Sustainability in Kansas City

Heartland AHMP

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A PROGRAM OF:

CITY OF KANSAS CITY, MISSOURI

GREEN

CLIMATE PROTECTION & RESILIENCY PLAN

Climate Action Planning in Kansas City

2008:
Climate Protection Plan

2020:
City Council directs staff to update the Climate Protection Plan to include new greenhouse gas reduction goals, resiliency, and equity

2021-2022:
Brendle & Sophic Solutions as the consultant team works with community members to build a Climate Protection & Resiliency Plan

2040:
carbon-neutral, equity-focused and resilient Kansas

What is the Kansas City Climate Protection and Resiliency Plan?

A roadmap to help the Kansas City community achieve its greenhouse gas emission reduction goals and adapt to the climate impacts we are already facing by:

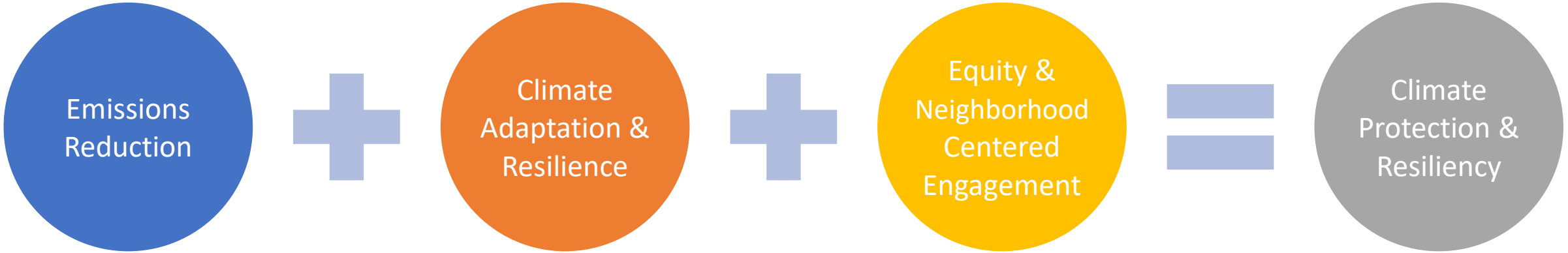
Building on existing data and regional efforts

Gaining a deeper understanding of the challenges our neighborhoods are facing

Identifying neighborhood-specific solutions

Identifying roles, responsibilities, and resources to implement those solutions

Climate Action Framework



Human intervention to reduce the human impact on the climate system.

Actions to help respond to and cope with the effects of climate change.

Working with, not for, neighborhoods to identify and prioritize climate solutions.

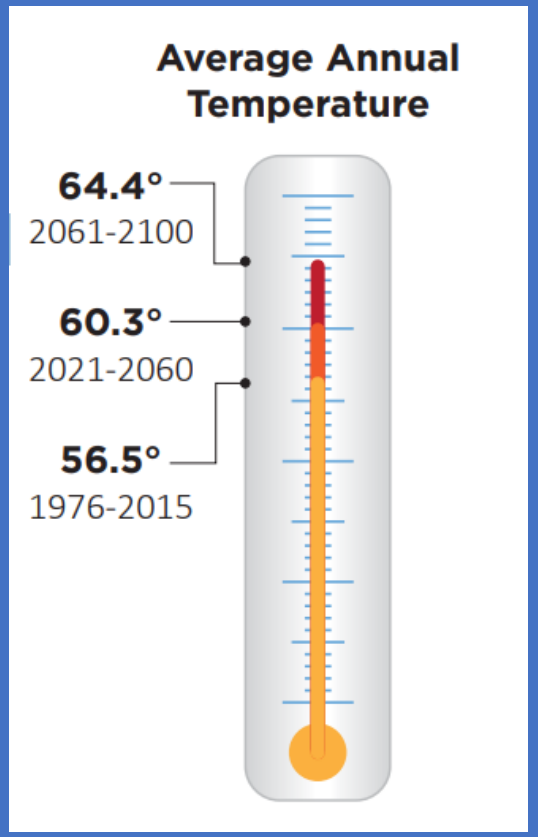
A carbon-neutral, equity-focused and resilient Kansas City

Climate Adaptation & Resilience: What Impacts are Expected?

The changes in precipitation and temperature patterns that are already being seen due to climate change will likely result in the following climate change impacts in Kansas City.

