
Tacoma's Greenhouse Gas Inventory & Business As Usual Scenario

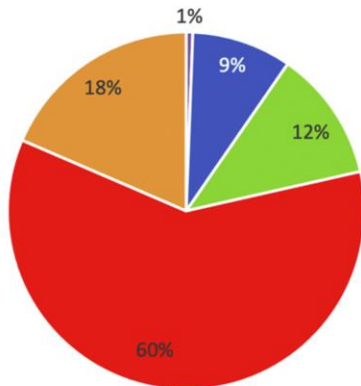
2019

Analysis and modelling provided by
Sustainability Solutions Group and
whatif? technologies

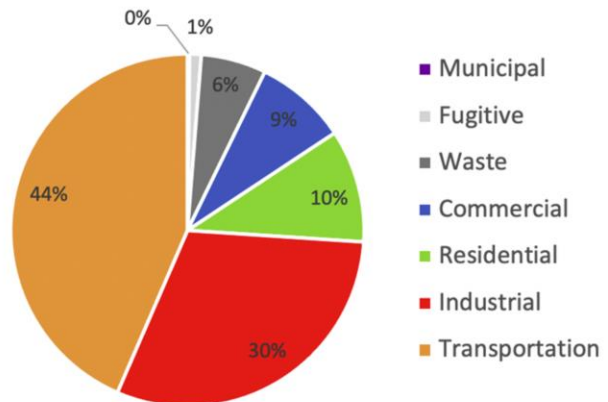


Where do our community emissions come from?

2019 Energy

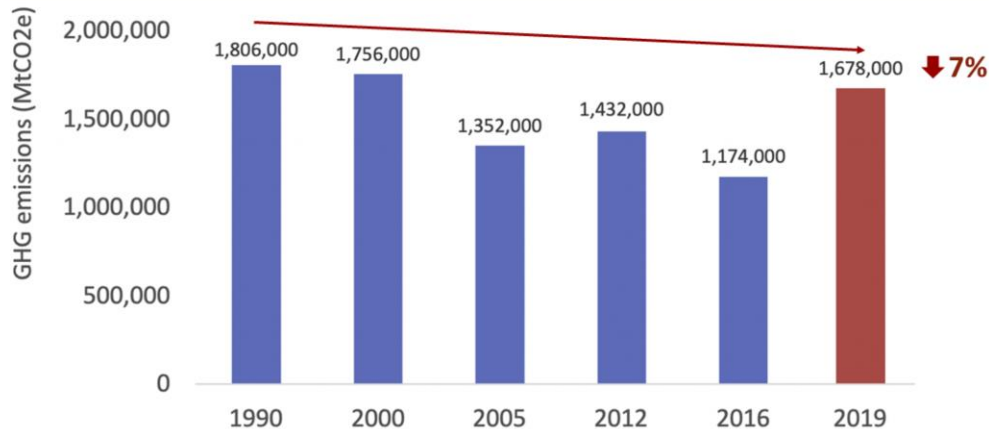


2019 Emissions



These pie charts show relative energy consumption and greenhouse gas (GHG) emissions from the various sectors in Tacoma. Tacoma's 2019 emissions comes from actual reported emissions data, as well as modelled data (i.e. downscaling Tacoma emission based on national or regional data or surveys). Like in past years, transportation is the #1 source of GHG emissions. Industrial energy use is much higher than Industrial emissions mainly due to estimated and modelled emission generated from wood waste burned at the Westrock Tacoma Mill. Fugitive emissions, the tiny 1% silver sliver, represent modelled natural gas leaks along the system, we don't have actual data on fugitive emissions.

What did our past inventories show us?



This graph shows our historical emissions over time. It looks like our emissions took a pretty big decline in 2005. However, our confidence in 1990 and 2000 data is low because those emissions were back-casted, we did not start inventorying GHG emissions until 2007. Methods of accounting for emissions and tools for tracking this data has evolved and improved over time. We now have professional staff and resources available for analyzing emissions that we didn't have in previous years.

Historic vs current inventory... can we compare?

New inventory inclusions:

