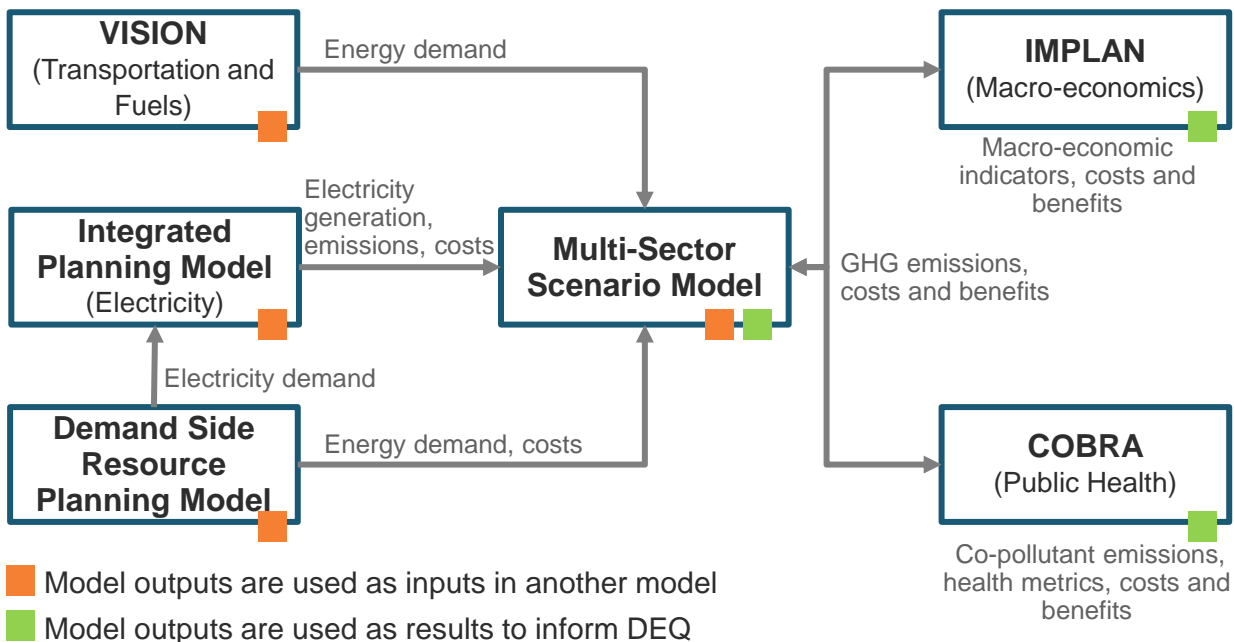
Modeling approach

ICF will perform scenario modeling using a toolkit of models and an integrated approach summarized in Figure 1 below. National and state-specific data sources will inform this study. With these data, ICF will model the reference case and at least four policy scenarios for greenhouse gas emissions reductions across multiple sectors. The modeled sectors will not all necessarily be sectors that will be regulated by a final program, but will include sectors that may be directly or indirectly affected by a final program. Sector-specific modeling results from Argonne National Laboratory’s VISION Model, ICF’s Integrated Planning Model, and Demand Side Resource Planning Model will be incorporated into ICF’s multi-sectoral model. For example, transportation sector effects of the policy scenarios’ impacts will be derived from the VISION model and incorporated into the multi-sector model to assess interactions with other sectors.

The multi-sector model will provide emissions results for multiple sectors of Oregon’s economy including, at least the energy sector (electricity generation, fuel consumption) and industrial process sector. This multi-sector modeling will provide a better view of the potential impacts of a new program across Oregon, even though not all sectors’ emissions will be assumed to be regulated in the policy scenarios.

The aggregated results from the multi-sectoral model will then be used as inputs for the economic and public health modeling. The Impact Analysis for Planning (IMPLAN) model for macro-economic results will include custom economic data for Oregon that will be used in conjunction with the inputs from the multi-sector model to estimate the economic impacts of each scenario. Likewise, EPA’s Co-Benefits Risk Assessment (COBRA) tool will use emissions outputs from the multi-sector model as direct inputs and will provide estimates of public health impacts and monetize health outcomes at the state or county level. The results of these economic and public health models can also help refine the policy scenario development.

Figure 1. ICF’s integrated modeling approach



High-level modeling results can help articulate the scope and directionality of benefits and costs of different program designs into the future and results will include, but not be limited to:

- Greenhouse gas emissions by sector
- Health impacts in the form of willingness to pay to avoid certain illnesses and the medical costs of treating illnesses, among other results
- Monetized economic impacts such as job creation, gross state product, and more

The approach of this study enables examination of program designs and impacts at upstream, midstream, and end use levels. The scope of this study does not include all the specific elements of policies and programs that make up emissions reduction scenarios, nor does it include specific economic costs to individual sectors or potentially regulated entities. The results will be informative for program design and direction and will support fiscal impacts and other analyses conducted in the formal rulemaking process.

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.