Climate and Resiliency Element of the Comprehensive Plan

October 15, 2024

Planning Commission Meeting

Agenda

Time	Subject	Lead
7:00 5 mins	Climate and Resiliency Element	Alan Peters, City of Camas Emma Johnson, WSP
7:05 25 mins	GHG Inventory Results	Claudia Denton, Parametrix
7:30 10 mins	Vulnerability and Risk – Overview	Emma
7:40 30 mins	Vulnerability and Risk – Group Discussion	Emma
8:10 5 mins	Next Steps	Emma

Climate Change and Resiliency Element

- **Greenhouse Gas (GHG) Emissions Reduction Sub-element**
  - ***Purpose:*** Identify actions Camas will take to:
    - Reduce overall GHG emissions generated by transportation and land use;
    - Reduce per capita vehicle miles traveled (VMT); and
    - Prioritize reductions that benefit overburdened communities.
  - ***Analysis:*** Community GHG Inventory (complete)
    - Results will help Camas establish targets and strategies to reduce emissions and VMT.
- **Resilience Sub-element**
  - ***Purpose:***
    - Equitably enhance resiliency to, and avoid or substantially reduce the adverse impacts of, climate change in human communities and ecological systems.
    - Must prioritize actions that benefit overburdened communities that will be most impacted by natural hazards due to climate change.
  - ***Analysis:*** Vulnerability & Risk Assessment
    - Focused technical analysis of the vulnerability of Camas' lakes and outdoor recreational areas to extreme heat (due October 2024).
    - Identification of vulnerable assets and resiliency policies (today's exercise).

GHG Inventory Results

Claudia Denton, GHG Lead
Parametrix

GHG Inventory Agenda

- GHG Inventory 101
- 2022 GHG Inventory Results
- Q&A

GHG Inventory 101

What is a GHG Inventory?

- **Accounting of greenhouse gases** (GHGs) emitted to or removed from the atmosphere **during a specified period** for an organization or geographic boundary.
- GHGs are in large part from the **combustion of fossil fuels**, but also include emissions from other sources like **refrigerants**, **wastewater treatment**, **waste disposal**, and **land use change**.
- GHG inventories provide an **emissions baseline and a means to track emissions reductions over time and progress toward goals.**

Greenhouse Gas	Chemical Formula	Global Warming Potential
Carbon Dioxide	CO_2	1
Methane	CH_4	28
Nitrous Oxide	N_2O	265
Other high-GWP gases	CFCs, HFCs, SF_6, etc.	up to 24,000

Source: IPCC 5th Assessment Report, 2014, 100-year values

What is 1 MT CO_2e?