Severe Heat Events	More frequent & intense
Flooding	More severe
Climate Migration	More people displaced from their homes
Air Quality	Increased air pollutants
Disease	Increased frequency

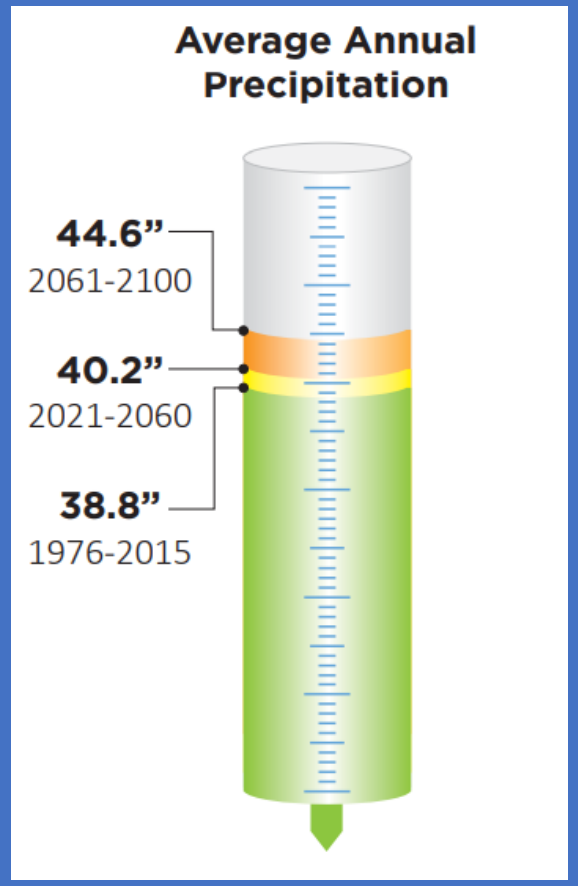
Climate Hazard: Urban Heat



- Heat waves almost every summer
- Impact of heat and humidity more severe in urban areas
- Average annual temperature increase
  - By 2050 - from 56.5°F to 60.3°F
  - By 2100 – to 64.4°F
- 2100 heat wave temperature increases
  - Daytime from 100.3°F to 111.4°
  - Nighttime from 79.8°F to 90.2°F

Sources: Understanding Long-Term Climate Changes for Kansas City, Missouri; Climate Change: Projected Impacts for Greater Kansas City (summary)

