

AUSTIN CLIMATE EQUITY PLAN



Carbon Footprint Update

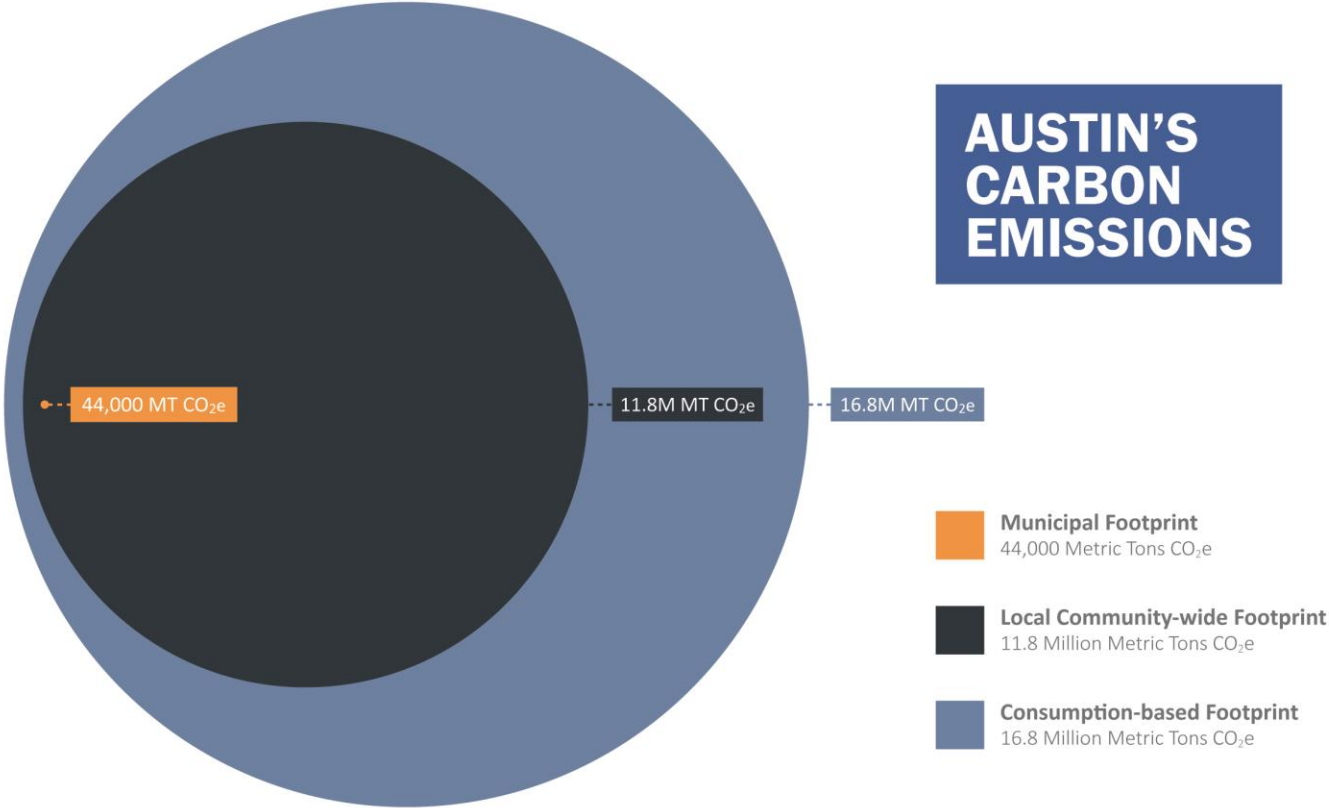
September 2023



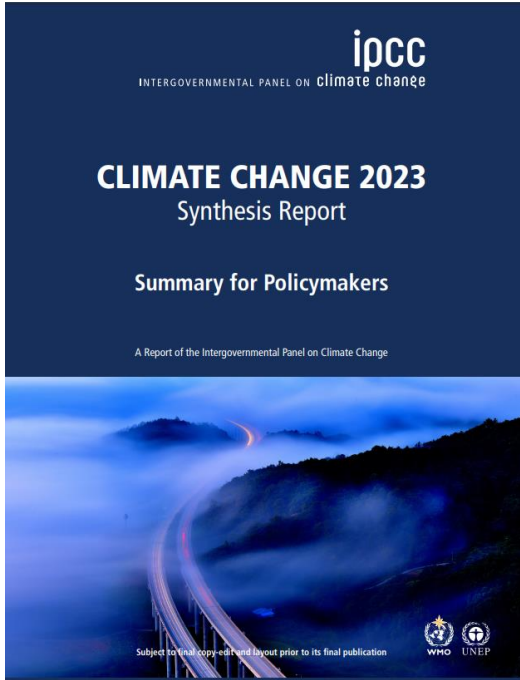
OFFICE OF
SUSTAINABILITY

CITY OF AUSTIN

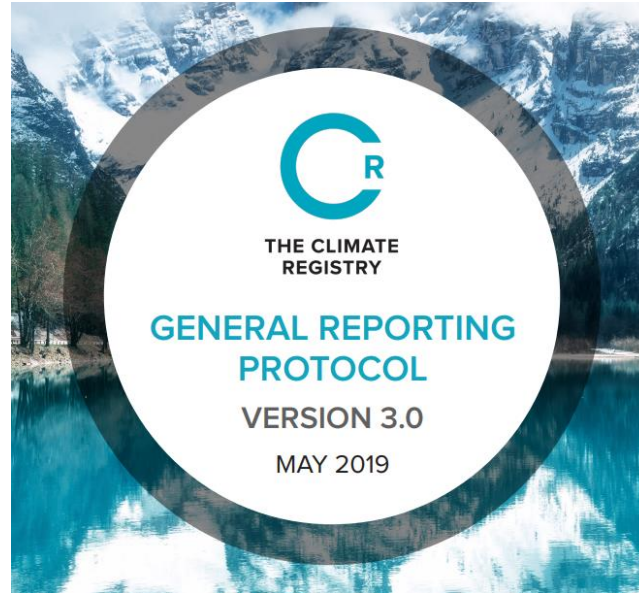
Austin's Carbon Emissions



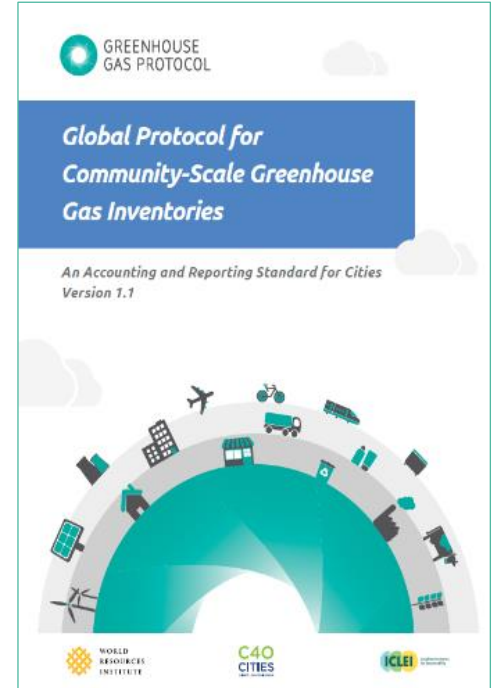
Carbon Accounting Protocols



International leader on climate science



For organizations like COA, CapMetro



For communities, like the Austin area

Carbon Emission “Scopes”



1

“BURN”

Fuels you burn directly

Transportation fuel

Water and space heating fuel



2

“BUY”

Indirect offsite emissions

Electricity

District Energy



3

“BEYOND”

