



CITY OF  
GRAND  
RAPIDS

Office of  
Sustainability

## Climate Change and Environmental Justice Work – with a Focus on Housing

Alison Waske Sutter, Sustainability and Performance Management Officer  
Affordable Housing Fund Board Meeting  
September 29, 2022

## Items to Review

- Climate change: impacts and opportunities with housing
- City's sustainability and climate change commitments and housing focused work
- Sustainability and climate change opportunities for the AHF Board

# What is climate change?

- **Climate Change**: long-term continuous increase or decrease to average weather conditions or range of weather (weather is short-term; climate is long-term)
- **Climate Change Mitigation/Decarbonization**: reducing or preventing greenhouse gases/carbon emissions
- **Climate Change Adaptation**: taking actions that reduce or prevent the harm caused by climate change
- **Environmental Justice** - all people and communities have the right to equal environmental protection under the law, and the right to live, work and play in communities that are safe, healthy, accessible, and free of life-threatening conditions.
- **Climate Justice** - a concept and movement that addresses the ethical dimensions of climate change. A shift from a discourse on greenhouse gases and melting ice caps into a civil rights movement with the people and communities most vulnerable to climate impacts at its heart.

## Existing and predicted climate changes

- Number of extreme precipitation events has increased 40%
- Total annual precipitation has increased by 16%
- The total volume of rainfall in extreme events (heaviest 1% of storms) has increased by 52%
- Total annual precipitation will likely increase in the future, through types of precipitation will vary (rain in winter)
- Increased potential for drought in future because while there will be more precipitation overall, more is anticipated to fall in shorter, extreme events.
- Average air temperature is projected to rise 3F to 5F by mid-21<sup>st</sup> century



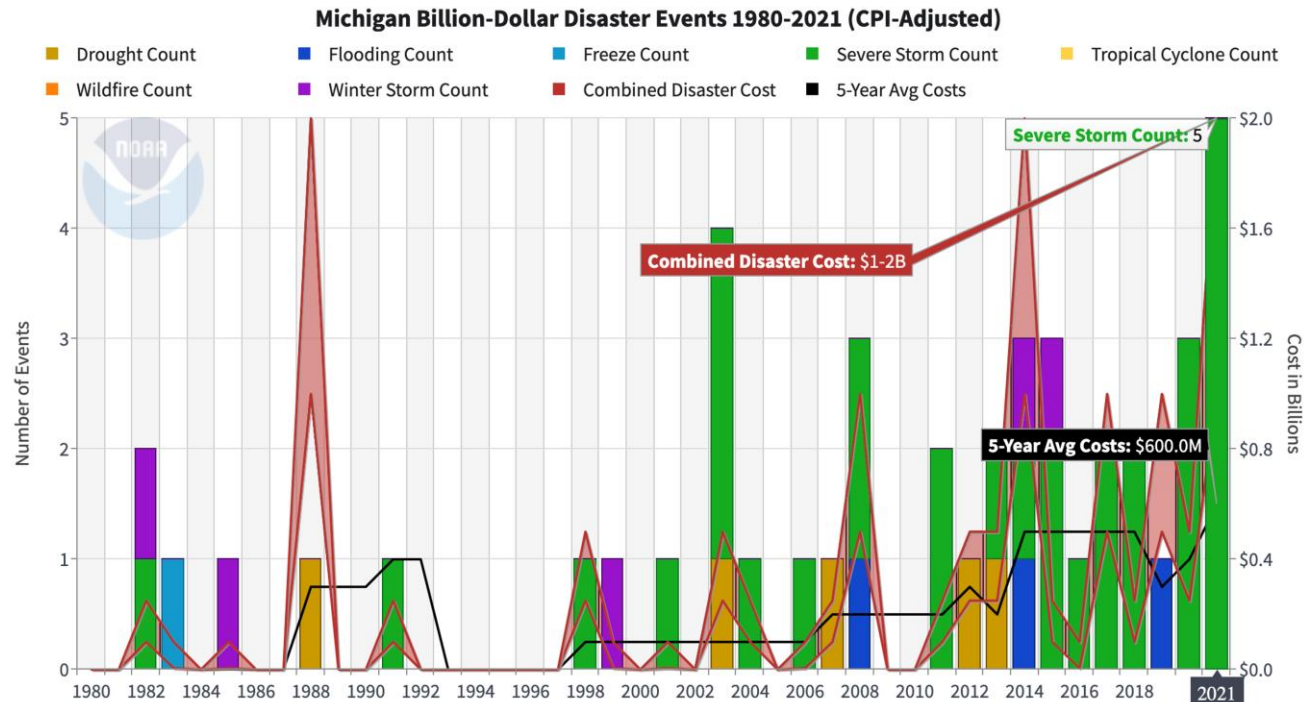
# Impacts of predicted climate change

## Health impacts

- Respiratory Conditions
- Heat Illness
- Waterborne Diseases
- Vector-borne disease
- Mental health impacts



## Billion Dollar Disasters



90%

of peoples' time is spent inside buildings



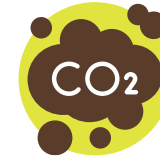
the construction and operation of buildings has a significant impact on:



affordability



community health



climate change



Black, Indigenous and People Of Color (BIPOC) are disproportionately impacted by environmental pollutants and climate change and have been under-represented in the design, regulation, and operation of buildings.

nationally, there is a shortage of more than 7 million affordable homes for our nation's 10.8 million plus extremely low-income families.

why  
focus on  
buildings?

# Climate Migration:

the movement of people due to climate or the effects of climate change.

ENVIRONMENT

## Will climate change turn Michigan into a 'climate haven'?

WOOD-TV 8

Published 3:00 p.m. ET July 7, 2021

[View Comments](#)

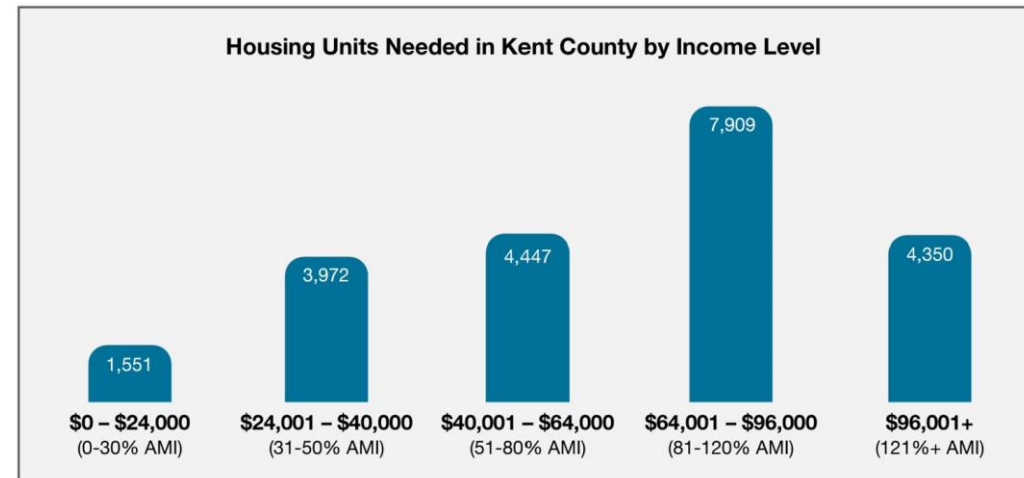


GRAND RAPIDS — Should Michigan be preparing for a mass migration of people in the future because of the effect of climate change on other parts of the country?

Experts behind one of the leading research projects are exploring the idea of “climate havens.”