Climate Hazard: Flooding



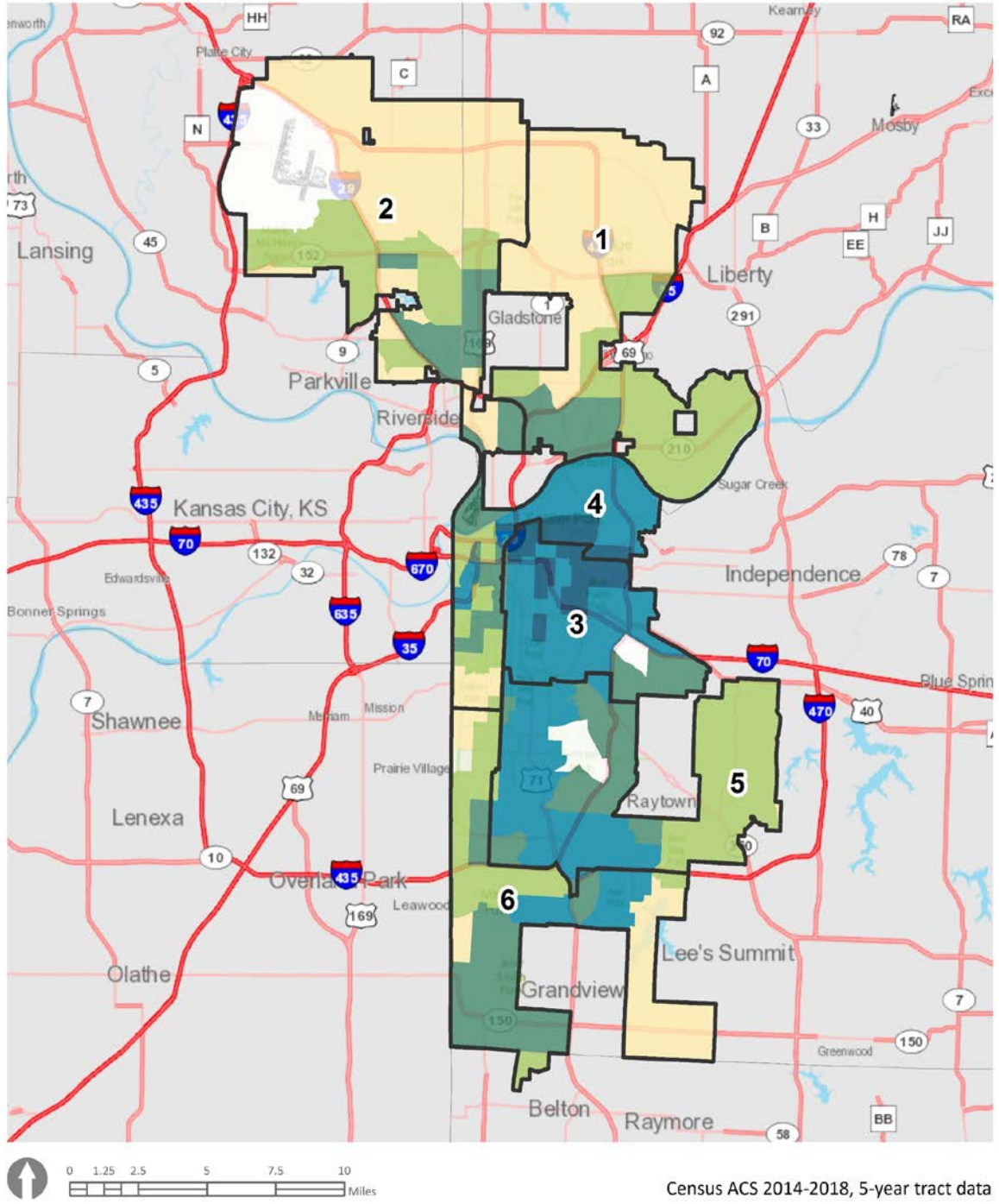
By 2100…

- Average annual precipitation will increase from 38.8" to 44.6" per year
- Maximum 1-day precipitation will increase from 3.4 to 4.0 inches
- Maximum 5-day precipitation will increase from 5.5 to 7.0 inches
- Maximum 15-day precipitation will increase from 7.5 to 10.4 inches

Sources: Understanding Long-Term Climate Changes for Kansas City, Missouri; Climate Change: Projected Impacts for Greater Kansas City (summary)

Disproportionate Impacts Related to Climate Change Impacts & Hazards

"aging and disabled communities, and Latino/Latinx and Black/AA communities, are hardest hit during these [climate] events."