Everything else

Production and delivery of goods
and services

Can occur anywhere in the world

Hard to measure

Traditional Carbon Footprint

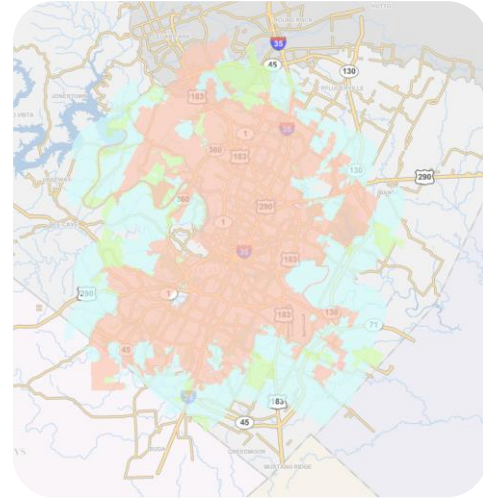
Carbon Footprint Boundaries

City of Austin Daily Operations



Municipal Carbon Footprint

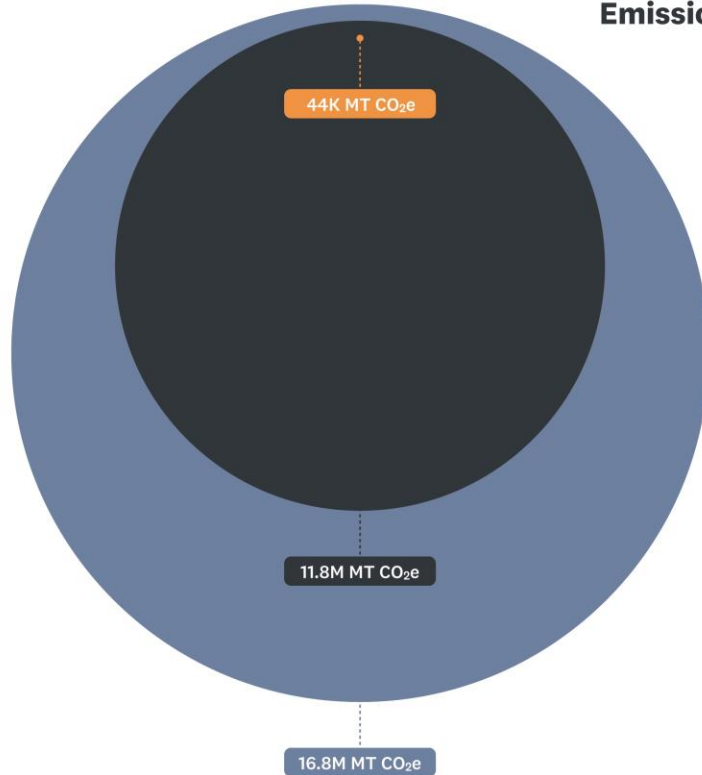
Austin Extra-territorial Jurisdiction



Community-wide Carbon Footprint

Austin's Carbon Emissions

Austin's Carbon Emissions



Municipal Footprint

44,000 Metric Tons CO₂e

Emissions released from the day-to-day operations of the City government, including our fleet vehicles and the energy used in our buildings.

Local Community-wide Footprint



11.8 Million Metric Tons CO₂e