Grand Rapids is primed to be a “climate haven” or safe place for people to move to with:

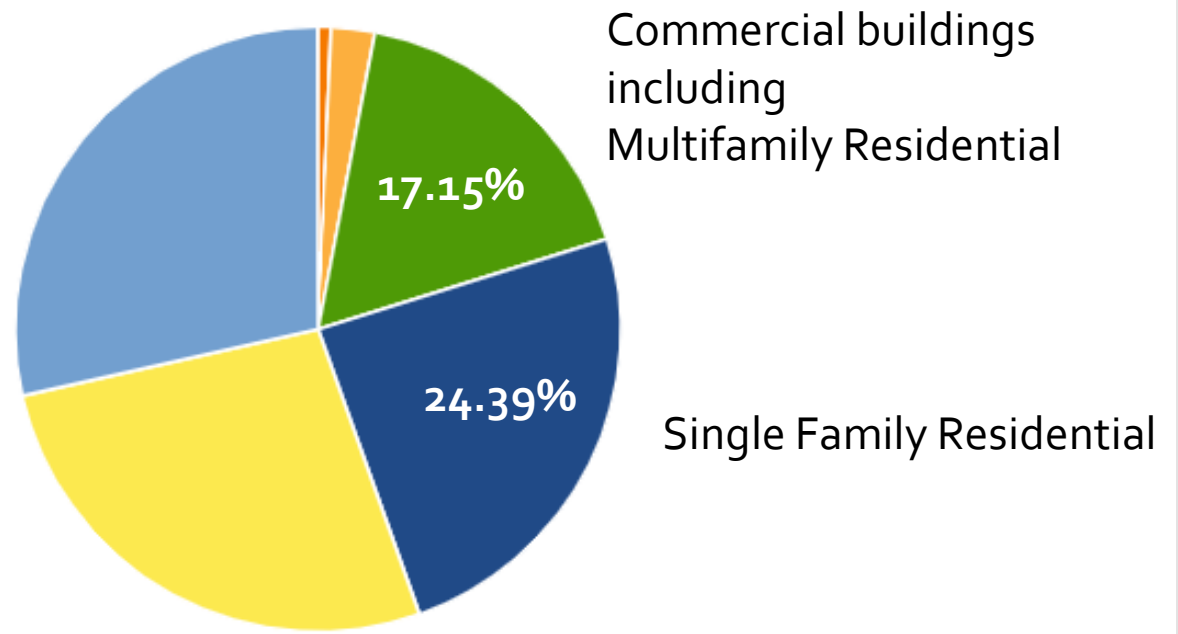
- A diverse job market
- Population growth
- Good schools
- Cultural offerings
- Comparatively moderate climate
- Access to water



Climate migration will exacerbate already existing inequities within our community (such as lack of affordable housing)— our focus is to address those inequities, and to increase quality of life and resilience of our current residents in the hopes that we will better be able to prepare for what’s to come and avoid displacement or gentrification.

# Sources of Greenhouse Gas/Carbon Emissions in our Community

## CO2e By Category



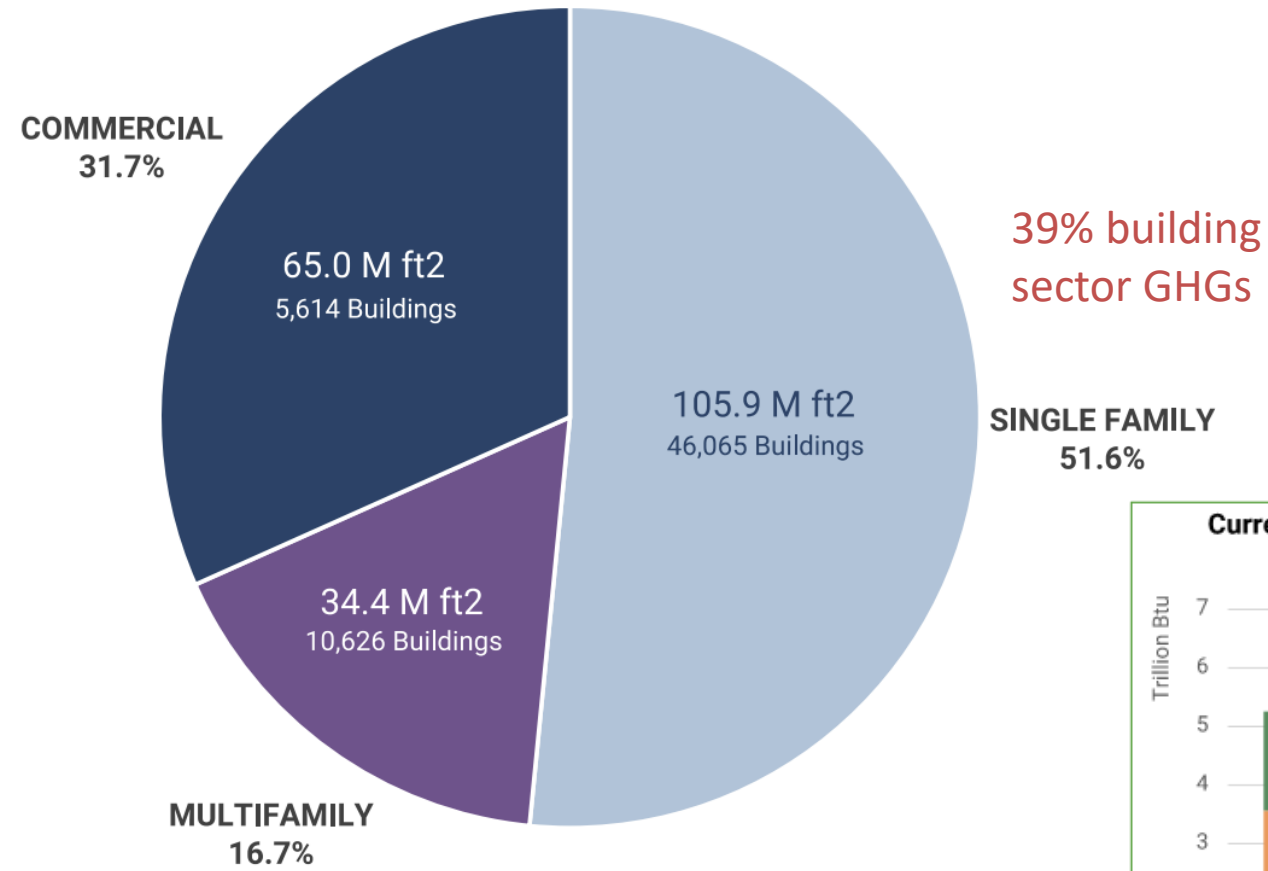
- AFOLU
- Water & Wastewater
- Solid Waste
- Commercial Energy
- Residential Energy
- Transportation & Mobile Sources
- Industrial Energy

*\*Preliminary results from communitywide emissions inventory (2019)*



# Commercial and Residential Buildings in Grand Rapids

## Current Building Area by Type

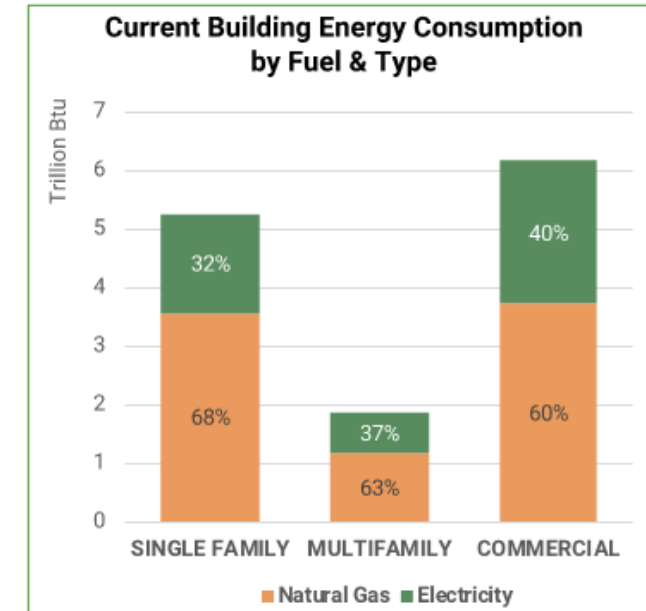


39% building sector GHGs

### Current Building Stock

**205,265,759** square feet  
**62,305** buildings

baseline  
building  
assessment  
key findings  
[building size]