Source: Mid-America Regional Council Climate Vulnerability Maps

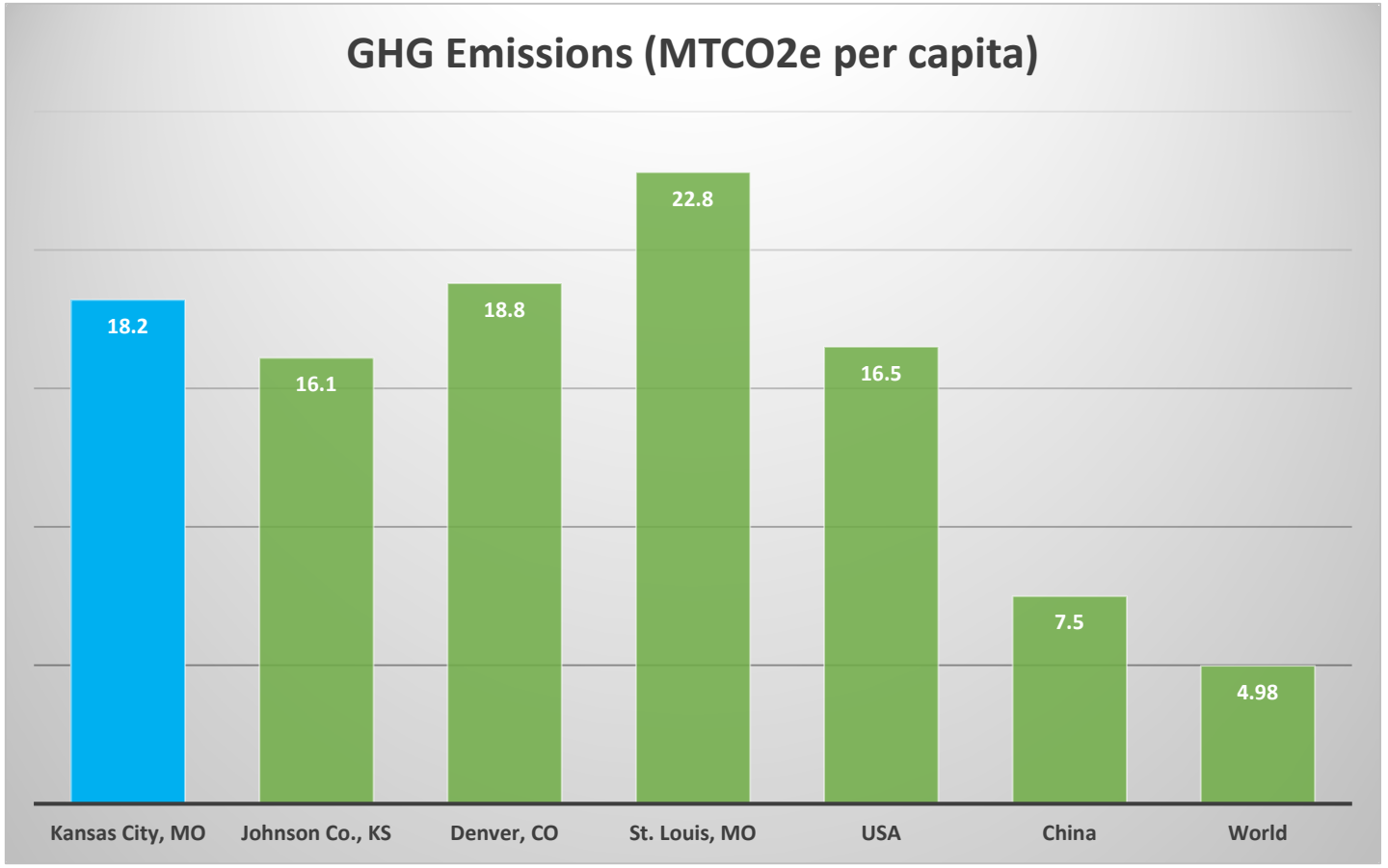
Greenhouse Gas Inventory

Kansas City's Carbon Footprint

Carbon Footprint: The total amount of greenhouse gases that are generated by our actions.

To have the best chance of avoiding a 2°C (3.6°F) rise in global temperatures, the average global carbon footprint needs to drop to under 2 tons per person per year by 2050.

As of 2017, Kansas City was at 18.2 tons per person, per year.