Emissions from across the community and released locally in Austin. This includes emissions from powering all residential and commercial buildings, transportation in Austin, and waste.

Consumption-based Footprint

16.8 Million Metric Tons CO₂e

Emissions from the production and delivery of all the goods and services consumed in Austin. Emissions may not directly happen in Austin but can occur anywhere in the world, for example, a factory overseas.

City of Austin Municipal Footprint

Boundary



City of Austin Daily Operations

Sources

Electricity



GreenChoice
Energy since 2012

Natural Gas



Space and water
heating

District Energy



City Hall, Central
Library, Austin
Convention Center

City Vehicles



Fleet, emergency
aircraft, mileage
reimbursements

Refrigerants



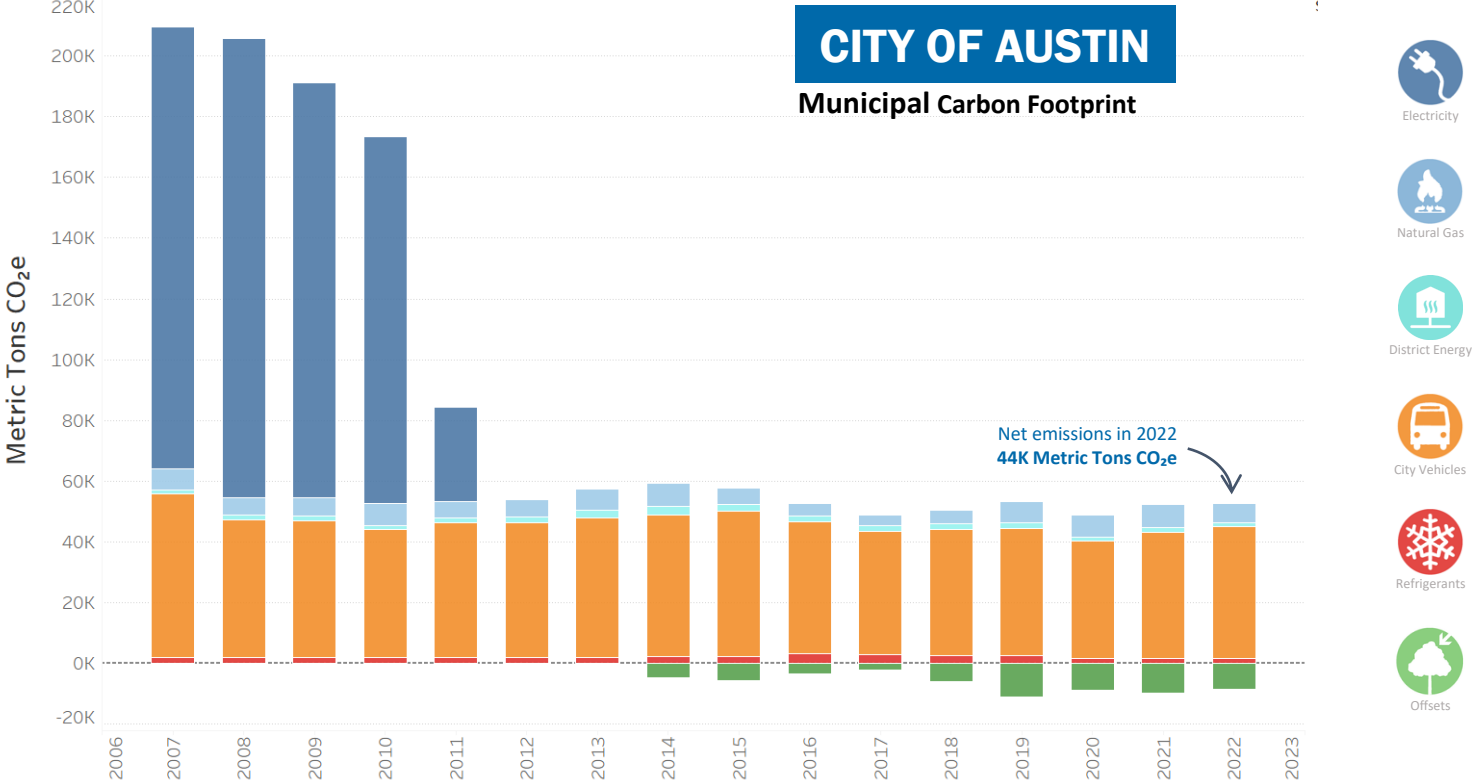
Estimate based on
fleet and facility
purchase orders