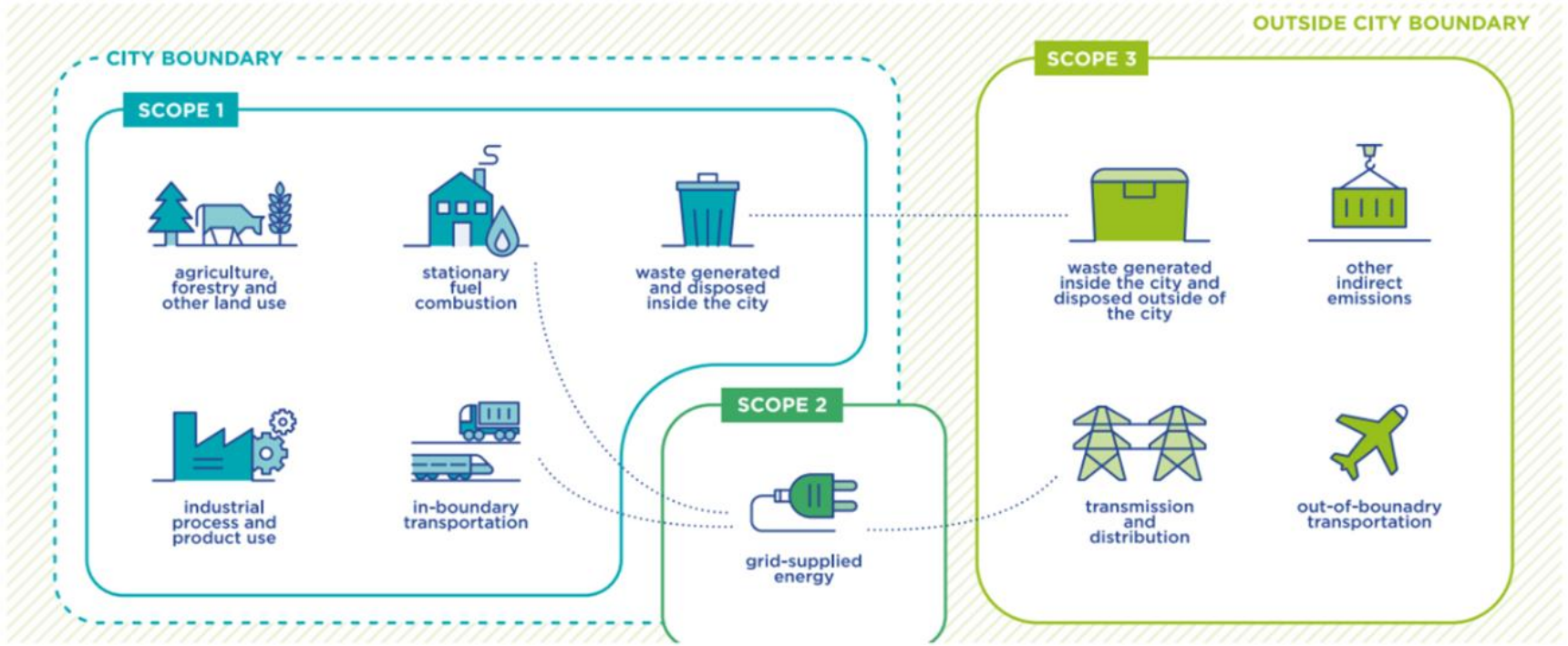
A Metric Ton of Carbon Dioxide Equivalent – a way to normalize GHG gases to CO_2.

One MT CO_2e is equal to any one of the following:*

- One passenger vehicle driven 2,500 miles
- 13% of one US home's energy use for a year
- 46 propane cylinders for home BBQs
- 1.2 acres of forest sequestration for 1 year

*Calculated using EPA's GHG Equivalencies Calculator

Inventory Boundaries



- Follows Washington State Department of Commerce requirements
- Calendar year 2022
- Camas geographic boundary