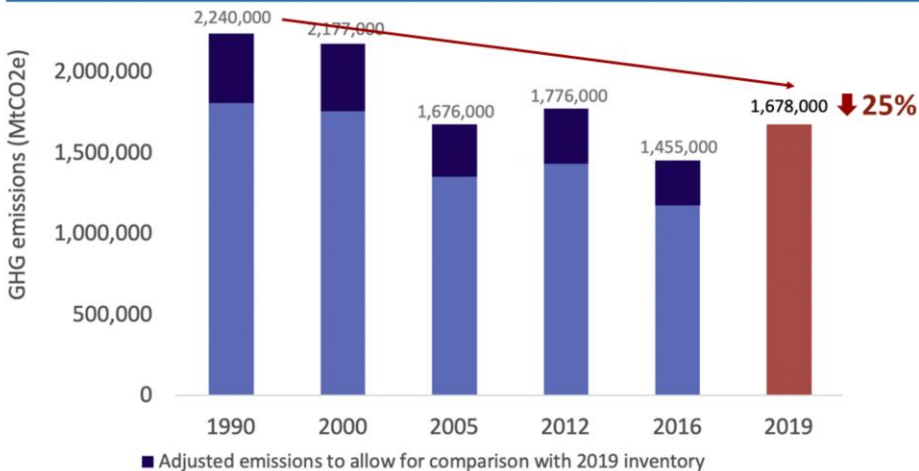
- reporting on N₂O emissions
- reporting on additional fuels (fuel oil, wood, propane)
- industrial emissions (refinery, pulp and paper mill process emissions)
- consideration of 'climate-carbon feedbacks'

Challenges with inventory comparisons:

- data quality
- evolving reporting methodologies

It can be quite tricky to conduct consistent and accurate inventories. We use the U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions (Community Protocol), and the Common Reporting Framework from the Global Covenant of Mayors which evolve as the science around emissions and modelling assumptions strengthens. We get "better" each time we conduct an inventory and discover "new" data sources, that can then sometimes lead to increase emissions from prior inventories because of those additional data sources. Most noticeably, this was the case for industrial emissions. For the first time, we input additional and more complete emissions data from our largest GHG emitting industries. Those three industries (Georgia-Pacific Gypsum, US Oil & Refining, and Westrock Tacoma Mill) are required to report emissions (not fuel sources) yearly by the Dept of Ecology. Emission from those industries in our 2019 inventory include natural gas (consistently captured in past inventories) and new emissions from fuel oil, propane, wood waste and petroleum coke.

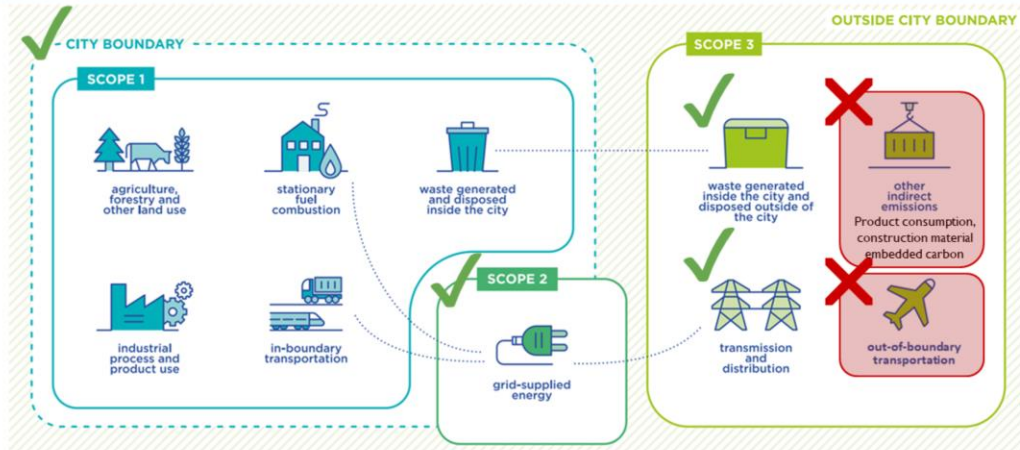
What did our past inventories show us?



Adding "new" data sources, and then modelling them back in time, produced this graph which shows a 25% decline from 1990. Although again, we are less certain about the 1990 and 2000 inventory data.

Since 2005, our carbon pollution has generally and modestly trended downward, although the dip in 2016 was mostly due to significant natural gas decreases in our industrial area. One or two PSE industrial metered accounts were dropped (we don't get the details on private utility customer accounts), which accounts for most of that decrease.

What isn't captured in the emissions inventories?



The way we inventory emissions only includes pollution generated here in Tacoma, that is, predominately fossil fuels burned here. This is known as a "sector" based inventory. It does not include impacts from items that we buy or foods that we eat that are created somewhere else and transported here. (in red under "other indirect emissions"). Those emissions are counted in California or China where the items are produced for example. If we were to look at our Tacoma community footprint that way, the few studies from the region model about a **doubling of emissions** if we included our stuff and food. This is known as a "consumption" based inventory. So, while goods don't show up here (unless it was created in one of our buildings or industries), our consumption of materials does have a huge impact, and is something that we can influence.

What is our emissions outlook?