Carbon Offsets

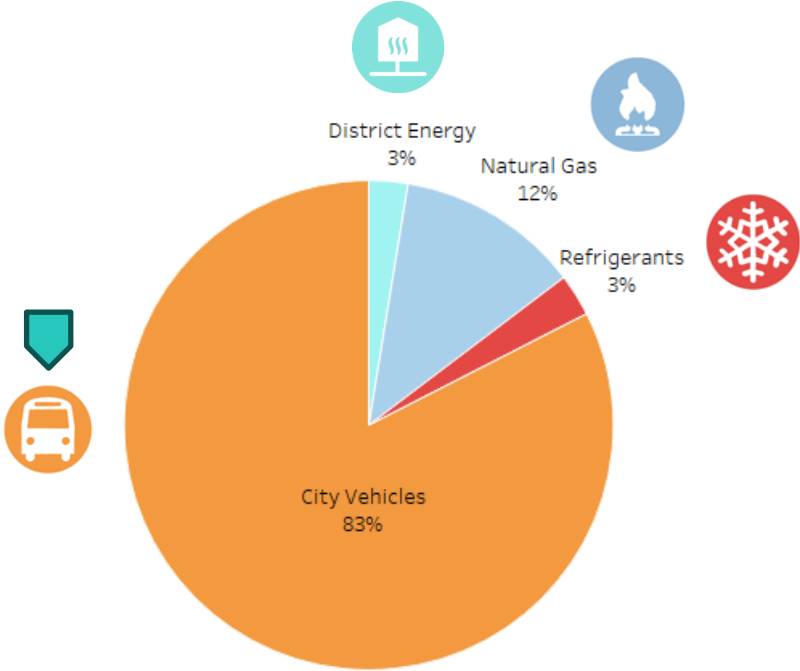


Local tree plantings,
Airport and
Convention Center

City of Austin Municipal Footprint



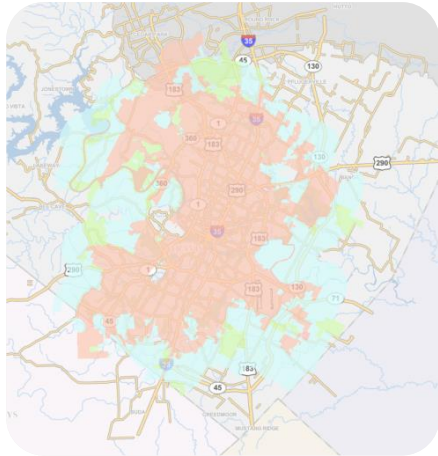
City of Austin Municipal Footprint



2022 Net Emissions: 44k metric tons CO₂e

Local Community-wide Footprint

Boundary



Austin Extra-territorial Jurisdiction

If the emissions occur here, we try to capture them

Sources

Electricity