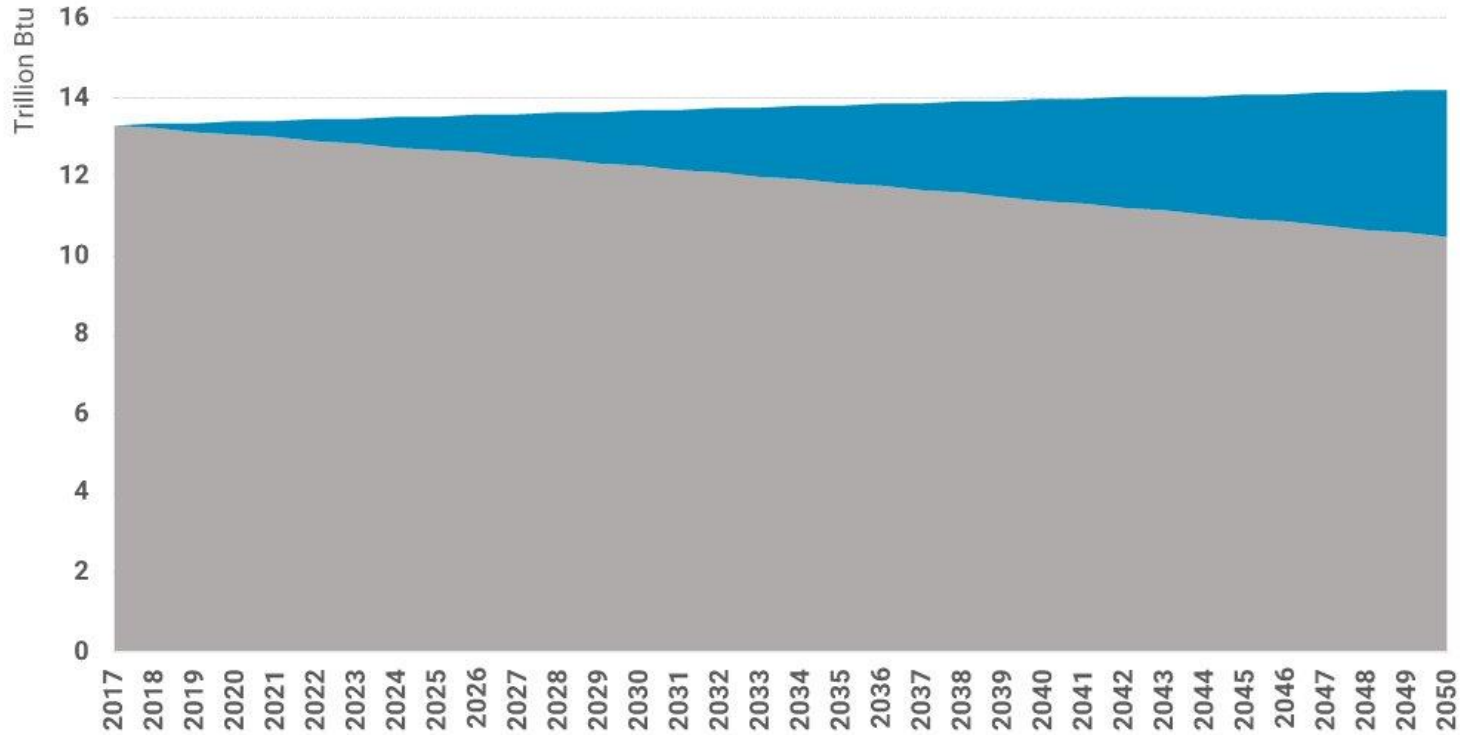


Data from Dec 2017

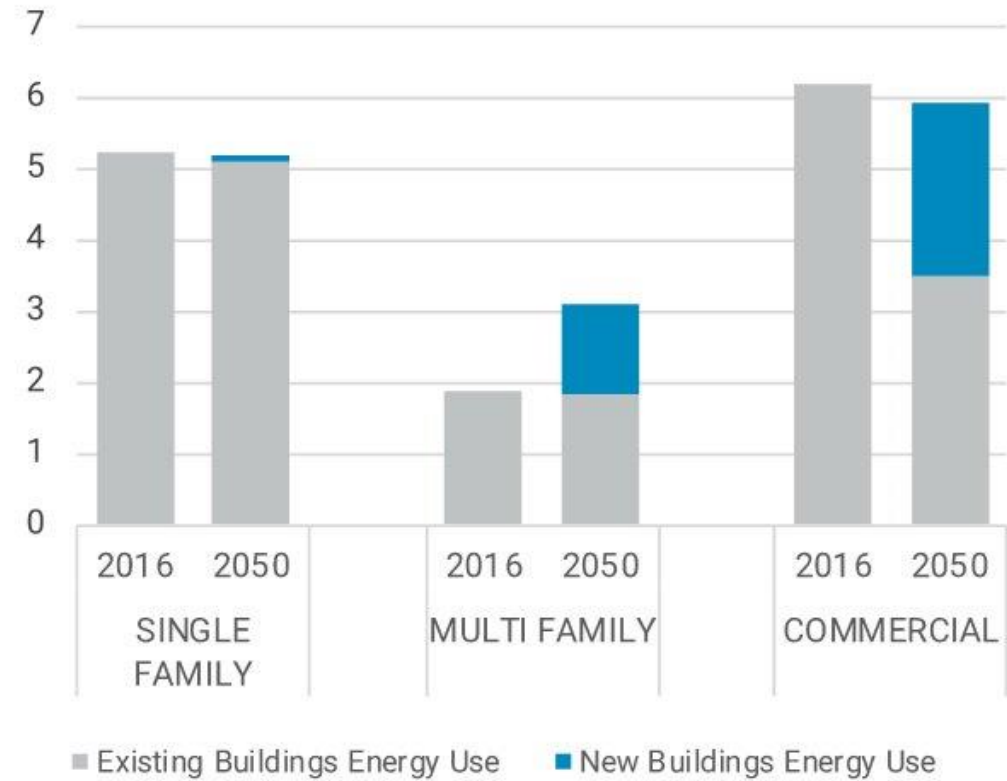
# building energy projections



**Building Energy Use Trends**



**Building Energy Use by Type**



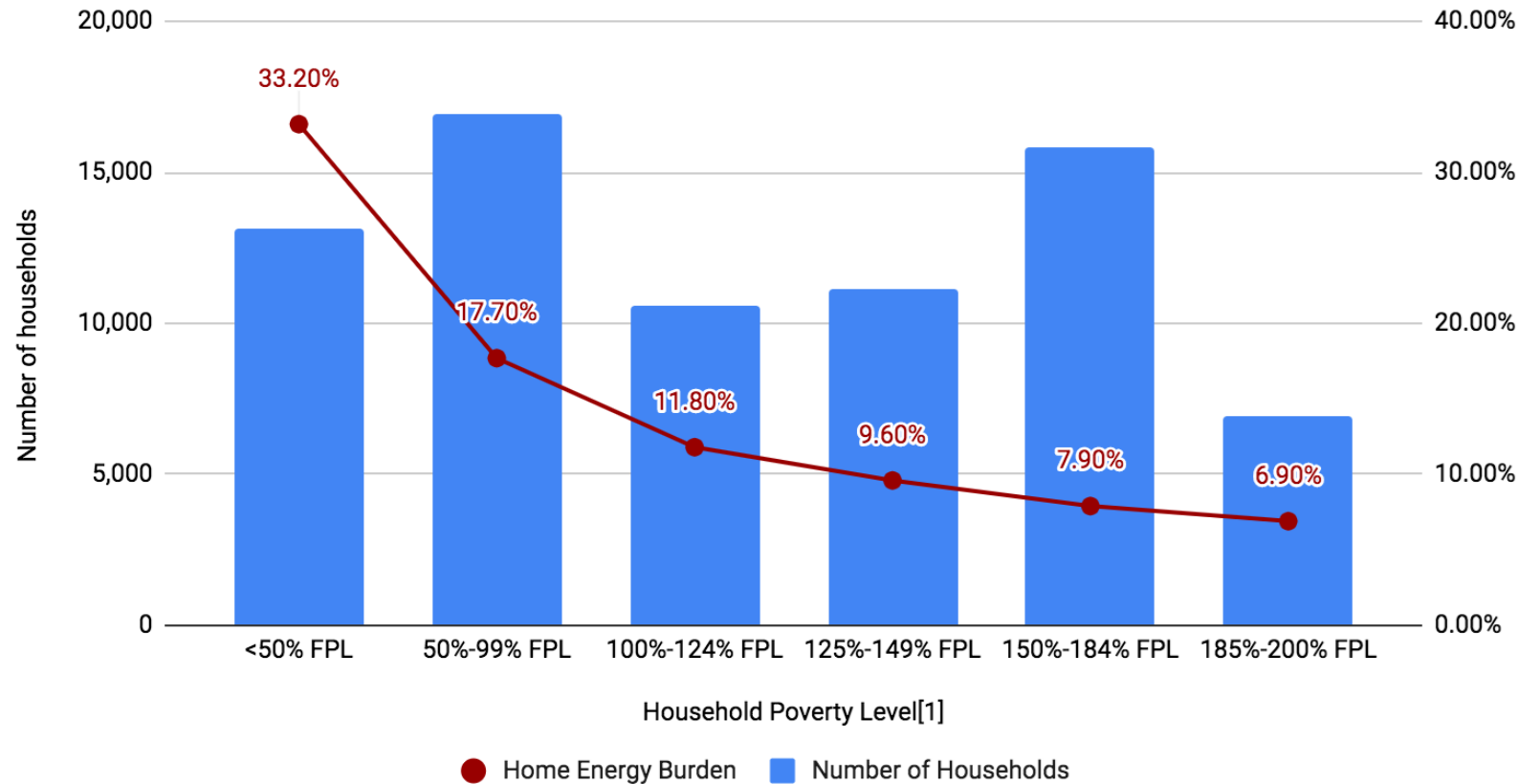
# ENERGY COST BURDEN

## Zero Cities Data



## Kent County Landscape

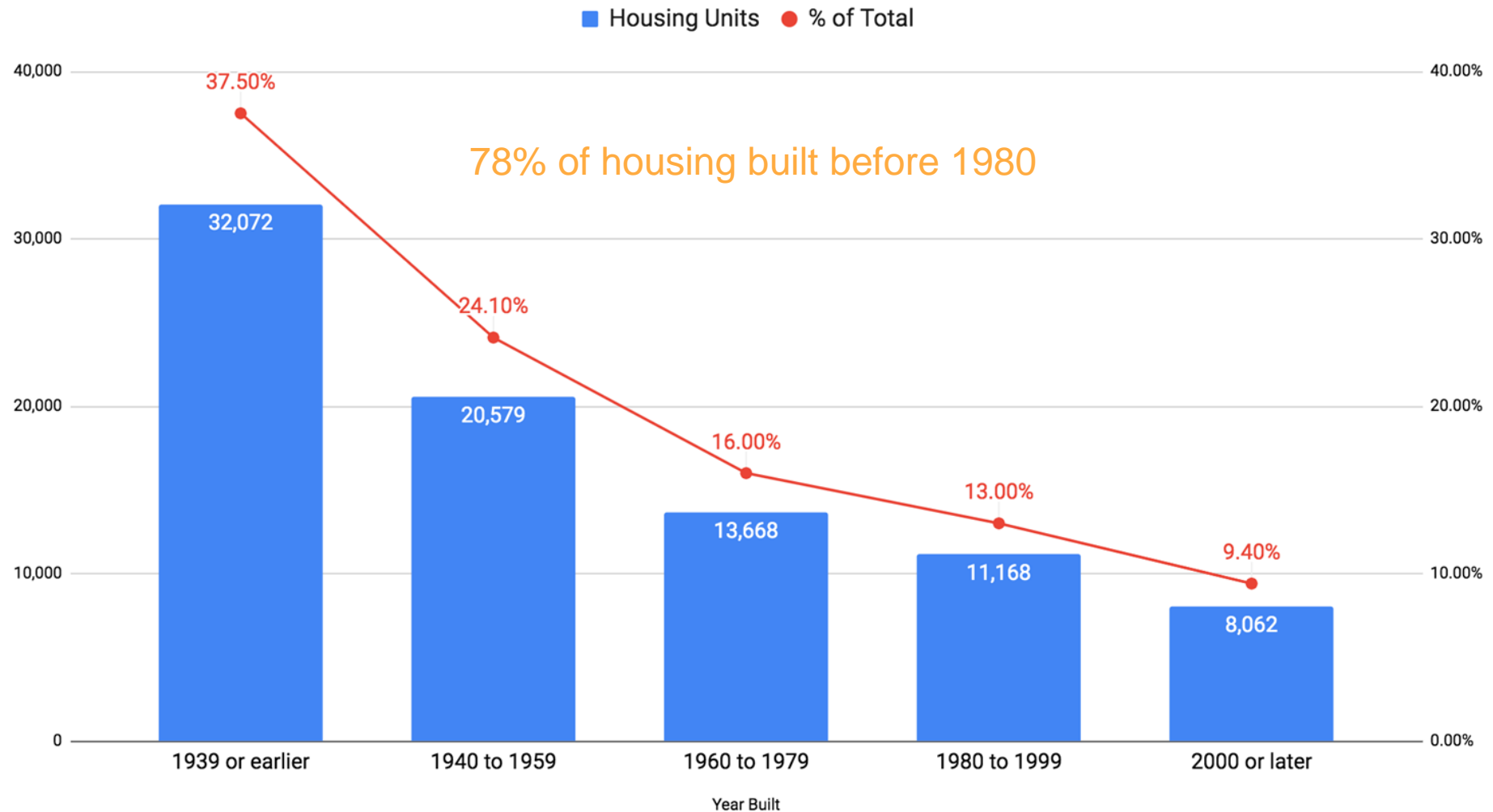
Kent County home energy burden (percent of annual income spent on home energy bills) among low income households



Source: Fisher, Sheehan, & Colton. (2019). Home Energy Affordability Gap, Michigan 2019. Retrieved from [http://www.homeenergyaffordabilitygap.com/03a\\_affordabilityData.html](http://www.homeenergyaffordabilitygap.com/03a_affordabilityData.html).

# ENERGY COST BURDEN

## Age of Housing Stock in Grand Rapids, Michigan



Source: U.S. Census Bureau. American Community Survey. (2019). Retrieved from <https://data.census.gov/cedsci/table?q=housing&g=1600000US2634000&tid=ACSDP1Y2019.DP04&hidePreview=false>

# SUBSTANDARD HOUSING AND EXPOSURE TO HEALTH RISKS

## Zero Cities Data

**4. Substandard Housing and Exposure to Health Risks**

**KEY TAKEAWAYS:** People of color are more likely to live in substandard housing that increases their exposure to health risks like mold, lead, poor indoor air quality, and airborne allergens. Investments in reducing carbon emissions from a city's building stock should consider how to also mitigate their risks.