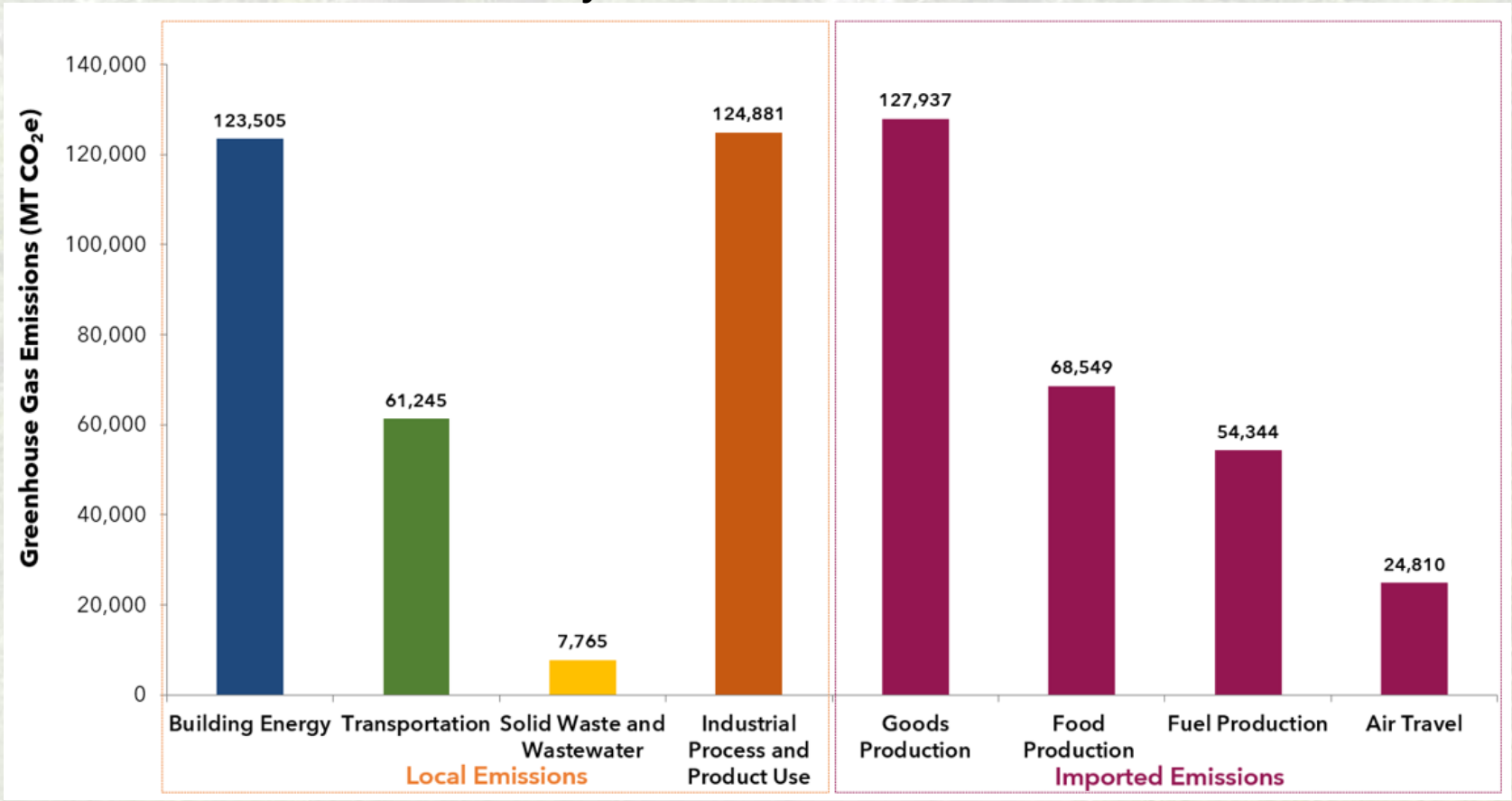
City of Camas 2022
GHG Inventory Results

Total Emissions

With a population of 27,000, all 2022 GHG emissions combined (local and imported) for Camas totaled **593,035 MT CO_2e**