Business As Usual Scenario

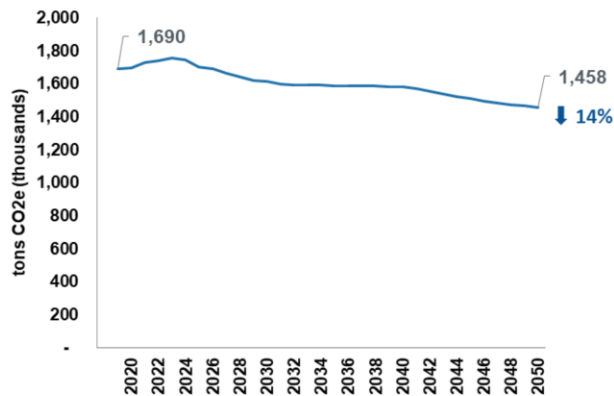
Existing plans/laws/strategies:

- **Federal** (EIA Energy Transportation Outlook, EPA vehicle fuel efficiency standards)
- **State** (Clean Buildings Act)
- **Region** (Puget Sound Regional Transportation Plan)
- **City** (Sustainable Material Management Plan, Land Use Vision V2)
- **Industry/other** (Tacoma Power Conservation Plan)

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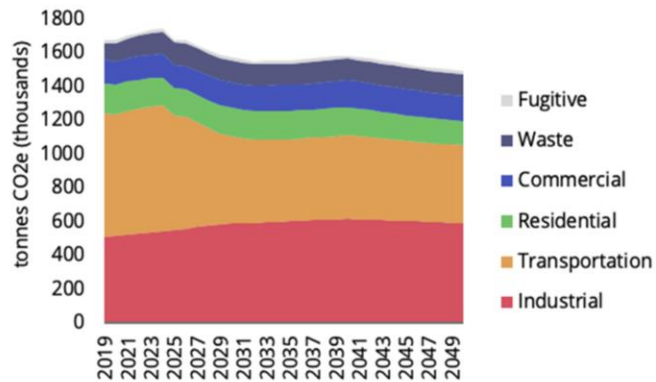
A common tool used by climate planners is to model out what emissions could look like if no new actions were taken. This is often called a Business As Usual (BAU) scenario. That means analyzing everything that is currently on the books including policies, regulations and codes at the local, state and federal level. The BAU shows what would happen if nothing new is done, which we know won't happen, but helps set the upper boundary of where our action planning needs to move from.

2019-2050 Business As Usual Emissions Projection



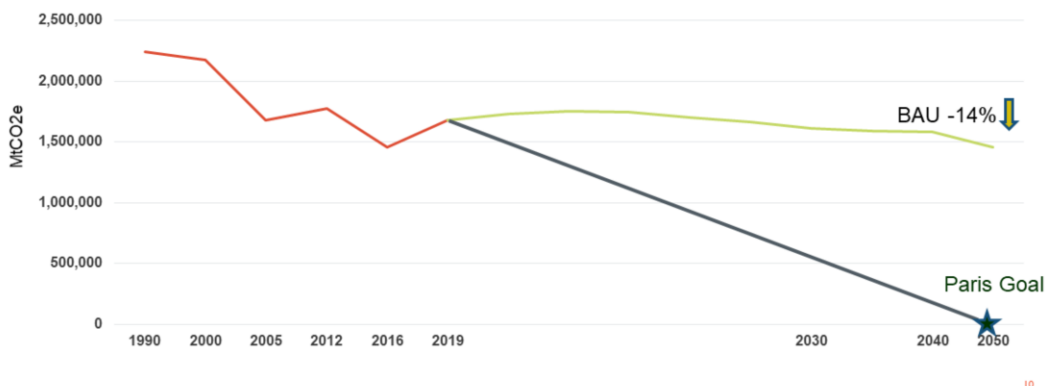
Tacoma's current BAU scenario does include projected population growth and shows that our emissions would drop 14% by 2050 based on already existing plans and policies. This moves us in the right direction, but is not steep enough to avoid unacceptable climate impacts on our community.

2019-2050 Emissions - by sector



This graph shows the Business As Usual scenario broken out by sector. Most of the projected 14% decline is from Transportation, that slice in orange.

2050 Emission Reduction Target



The blue star shows where we need to be in 2050. Our City Council has agreed that planning around the Paris Climate Accord goal of net zero carbon by 2050 is the most prudent and equitable path forward. Scientists now agree that in order to keep our planet to below 2 degrees Celsius of warming, net emissions need to be zero by 2050. This gives us a chance of allowing our planetary systems to right themselves. Beyond 2 degrees, irreversible feedback loops would likely keep escalating warming and worldwide ecosystems, ocean and jet streams, forests dying and burning, irreversible loss of Greenland ice sheets, and ocean acidification.

This gap between the dark blue line and the light green line shows the difference between where we would be without new action and where we need to be to reach our goals. It shows the transformative scope and pace necessary. It should be stressed, that while this gap from -14 to -100% is significant, reaching this goal is not solely the responsibility of the City of Tacoma. This is a community-wide goal and we cannot get there without state and federal support and actions, as well as investments and changes by our local partners and businesses.