**SUBSTANDARD HOUSING:** A 2005 study using data from the American Housing Survey illustrates the breakdowns of individuals living in moderately or severely substandard housing by race/ethnicity (see Figure 8).

The data shows that the percentage of non-Hispanic Black and Hispanic that reside in moderately substandard housing is 2 times higher than the percentage of white who live in moderately substandard housing. The percentage of people of color that live in severely substandard housing

disproportionately are tied to the conditions affecting poor, highly racially segregated neighborhoods - substandard housing, environmental hazards, and a lack of financial resources - (substandard housing on its own is often responsible for poor indoor air quality, mold, dust, and pests, which are all triggers for asthma attacks).

There are profound racial disparities in both the prevalence and impacts of asthma in the United States. African Americans, for example, not only have a higher prevalence of asthma than

**Figure 8. Prevalence of severe and moderate substandard housing by race and ethnicity.\*** (Source: American Housing Survey, 2005.)

is nearly 2 times greater than the percentage of whites.\*

**EXPOSURE TO HEALTH RISKS:** Populations in substandard housing are more likely to have environmental diseases and injuries.\* In particular, low-income communities and communities of color across the country face disproportionately higher rates of asthma than other communities. These

white; they also experience higher rates of asthma-associated morbidity and death.\*

One source of indoor air pollution with a direct connection to household energy use and emissions is the substandard fossil fuel heating appliances that are more common in low-income homes. These appliances burn natural gas, propane, oil,

and coal, increasing indoor exposure and the exacerbation of asthma. African Americans, more than any other racial or ethnic population, are more likely to live in homes with fossil fuel heating appliances that are not properly maintained as shown and described below. (Cory Moore & Ryan Kavanagh, Environmental Justice and Energy Disparities: The Impact of Environmental Risk Factors on the Modern Health Care System, in Lisa A. Cannon, Lisa M. Kelly, and J. Douglas Kruse, eds., *Environmental Justice and Public Health*, 2014.)

\* Environmental health disparities in housing: An EPA health issues report. (EPA.gov, 2012). Retrieved from <https://www.epa.gov/health-topics/environmental-health-disparities-in-housing>

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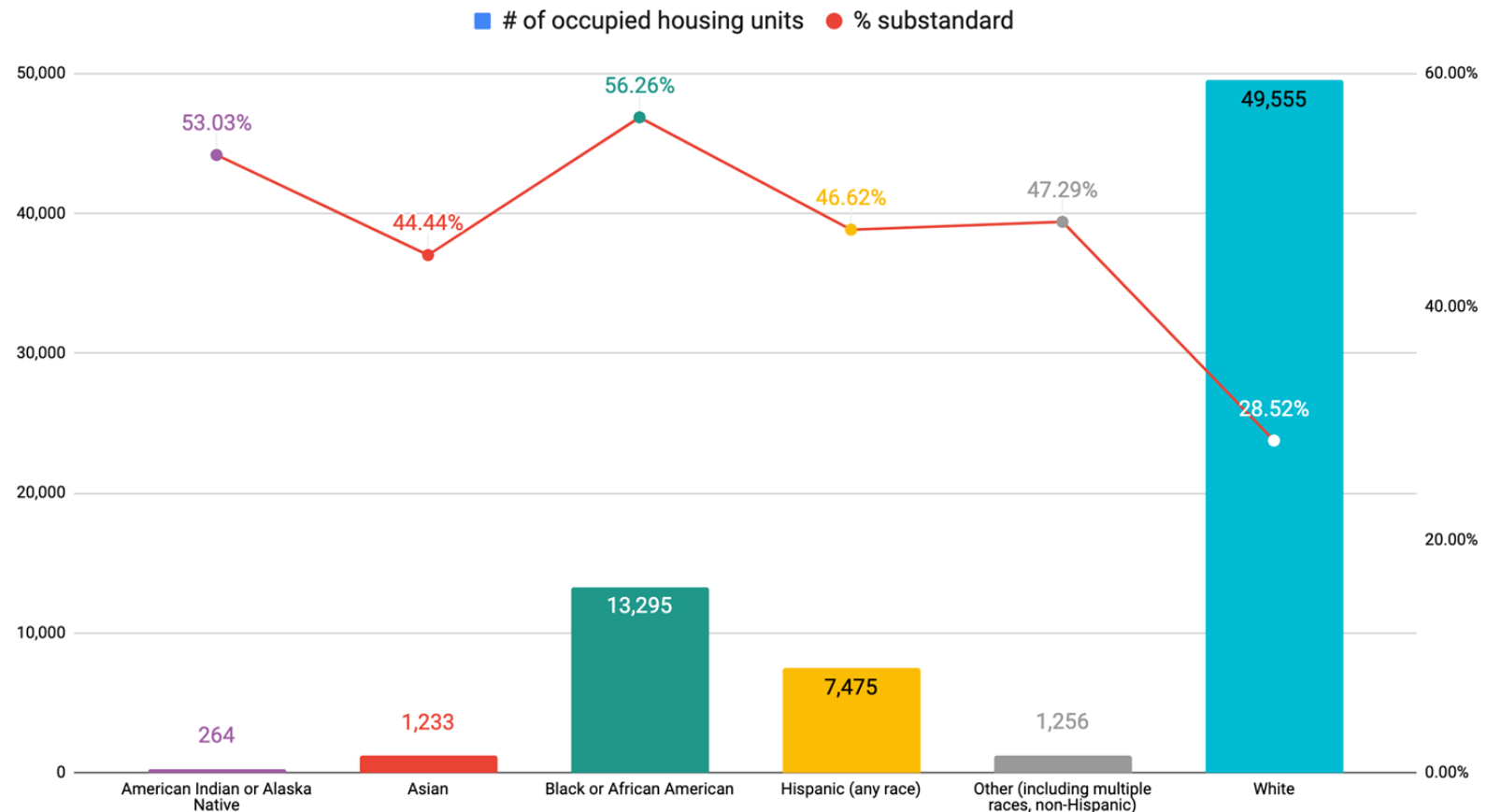
\* The Health Care in Low-Income Communities of Color Using the Law as a Tool for Promoting Public Health. (Am. U., 2014). Retrieved from <https://www.americanuniversity.edu/health-care-in-low-income-communities-of-color-using-the-law-as-a-tool-for-promoting-public-health>

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## Grand Rapids Landscape

### Prevalence of Substandard Housing



**Source:** Department of Housing and Urban Development. (2019). Comprehensive Housing Affordability Strategy (CHAS) data, 2012-2016. Retrieved from [https://www.huduser.gov/portal/datasets/cp.html#2006-2016\\_data](https://www.huduser.gov/portal/datasets/cp.html#2006-2016_data).