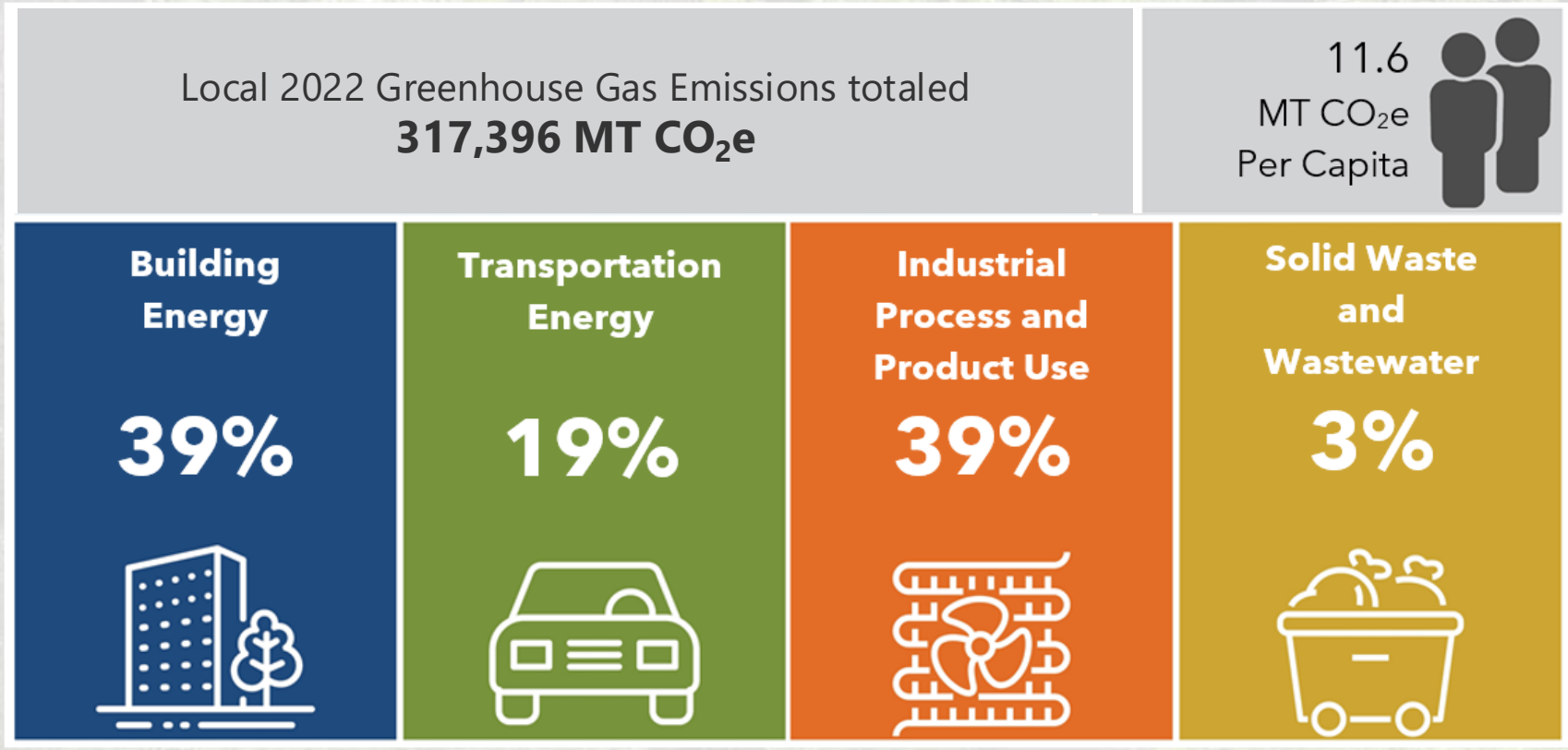
21.8
MT CO_2e
Per Capita

2022 Camas GHG Emissions Inventory Results



Local Emissions

2022 Camas GHG Emissions Inventory Results



- Largest sources of local emissions were
  - **Building energy**
  - **Industrial process and product use**
  - followed by **transportation**