Austin Energy

Natural Gas



Texas Gas Service,
Atmos Energy, UT
Power Plant

Transportation



Google EIE, Red
Line and freight, in-
boundary aviation

Refrigerants



Community-wide
estimate based on
population

Industrial



Semi-conductor
manufacturing,
other processes

Waste

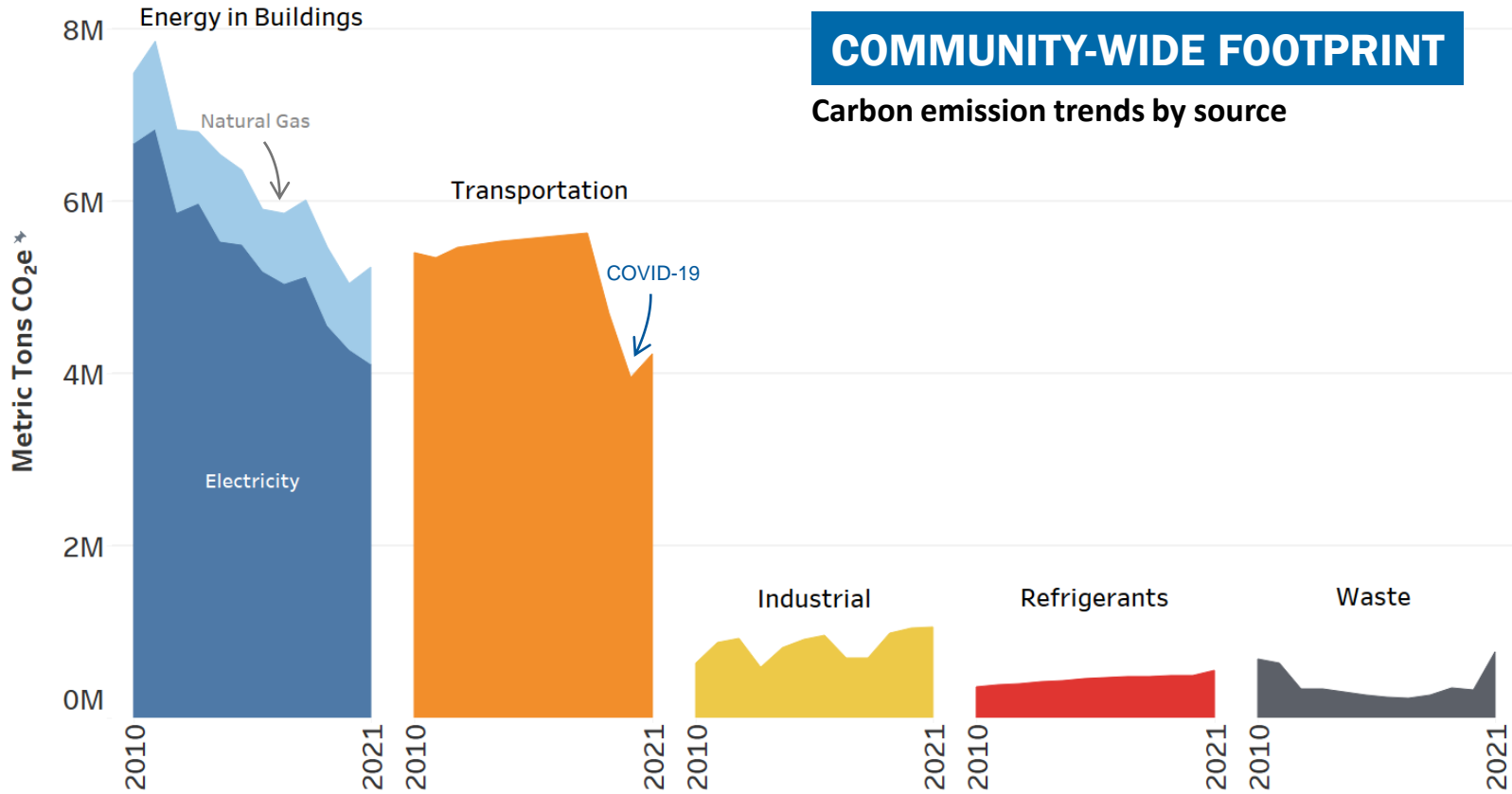


Austin Water
wastewater, local
landfills, flaring

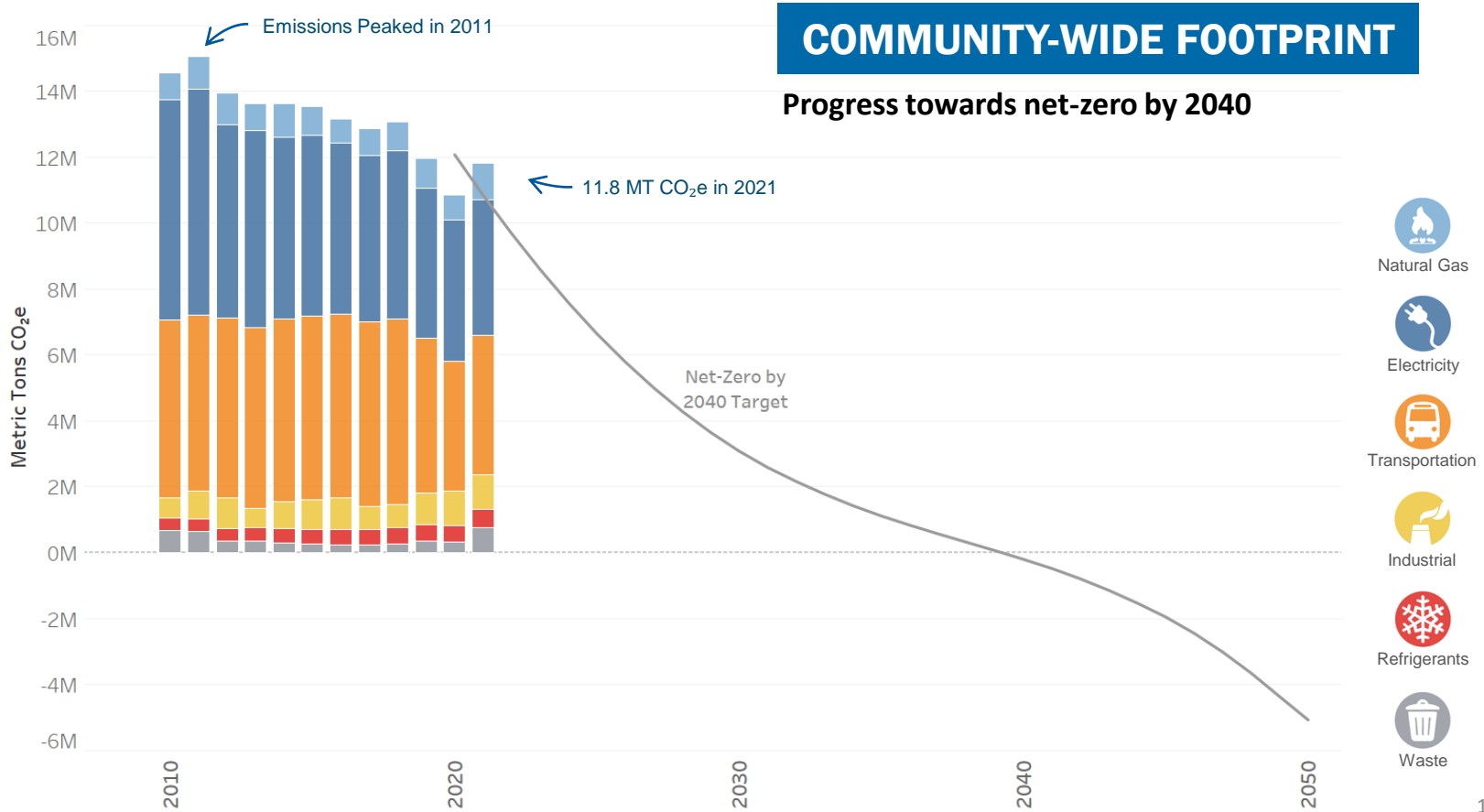
Local Community-wide Footprint