# URBAN HEAT ISLAND EFFECTS

**Source:** Plan-It Geo. (2015). An Assessment of Urban Tree Canopy in Grand Rapids, Michigan. <https://www.friendsofgrparks.org/wp-content/uploads/2018/10/Urban-Tree-Canopy-Assessment-2015.pdf>

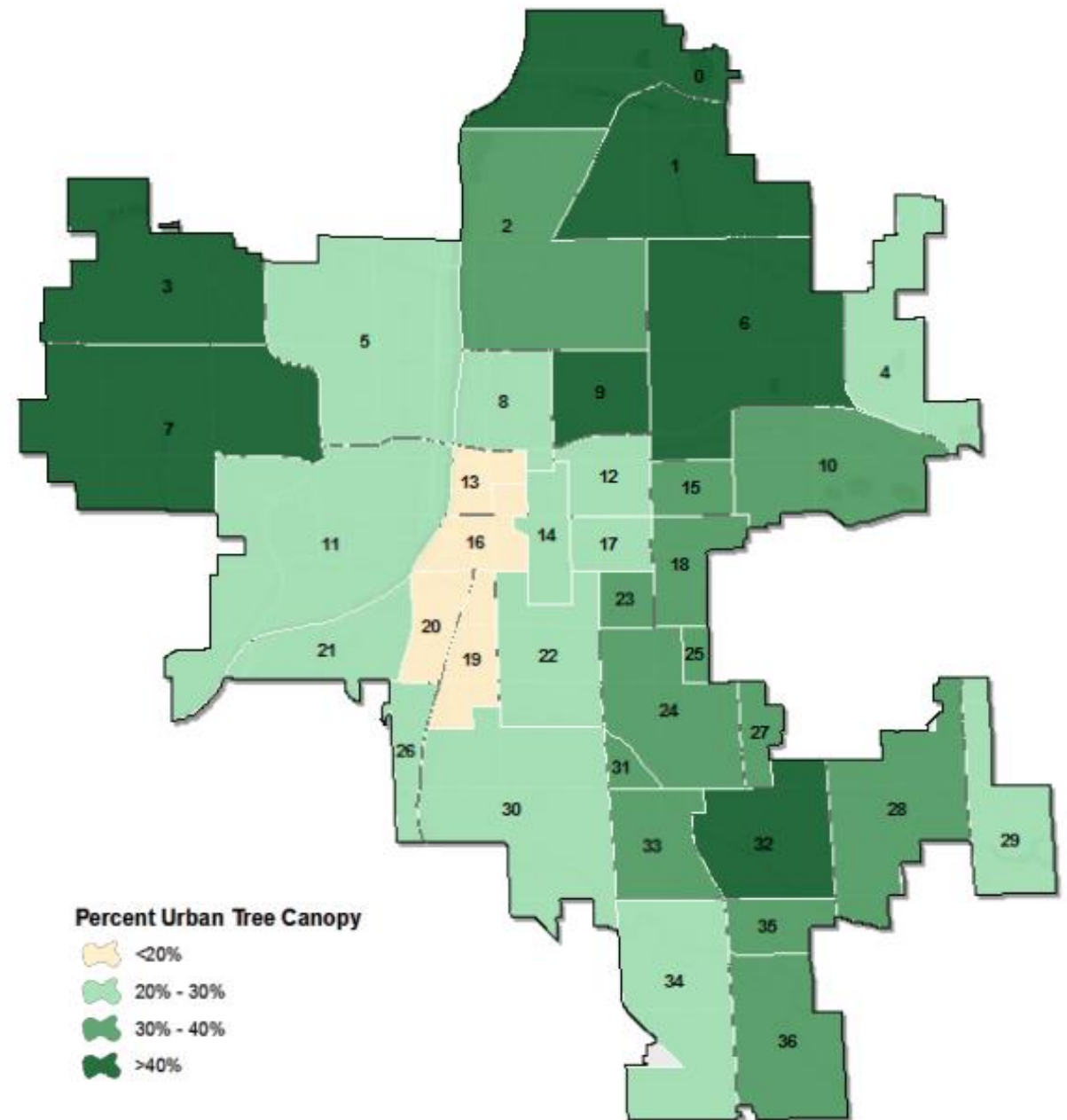


Figure 10: Percent UTC by neighborhood in Grand Rapids, MI.

# **NOF Resident Survey FINDINGS - Demand**

- **Types of programs of interest (6 options)**
  - 69 Financial Assistance
  - 60 Energy Efficiency
  - 56 Home Rehabilitation
- **Most used in previous 10 yrs. (20 options)**
  - 42 DTE Energy Assistance Program
  - 20 Get the Lead Out
  - 19 Home Repair Services
- **Cost Savings - Biggest motivator to participate (Q - 12)**



# NOF Resident Survey Findings- Investments

Q25 - "Would you be willing to invest in any of these areas if program assistance existed?  
[Check all that apply]"

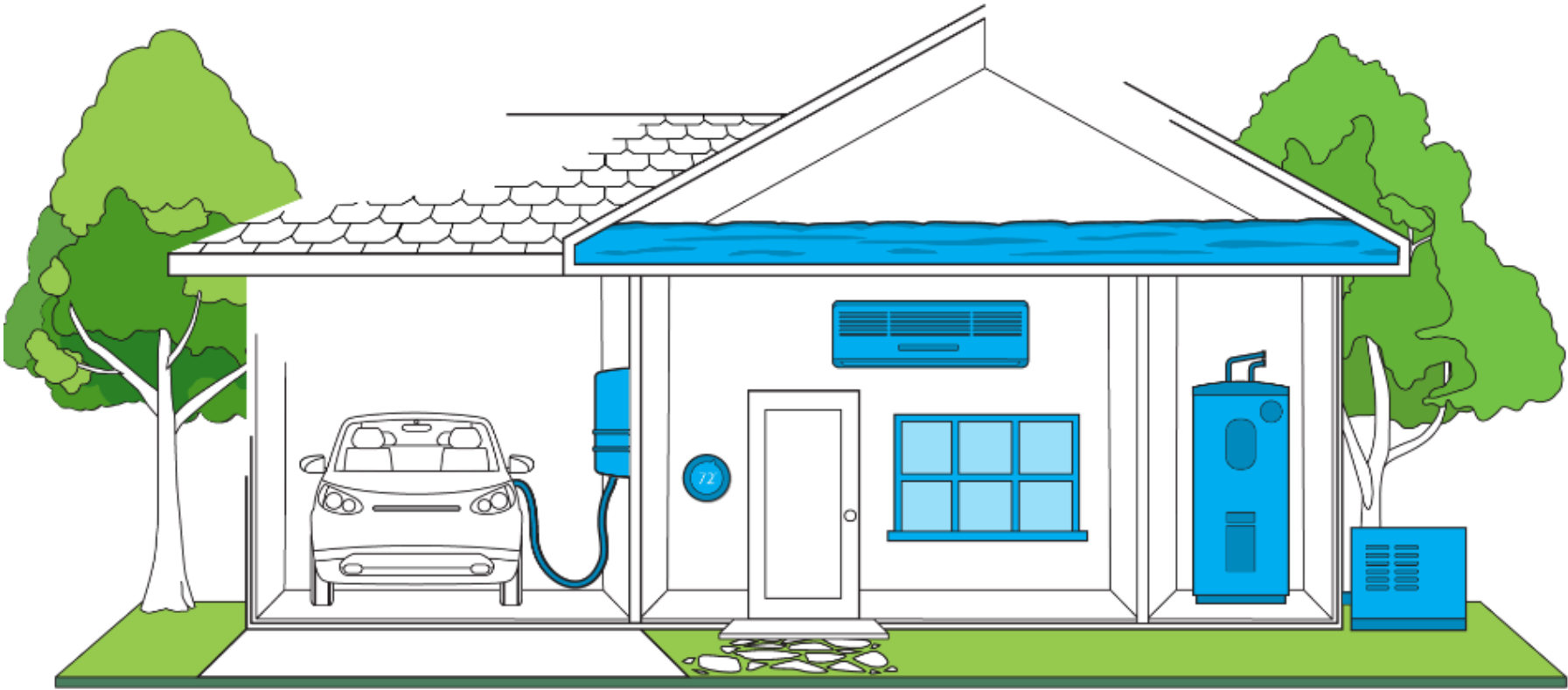
1	Roof	15.19%	24
2	Windows	13.92%	22
3	Lead abatement	7.59%	12
4	Fire safety	9.49%	15
5	Appliances	14.56%	23
8	Other (please specify)	4.43%	7
10	Insulation	15.19%	24
11	Weatherization	15.82%	25
12	I am not interested in investing in any of these.	3.80%	6
			158