Imported Emissions

2022 Camas GHG Emissions Inventory Results

Imported 2022 Greenhouse Gas Emissions totaled
275,639 MT CO_2e

10.1
MT CO_2e
Per Capita

46% Goods Production

9% Air Travel

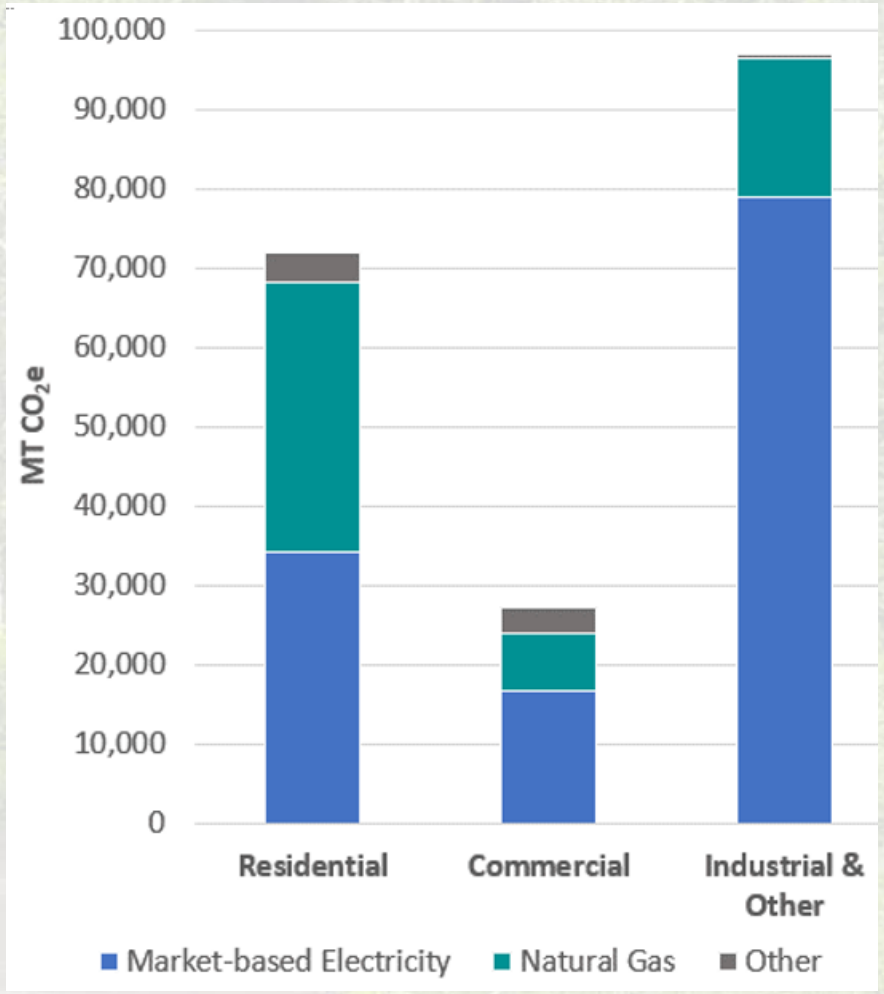
25% Food Production

20% Fuel Production

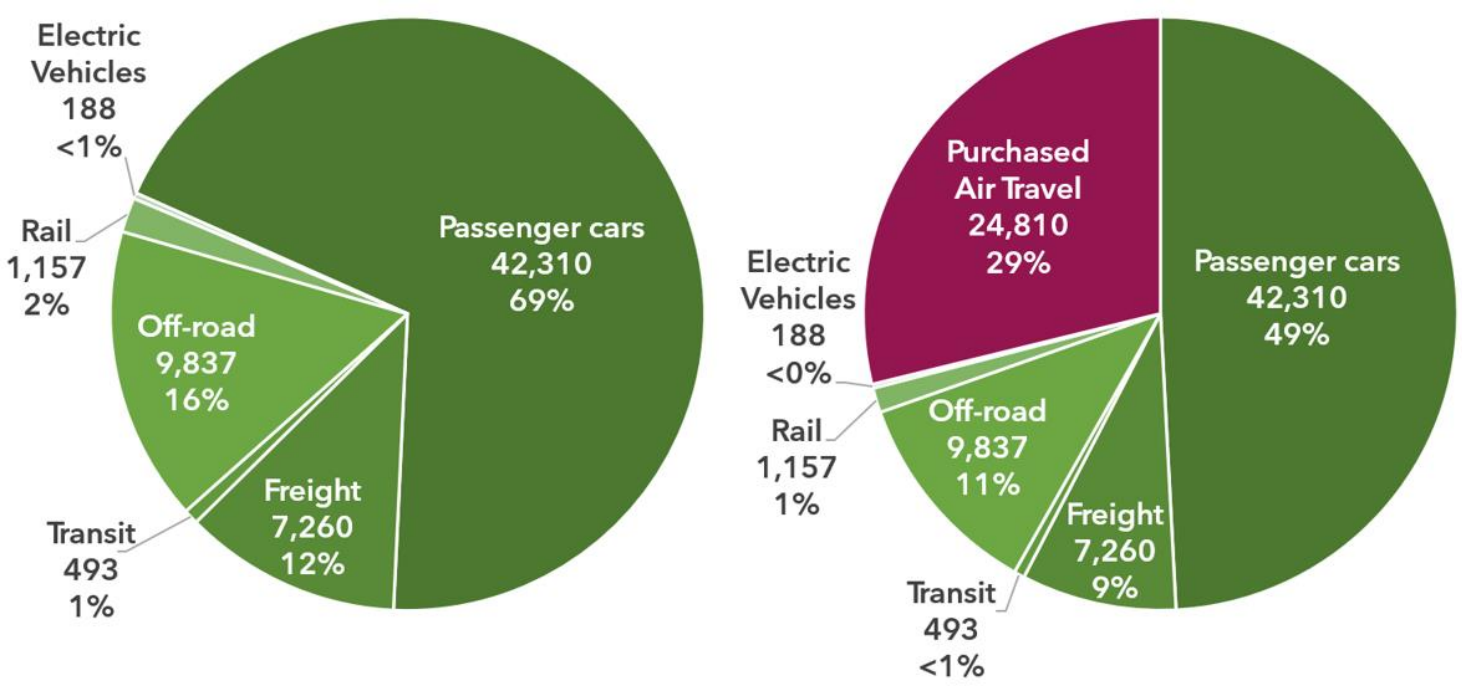
- Consumption of **goods** is largest source of imported emissions
- Followed by **food production** and **food production**