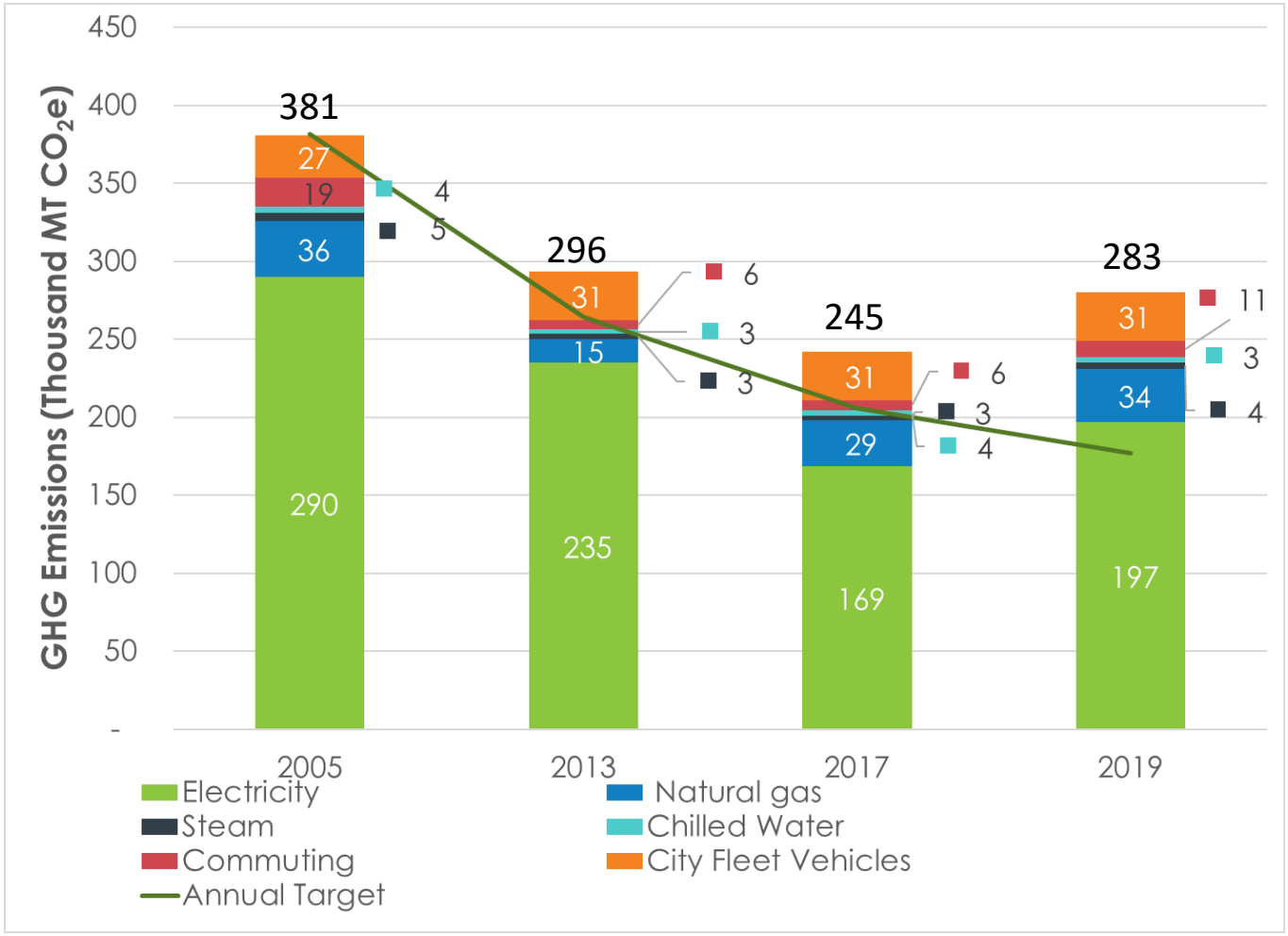


Source: KCMO 2017 GHG Inventory and Worldbank.org

Resolution No. 200005
Emission Reduction Goals

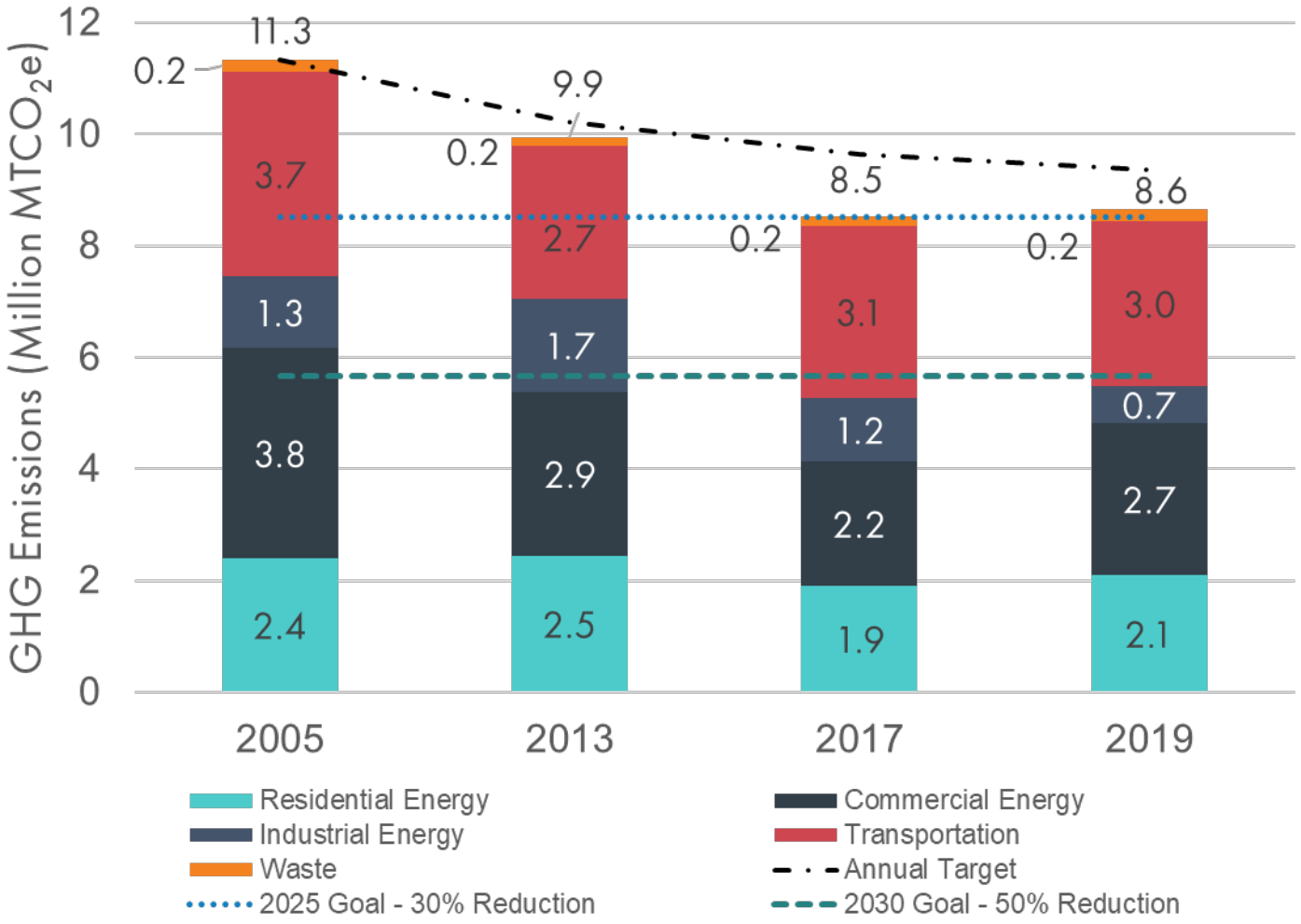
	2022	2025	2030	2040
Community Emissions		30% reduction overall	50% reduction overall 100% reduction from electricity use	Climate neutral
Municipal Emissions	100% reduction from electricity use	70% reduction overall	Climate neutral	