# Housing mitigation and adaptation opportunities

- Backup battery / onsite energy generation (solar)
- Temperature control / energy efficiency
  - Insulation and envelope repairs
  - Energy Star (all electric) appliances
  - Heat pumps (A/C)
  - Shade trees
  - LED bulbs (reduce energy by 90%)
- Water usage / energy efficiency
  - Low-flow showerheads and faucet aerators
  - Using cold water when possible (laundry)
- Stormwater management
  - Native plants to absorb water
  - Drainage away from foundation (gutters and downspouts)
  - On-site rainwater collection

# Energy Star Home Upgrades



## ALL ENERGY STAR HOME UPGRADES



HEATING & COOLING



WATER HEATER



SMART THERMOSTAT



ATTIC INSULATION

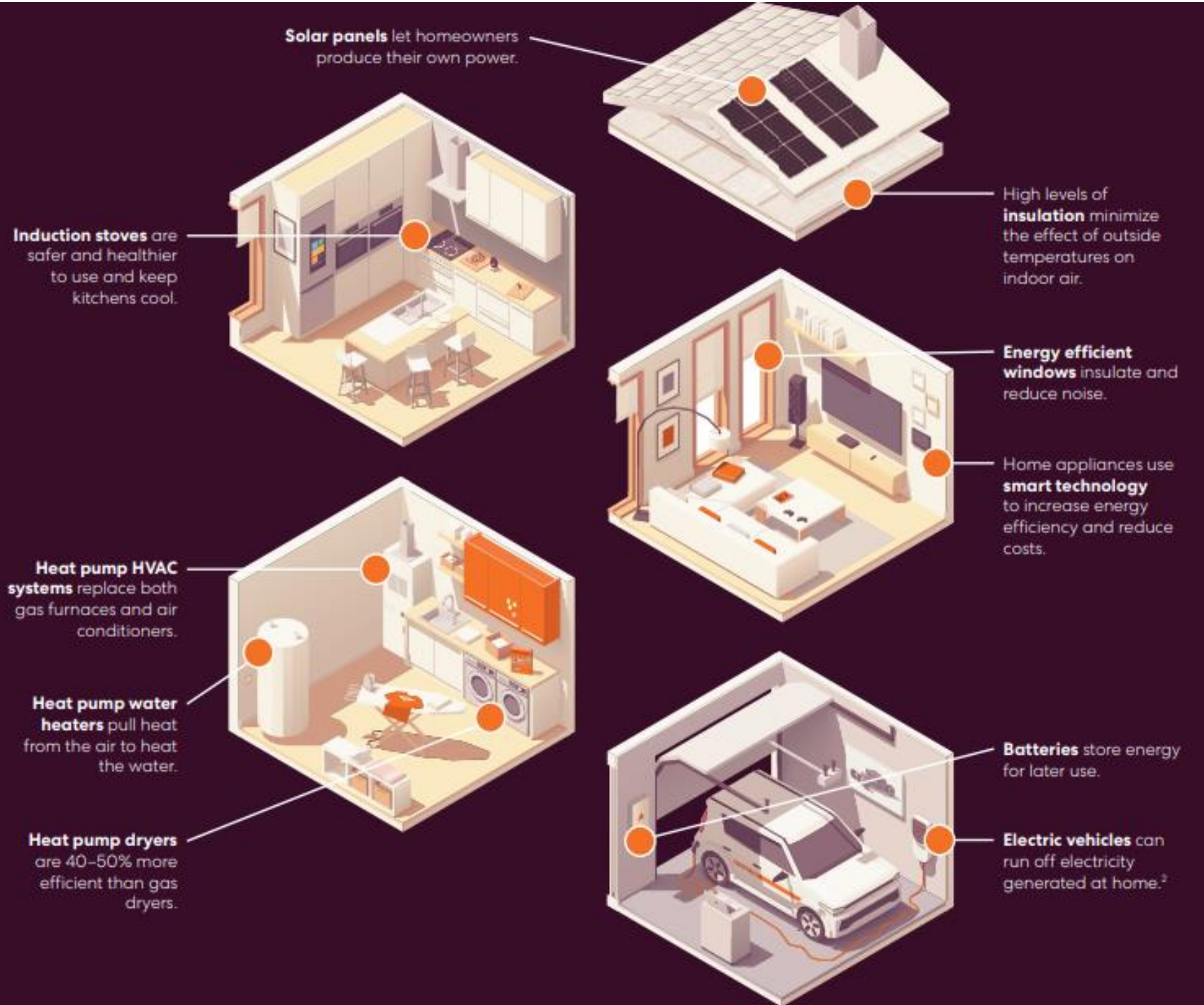


WINDOWS



EV READY

# Anatomy of an All-Electric Home





# City's Commitment and Current Areas of Focus

# city of grand rapids strategic plan

## Values

Our values are what we stand for. They are embedded throughout the entire plan and guide all City work.

### **Accountability**

Always acting with integrity and transparency and being responsible for what we do and say.

### **Collaboration**

Working together in partnership with others; teamwork.

### **Customer Service**

Professionally serving those who live in, work in or visit the city. Providing respectful, excellent, high quality service and assistance before, during and after the person's interactions with the City.

### **Equity**

Leveraging City influence to intentionally remove and prevent barriers created by systemic and institutional injustice.

### **Innovation**

Challenging how things have been done before. Fulfilling community needs by offering new ways to serve our customers and enhance operations. Being nimble, self-aware and open to feedback.

### **Sustainability**

The ability to be maintained; making decisions with an understanding of how those decisions will impact the environment, people and communities, and finances, both today and in the future



## Vision

Grand Rapids will be nationally recognized as an equitable, welcoming, innovative and collaborative city with a robust economy, safe and healthy community, and the opportunity for a high quality of life for all.

## Mission

To elevate quality of life through excellent City services.

## Priorities



### **Governmental Excellence**

A fiscally resilient government powered by high performing and knowledgeable staff equipped with the appropriate tools and resources to offer excellent, equitable and innovative public service.



### **Engaged and Connected Community**

Residents and stakeholders have awareness of and voice in decisions that affect them, and receive culturally-responsive and proactive communication.



### **Mobility**

Innovative, efficient and equitable mobility solutions are safe, affordable and convenient to the community.



### **Economic Prosperity and Affordability**

Residents, employees and businesses have pathways to financial growth and security.



### **Health and Environment**

The health of all people and the environment are advocated for, protected and enhanced.



### **Safe Community**

All people feel safe and are safe at all times throughout our community.