GHG Emissions by Sector – Building Energy

- **Electricity** is largest source of building energy emissions
- **Natural gas** is the second largest
- **Other fuels** include propane and fuel oil



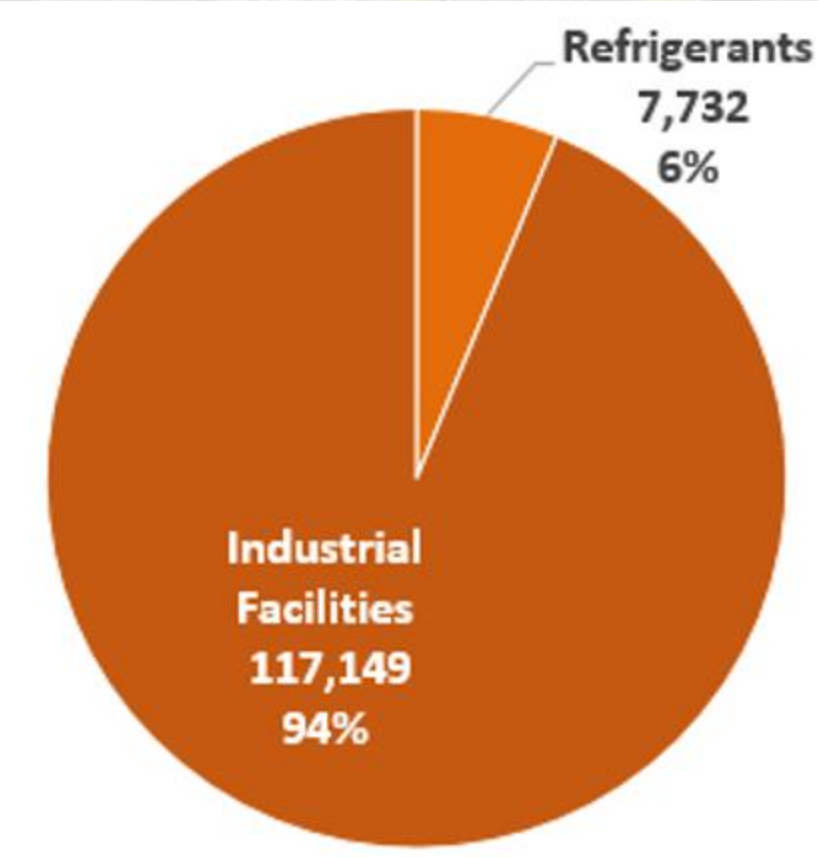
GHG Emissions by Sector – Transportation



- The largest contributor to transportation emissions is **gasoline**, followed by **purchased air travel** and **diesel**

