# UNDERSTANDING SALEM'S GREENHOUSE GAS EMISSIONS INVENTORIES

Salem recently completed a consumption-based greenhouse gas inventory. This inventory will help Salem understand its contribution to global climate change and is complementary to the 2019 sector-based Inventory. The combustion of fossil fuels is the key driver of greenhouse gas emissions, whether occurring directly through sector-based emissions or indirectly through consumption-based emissions.

Measuring our greenhouse gas emissions is a necessary first step toward meeting the climate goal set by Salem City Council as part of their continued commitment to climate action. The goal seeks a 50 percent reduction of greenhouse gas emissions by 2035 (relative to 2016 levels) and to be a carbon-neutral city by 2050.

Greenhouse gas emissions are produced in the City of Salem every day from activities such as driving a vehicle, heating a home, or cooking with natural gas. We also contribute to greenhouse gas emissions indirectly when we purchase goods or food manufactured in other places and transported to Salem. All these emissions come from human activities that contribute to climate change.

In acknowledging the different ways that we add to this global issue, the City has compiled information in two different ways.

- **Sector-based inventory:** Emissions produced in Salem from areas, such as transportation, and residential, commercial, and industrial building and energy sources, including electricity produced elsewhere but used in the city.

- **Consumption-based inventory:** Emissions produced around the world due to Salem residents' consumption of goods and services, including emissions associated with the production, transportation, supply chain, use, and disposal of those products.

By carrying out these two different community-wide inventory methods, we can better understand key drivers to our contributions. The sector-based inventory is the traditional method for setting a goal and tracking emissions within a geographical area, such as Salem city limits, and is similar to the methods many other cities and countries use. The consumption-based inventory is a less common method and is increasingly being used by local governments to better understand how the choices and behaviors of individuals can impact climate change.

It is important to note that the sector-based and consumption-based inventories are not additive, as there are areas of overlap. Instead, they are both pieces of the greenhouse gas emission picture. Emissions from Salem's consumption-based inventory cannot be directly added to the sector-based inventory because some consumption occurs within the Salem city limits and therefore would be double-counted.

The information used in the inventories was compiled from 2016 data. Future updates to this information will allow us to understand how Salem emissions change over time and how to track progress towards meeting our greenhouse gas emission reduction goal.

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# Key findings

Results from Salem's two greenhouse gas inventories show that approximately 4.2 million metric tons of carbon dioxide equivalent are produced through consumption-based emissions while sector-based emissions produce approximately 1.6 million metric tons.

## Highlights:

- Consumption-based emissions account for more than double what is produced within the City. This means that individual choice and behavior overwhelmingly influence global emissions.

- The purchase and use of vehicles and parts is the largest source of emissions in the consumption-based inventory.

- Transportation is the largest sector of emissions from within the City limits.

- Electricity produced elsewhere but used in Salem is the second-largest source of sector-based emissions while the purchase, consumption, and disposal of food is the second-largest source of consumption-based emissions.



**SECTOR VS. CONSUMPTION**

Accounting for emissions in a sector-based vs. consumption-based inventory

CONSUMPTION   SECTOR-BASED   NOT TRACKED

Lives in Salem, drives outside city limits.

Lives outside city limits, drives in Salem.

Lives and drives in Salem.