Municipal GHG Emissions (2005-2019)



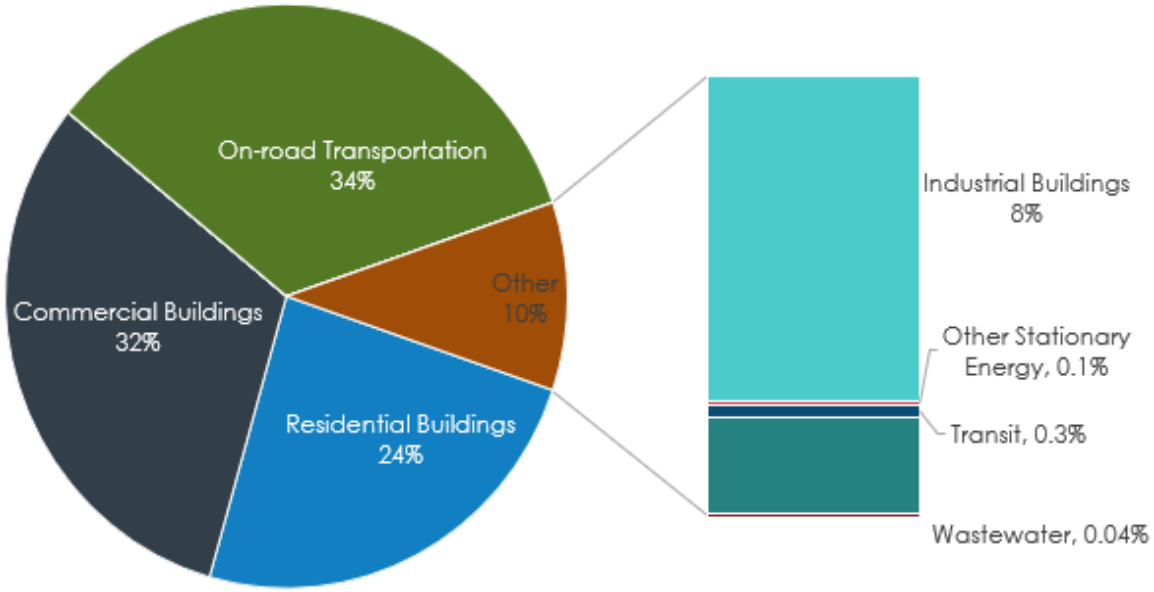
- Municipal Emissions 26% below 2005
- Significant progress needed to hit 2025 goal of 70% Reduction
  - Will meet target if goal of 100% electricity from renewable energy is met.
- Commuting emissions dropped 42% though they have increased since 2017.
- Emissions from fleet vehicles have increased since 2005.