GHG Emissions by Sector – IPPU

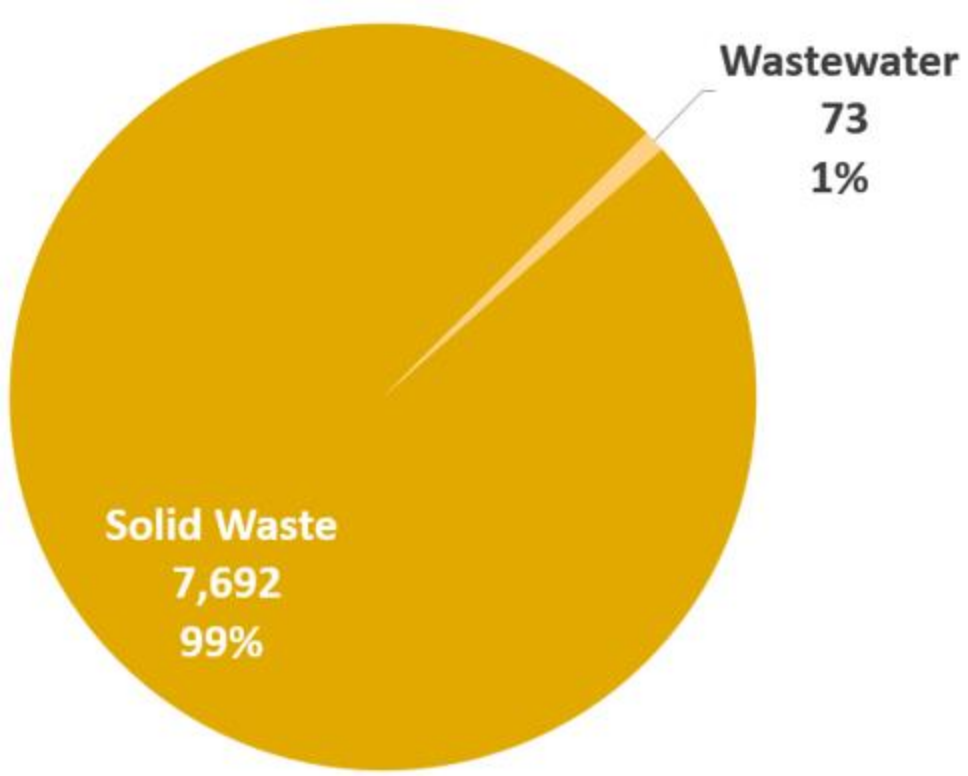
Industrial Process & Product Use (IPPU) Emissions



- **IPPU** are non-energy sources of emissions, and are a large source of emissions for Camas
- Specialized fugitive gases from **industrial facilities** contributed the largest share of emissions
- These gases are potent GHGs, up to 23,500 times that of CO_2

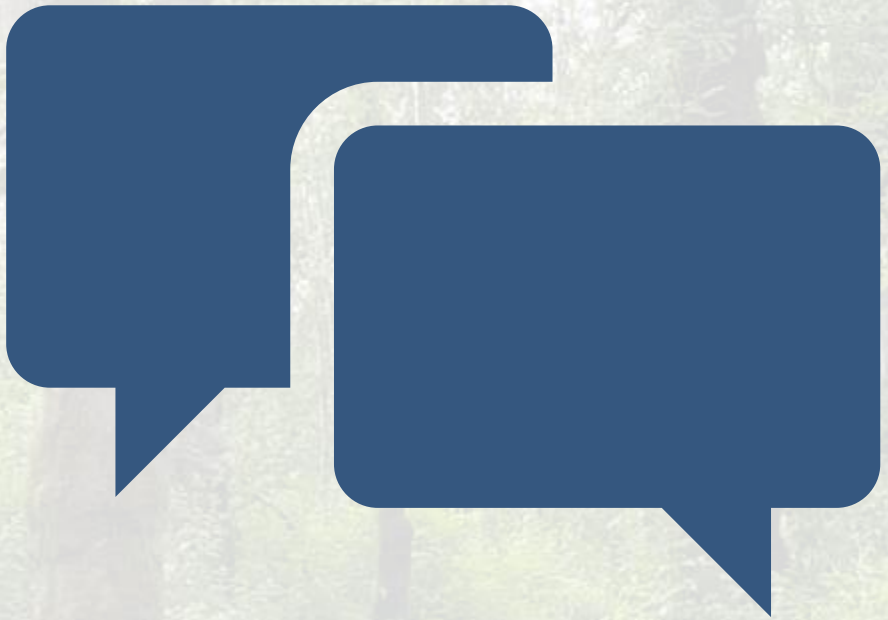
GHG Emissions by Sector – Waste & Wastewater

Solid Waste & Wastewater Emissions



- **Waste and wastewater** is a small source of emissions
- **Solid waste** is the largest portion
- **Central wastewater** is a small source of emissions in this category

Questions



Claudia Denton, GHG Lead

Parametrix

Climate Hazards in Camas

Probability: The likelihood a hazard will occur in the future.