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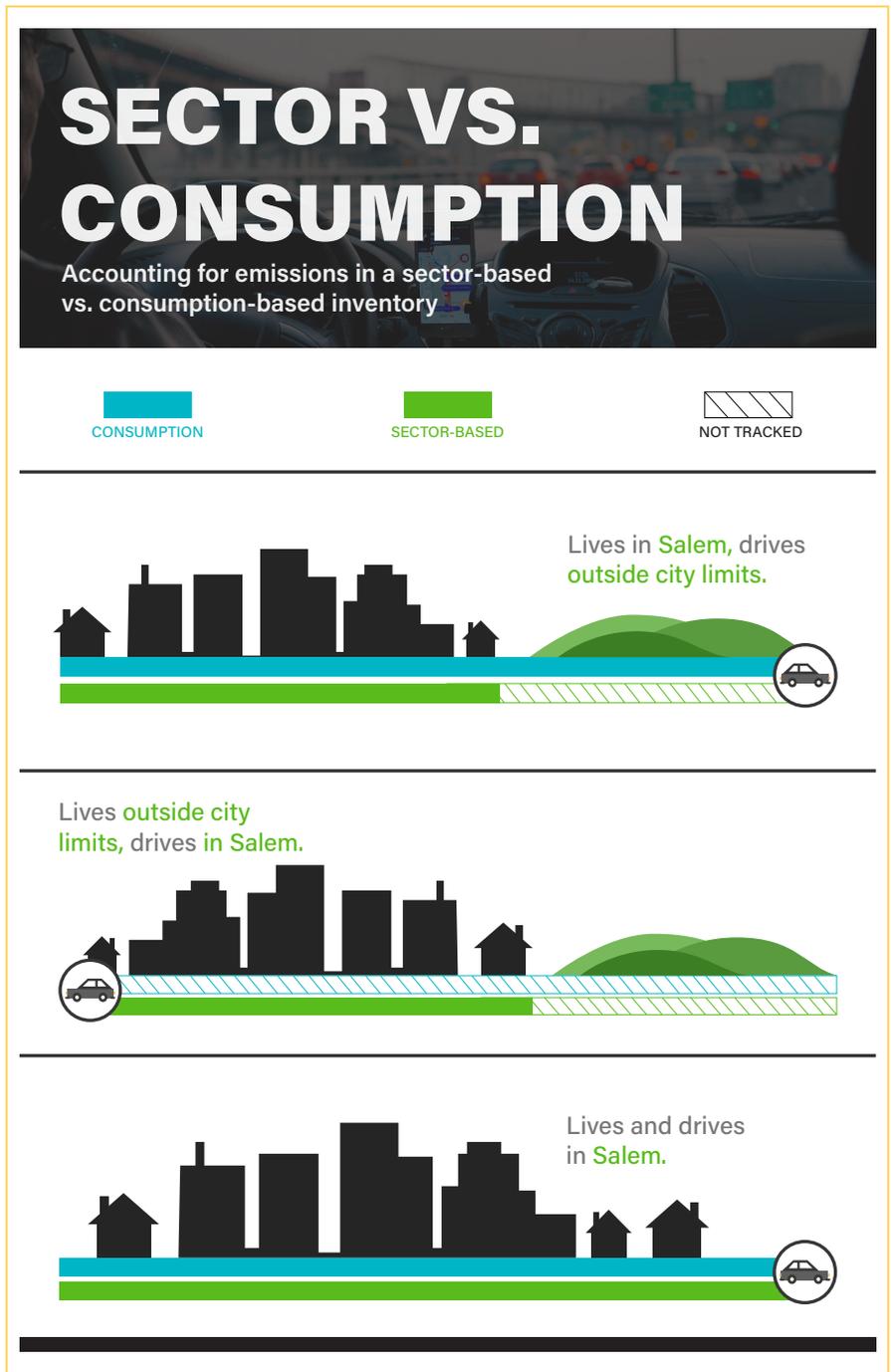
# How to measure progress

The baseline for measuring progress toward Salem's emissions reduction goal is set using data from the 2016 sector-based inventory. This is because the sector-based methods provide a better representation of locally produced emissions that can be influenced by direct action from the local government. It remains uncommon to set consumption-based goals because of the difficulty of measuring the effect of changes in consumption and because municipalities have few means to affect change.

The consumption-based inventory still provides a lot of useful information about the impact of local consumption patterns. This information helps to identify additional opportunities to reduce emissions, including voluntary changes in behavior and other choices made by Salem residents, businesses, and visitors.

Another purpose of the consumption-based inventory is to ensure that emission reductions occurring within Salem are a result of local action and that we are not shifting emissions to locations outside of City limits.

The frequency for measuring progress through updated inventories will be recommended as part of the Climate Action Plan.

# What happens next?

The City is in the process of developing a plan for reducing greenhouse gas emissions and adapting to climate change. The Climate Action Plan will outline strategies and actions Salem can take to reduce emissions and create a thriving, resilient community for decades to come. The sector- and consumption-based greenhouse gas inventories will be used in the planning process to analyze the cost/benefit and the emissions reduction potential of select strategies and will help create a dashboard that can be used to track progress on goals.

We are also in the process of updating our Comprehensive Plan, "Our Salem," which will guide future growth and development in the City. Both the sector- and consumption-based inventories, and Climate Action Plan strategies, will inform policies about how the City grows, which can have a major impact on our contributions to global emissions.

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