GHG Emissions in Kansas City (2005-2019)



- 24% reduction in GHG emissions from 2005 to 2019
- On track to hit 2025 goals.
- Largest emissions source shifted from commercial energy to transportation
- Significant sources of emissions reduction:
  - Electricity generation shifting to cleaner sources
  - Reduction in industrial emissions
  - Transportation emissions decreased 5%

Where do our GHG emissions come from?



Total 2019 Emissions = 8,660,000 MTCO2e

Buildings

Transportation

Processes

Primary Areas of Action for GHG Reductions

- **Mobility**
- **Energy Supply**
- **Natural Systems**
- **Homes & Buildings**
- **Food Systems**
- **Waste**

Potential Strategies: Mobility

- Increase and target sustainable, mixed-use and mixed-income development at key activity centers and corridors where infrastructure is already in place
- Establish 15-minute neighborhoods
- Increase complete and green streets
- Expand electric vehicle charging infrastructure
- Implement EV car-sharing in low-income communities
- Electrify municipal, transit and other public fleets
- Create more protected and connected bike lanes, greenways, sidewalks and electric bike and scooter share systems
- Encourage a shift to other modes of transportation through parking policy
- Redesign and upgrade critical and vulnerable infrastructure
- Use technology to monitor integrity of transportation infrastructure and relay real-time data to ensure responsiveness and limit disruptions to users

Source: 2021 Climate Action Plan, Climate Action KC

Potential Strategies: Energy Supply

- Expand wind energy production
- Expand utility-owned solar farms
- Build sustainable community and neighborhood energy generation
- Expand corporate, industrial and institutional solar energy generation
- Increase incentives and eliminate barriers for residential solar energy production
- Implement grid flexibility and smart grid strategies
- Utility-scale and distributed energy storage
- Increase power outage resilience

Source: 2021 Climate Action Plan, Climate Action KC

Potential Strategies: Natural Systems

- Conserve and restore the region's urban forests
- Conserve and restore the region's riparian (or streamside) corridors
- Implement heat island mitigation strategies
- Become a net zero community through urban- and landscape-scale sequestration projects
- Incentivize use of green development practices

Source: 2021 Climate Action Plan, Climate Action KC

Potential Strategies: Homes & Buildings

- Develop and employ a building performance standard beginning with energy benchmarking, and adopt commercial energy efficiency programming and incentives
- Certify every public building for Energy Star or LEED
- Implement energy efficiency and renewable energy strategies at schools, universities, nonprofit organizations and libraries
- Leverage the Climate Action KC Regional Building Energy Exchange
- Maximize savings through energy efficiency and healthy home programs
- Embed energy efficiency and durability in affordable housing efforts
- Expand water use efficiency program

Source: 2021 Climate Action Plan, Climate Action KC

Potential Strategies: Food Systems

- Redirect quality, edible food to local food recovery programs
- Implement a voluntary carbon offset pilot program to incentivize carbon sequestration on farms and ranches in our region
- Support farmers and ranchers with resources to ease the transition to agriculture practices that provide environmental services and that slow/prevent climate change
- Expand market demand for local food
- Scale up local food production to respond to increasing demand for local food
- Increase the number of neighborhood urban farms, gardens and orchards
- Facilitate updates to zoning codes, building codes and animal regulations to allow for urban agriculture
- Expand participation in programs that increase local food access for low- and moderate-income people

Source: 2021 Climate Action Plan, Climate Action KC

Potential Strategies: Waste

- Reduce waste
- Increase recycling
- Divert organic waste from landfill disposal through composting
- Reduce food waste from landfill disposal
- Green the supply chain using recycled and other environmentally preferable products and services
- Promote recycling education and advocacy programs
- Install, expand and maintain landfill gas collection systems
- Beneficially reuse landfill gas

Source: 2021 Climate Action Plan, Climate Action KC

What are we doing now - Renewables

Solar Generating Capacity - Installation of sixty 25 kW solar panel installations on rooftops of 58 City buildings totaling 1.5 MW capacity

KCI Solar Energy Project

Kansas City International Airport
Solar Energy Project Conceptual Rendering – Airport View