COMMUNITY-WIDE FOOTPRINT

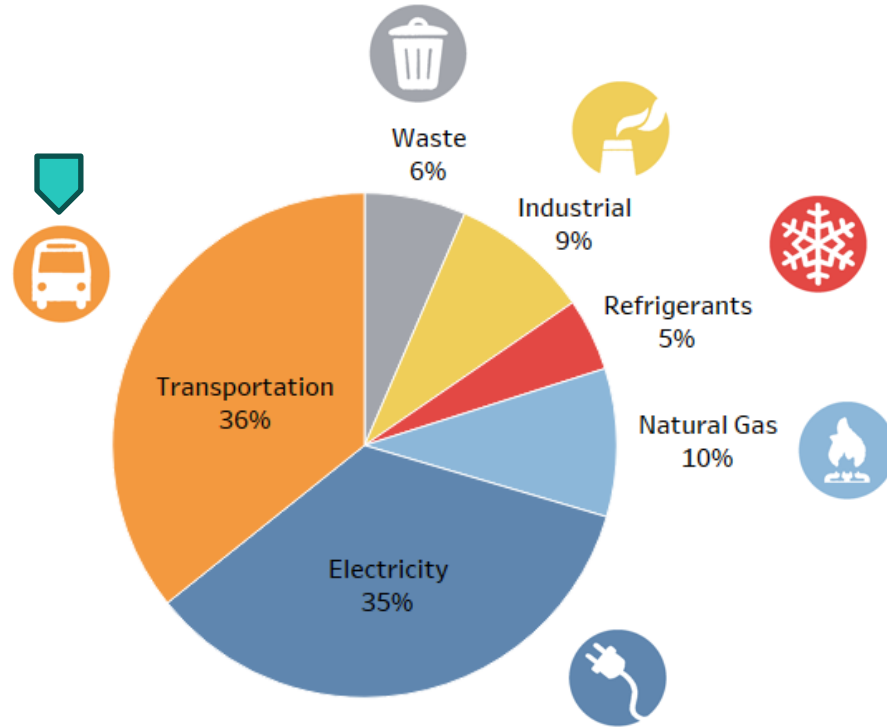
Carbon emission trends by source



Local Community-wide Footprint



Local Community-wide Footprint



2021: 11.8 million metric tons CO₂e

Consumption-based Footprint



1

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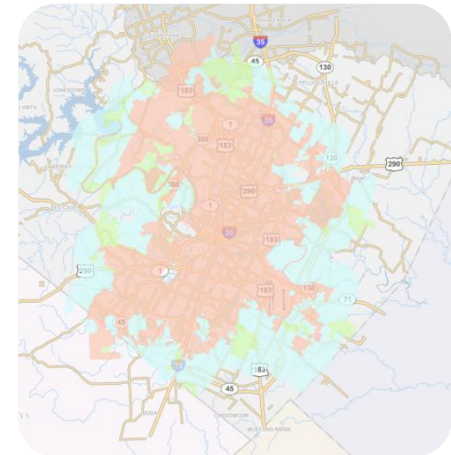
Hard to measure

Consumption-Based Footprint

What is a consumption-based emissions inventory?