Magnitude: The degree of impact or loss expected (informed by vulnerability).

- Cost of damage, response or recovery
- Number of people, structures or other assets impacted
- Severity of disruption (i.e., availability of alternatives)

Hazard Ranking: **High**

Extreme Heat

Annual days with a humidex** over 90°F

+42 days by 2050

+63 days by 2080

More hot days in summer will increase the risk of heat-related illness and may disrupt daily activities. Heat is expected to increase demand for water and electricity (air conditioning).

**Humidex is how hot it feels based on temperature and humidity

Hazard Ranking: **Low**

Drought

Late summer precipitation (Jul 15 - Sept 15)

−14% by 2050

−28% by 2080

Less rain in summer means less water will be available for human use when demand is high. This will also impact wildlife by reducing the amount of water in lakes and streams.

Hazard Ranking: **Medium**

Wildfires & Smoke

Annual days with high fire danger

+9 days by 2050

Not Available by 2080

Hotter, drier conditions increase the potential for wildfires, which may burn near populated areas, causing evacuations and property damage. Wildfire smoke can damage human health and disrupt daily activities.

Hazard Ranking: **High**

Extreme Precipitation

Total annual precipitation

+12% by 2050

+17% by 2080

Heavy rains can overwhelm drainage systems, collapse roadways, make driving unsafe, and lead to landslides and floods. Rainstorms may bring strong winds that down trees or powerlines. Though less rain is expected in summer, more is expected in other seasons.

Hazard Ranking: **Medium**

Flooding

Peak streamflow in the Washougal River

+17% by 2050

+19% by 2080

Heavy rains cause flooding that may inundate homes, businesses, roads, and agricultural areas, leading to costly property damage and health impacts. Stream/river flooding can harm salmon and other aquatic species, create streambank erosion, and damage the quality of wildlife habitat.

Hazard Ranking: **Medium**

Landslides

Intensity of heavy precipitation events

+13% by 2050

+24% by 2080

Heavy precipitation increases the risk of landslides by saturating the ground and loosening soil. Landslides damage natural areas, buildings, and infrastructure in their path. Debris may block roads, pollute waterways, and displace people living nearby.

Vulnerability & Risk Assessment

- Consider the vulnerability (sensitivity and adaptive capacity) of local assets to assess risk.
  - Sensitivity concerns the potential degree of impact to an asset.
  - Adaptive capacity concerns the ability of an asset to adapt to a hazard.
  - Risk includes the future probability and magnitude of a hazard.
- Identify which assets are more vulnerable to certain climate hazards and policies that will improve resiliency.

Identifying Assets in Camas

- Camas must develop at least one climate resilience goal and supportive policy for each of the 11 climate sectors:

  - Agriculture & Food Systems
  - Buildings & Energy
  - Cultural Resources & Practices
  - Economic Development
  - Ecosystems
  - Emergency Management
  - Health & Well-being
  - Transportation
  - Waste Management
  - Water Resources
  - Zoning & Development

Vulnerable Assets in Camas

Discussion: Which assets in Camas should be prioritized in the resiliency sub-element of the comprehensive plan?

Identify your **top 1-2** asset/hazard pairings and share with the group.

- *Example: Drought will affect Camas' tree canopy.*

Are there policies that could improve the resiliency of the asset to the hazard?

- *Example: Encourage the use of tree species that are drought resistant.*

Next Steps

- Community Summit #2 to review land use alternatives
  - Tuesday, October 22nd from 4:30-6:30 PM
  - Fire Station 42 (4321 NW Parker St)
- Complete focused Vulnerability and Risk Assessment (Oct. 31, 2024)

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