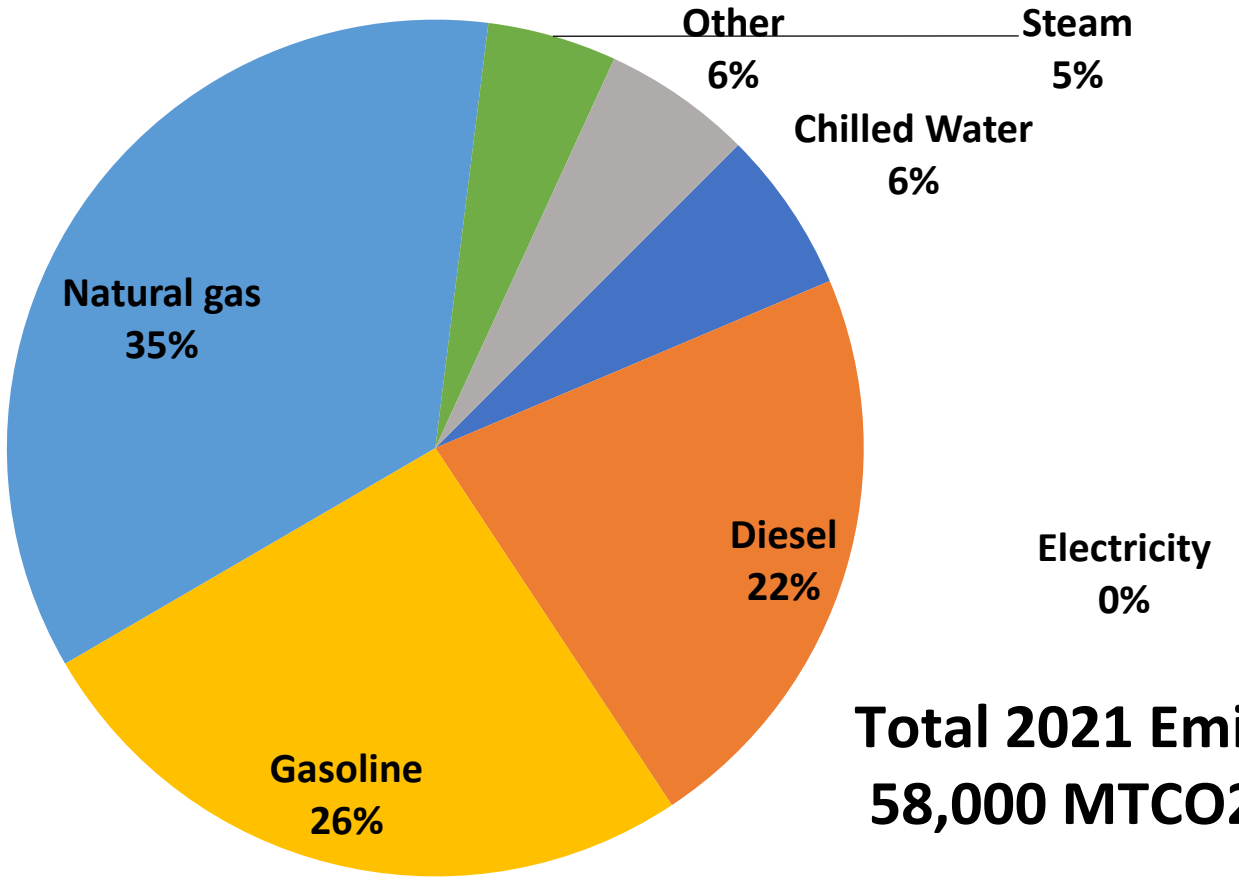
KC GREEN

Solarize KC

Renewables Direct

- Power purchase agreement with Evergy
- Cimarron Bend III Wind Resource in Clark County, KS
- 18 MW
- 19.5% electricity usage from resource; 60 % overall
- In 2021, City saved $1.9M in electricity costs for participation in program
- Waiting for resource to service the metro

What's left……



Total 2021 Emissions = 58,000 MTCO2e

Electrify the fleet….

LED Streetlight Conversion

Energy Efficiency….

Energy Efficiency Projects

- LED Lighting
- Occupancy sensors
- Variable frequency drives
- ESCO

Where do we go from here….

- Climate Resilience Plan - Implementation
- Implementation of Urban Forest Master Plan
- ENERGY STAR® Certification for eligible City buildings
- Assist utility in community solar program
- Energy Efficiency in residential and its tie in to affordable housing

In closing…..

- Look for low hanging fruit…
- Set goals/Measure your progress
- Collaborate
- Share your successes!

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