Our consumption-based emissions inventory (CBEI) is an estimate of the greenhouse gas emissions from the production and delivery of the goods and services used by the entire community.

Sources like utilities and transportation overlap with the Local Community-wide Inventory – food, other goods, and non-utility services are additional.



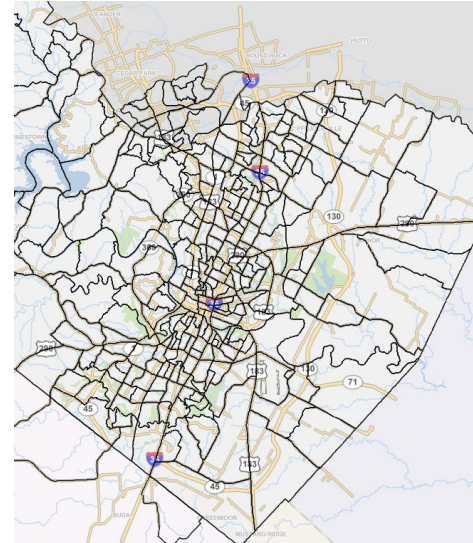
Austin Extra-territorial Jurisdiction

If the end-use (consumption) happens by an Austinite, we try estimate emissions associated with the production and delivery

Consumption-based Footprint

Table 2. Range of average household characteristics (by census tract)

Household Characteristic	Austin Minimum	Austin Maximum
Average Income	\$22,100	\$219,200
Vehicle Ownership	1	2.58
Household Size (occupants)	1.43	4.1
Home Size (rooms)	2.64	9.27
Home Ownership	1%	100%
Educational Attainment (college degree)	5%	96%



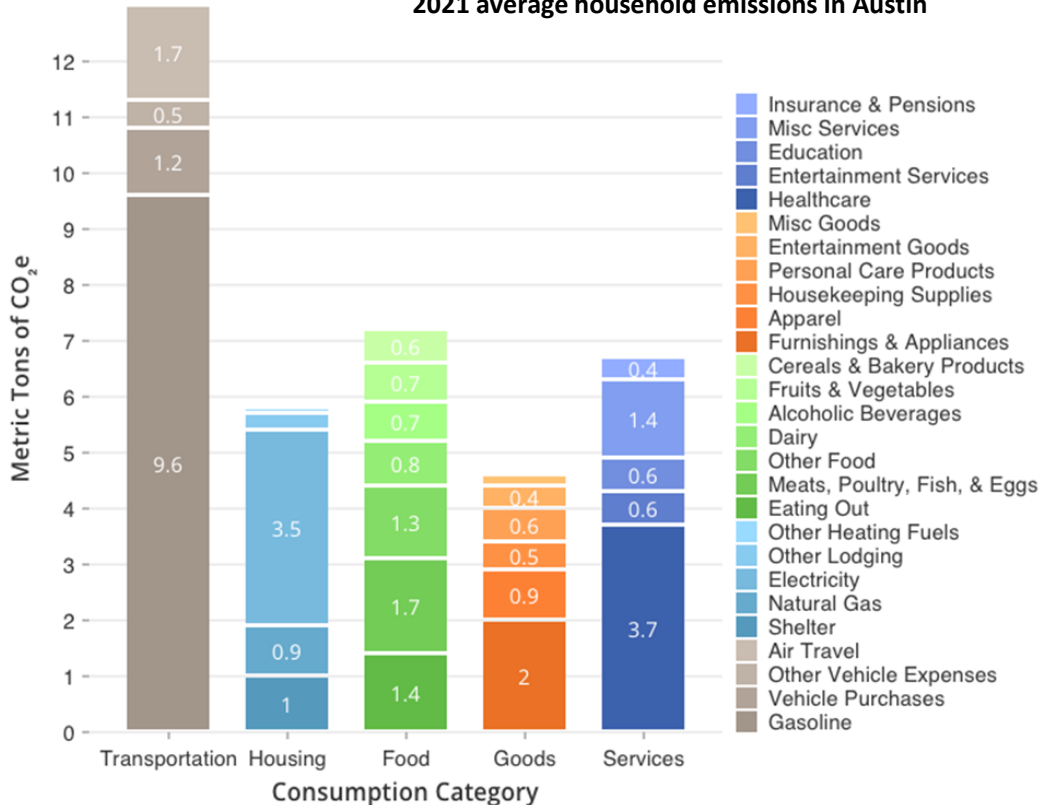
How it works:

1. Determine average household for every Census tract in Austin (US Census, ACS)
2. Use a model (like the Consumer Expenditures Survey) to estimate how households spend money, based on above characteristics
3. Calculate emissions using EPA's Input/Output Model
4. Refine using localized data (electricity source, types of vehicles on the road, other utilities)

Consumption-based Footprint

CONSUMPTION-BASED FOOTPRINT

2021 average household emissions in Austin



In 2021, consumption patterns of all Austinites led to

16.8M metric tons CO₂e

*37 MT CO₂e per household on average
450,000 households in Austin*

Other takeaways:

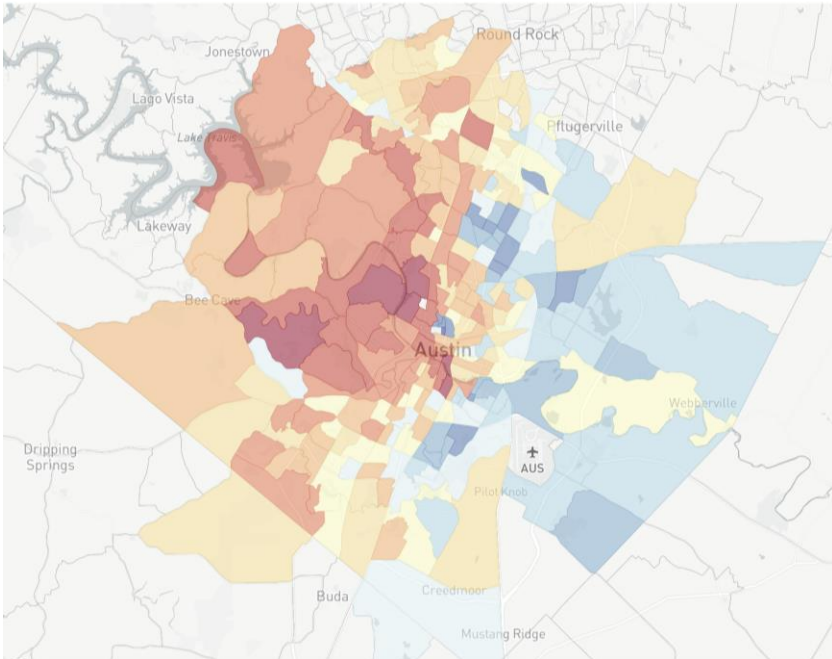
- **40% greater** than the Local Community-wide Footprint
- **Transportation** is still the largest emitter, mostly from gasoline
- **Food** production and distribution is the second largest source (20%)
- **Healthcare** accounts for more than half of emissions from the services category
- **Trending downward** mostly due to decarbonization of our electricity

Consumption-based Footprint

CONSUMPTION-BASED FOOTPRINT

Emissions per resident in Austin

Metric tons CO₂e per resident

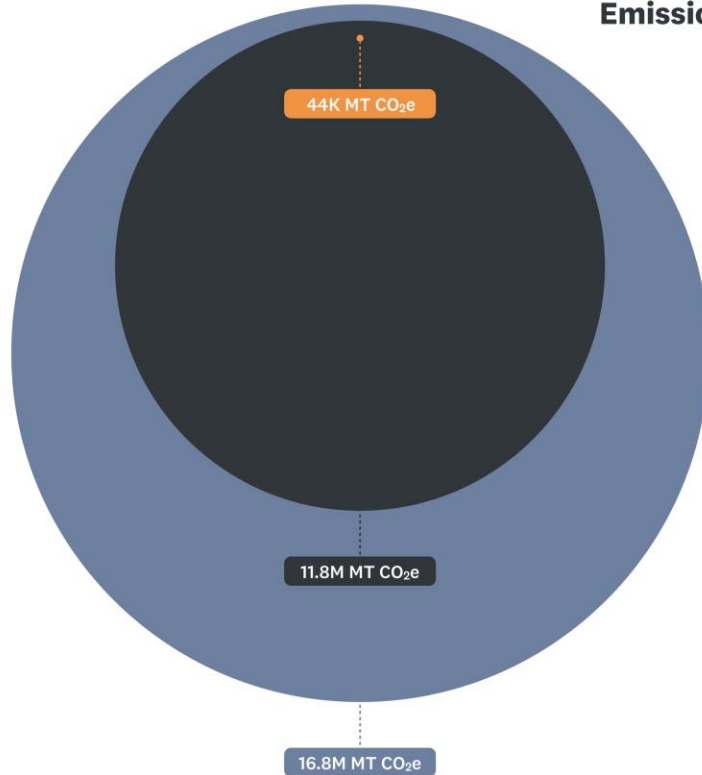


Mapping emissions per resident using localized data and demographics

- Austin remains segregated along the eastern crescent
- Residents in these neighborhoods typically have lower-income and lower educational attainment
- Carbon emissions are lower as a result
- Highest emitting households contribute 3x more than lowest emitting households

Austin's Carbon Emissions

Austin's Carbon Emissions



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Thank you!

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