# health and environment

**Objective 1: Reduce carbon emissions and increase climate resiliency.**

**Strategies**

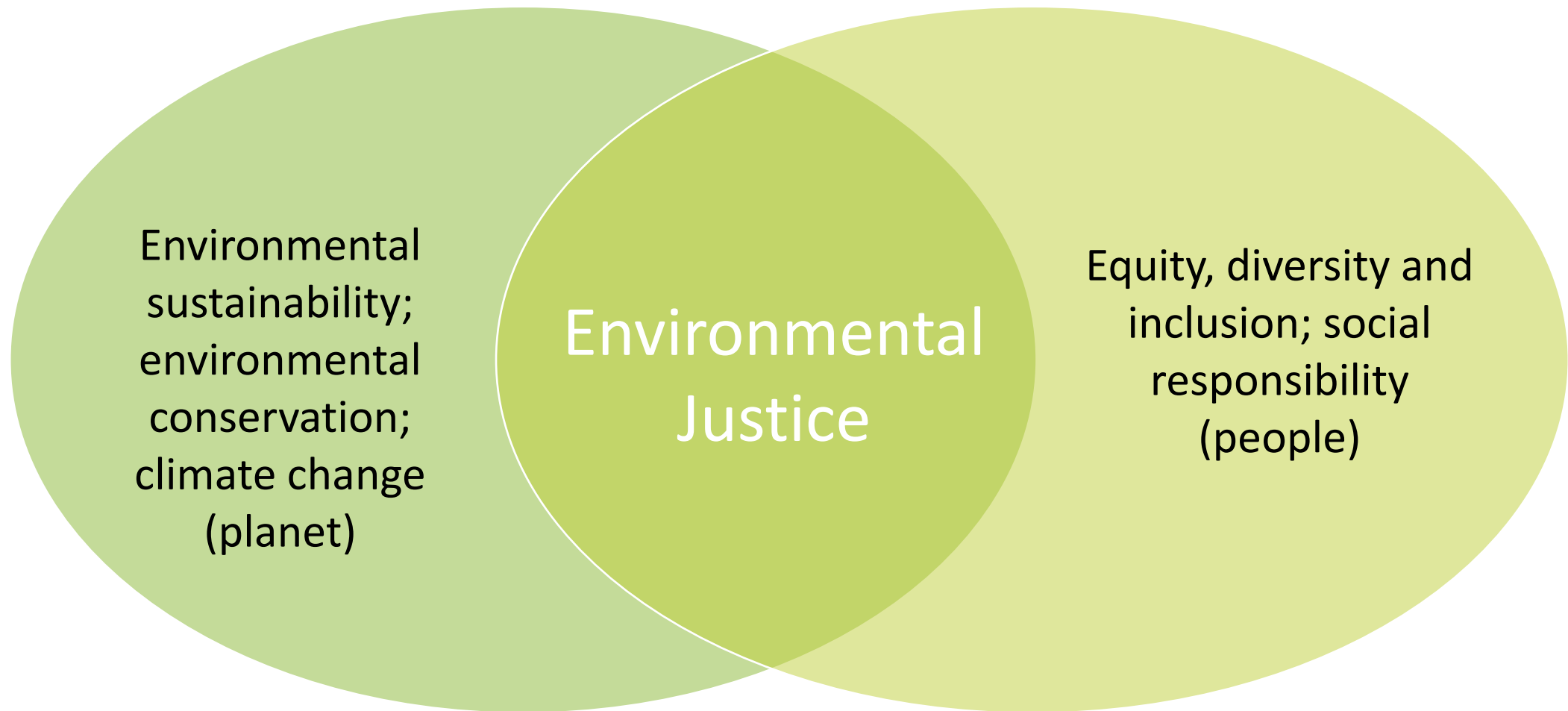
1. Create carbon reduction goals and integrate goals into appropriate City plans, including the Comprehensive Master Plan
2. Reduce the carbon footprint of City operations (buildings, utilities and fleet)
3. Assess the feasibility and cost of offsetting 100% of City electricity with renewable sources by FY2025
4. Create and support programs and policies to reduce carbon emissions from the building and transportation sectors throughout the community
5. Create a Climate Action and Adaptation Plan in partnership with the community
6. Work with community partners and businesses to achieve a 40% tree canopy

**Draft Metrics**

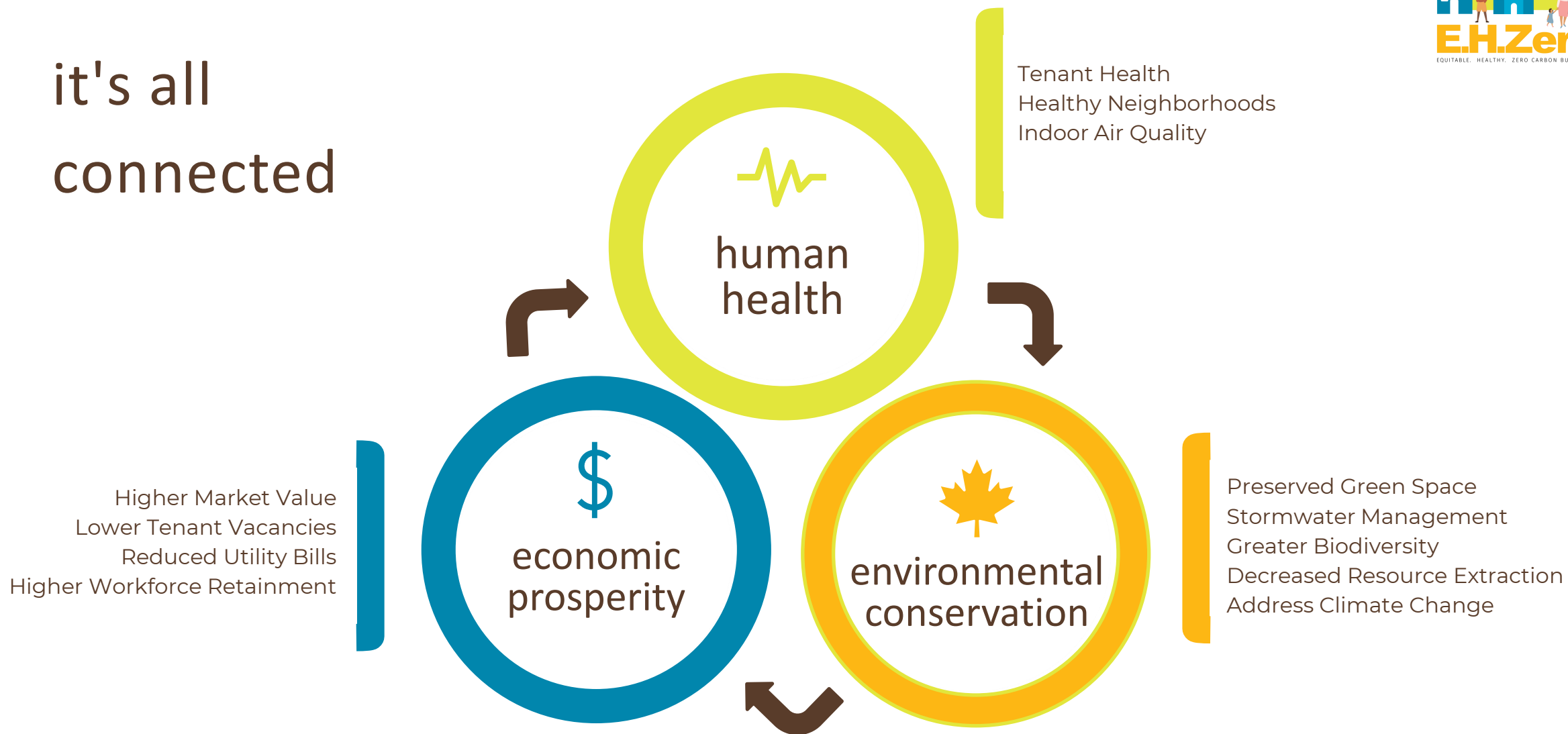
- Carbon footprint of city buildings, utilities and fleet (metric tons of carbon dioxide equivalents)  
2018: 59,088\*                      Goal: To be created  
\*Fleet not included
- % of City electricity supplied by renewable sources  
2018: 34%                              Goal for June 30, 2025: 100%
- % of tree canopy  
2018: 34%                              Goal: 40%

city of  
grand  
rapids  
strategic  
plan

# Environmental Justice Journey



it's all  
connected







# E.H.Zero

Policies and Programs for  
Equitable, Healthy, Zero  
Carbon Buildings

The E.H.Zero initiative is a partnership of





desired  
outcome



Residential and commercial building policies and programs co-created and supported by community (residents and commercial building stakeholders) focused on equitably achieving increased affordability, beneficial health outcomes and resilience while reducing energy consumption and carbon emissions.

# a holistic approach



# key objectives



Lead with equity in the development of policies and programs that will reduce carbon emissions from buildings and homes



Educate all interested stakeholders on Zero Cities Project outcomes and possible policy options



Engage all interested stakeholders in co-creation of policies and programs



Enhance and expand building policy modeling dashboard to support data driven decisions



Complete a housing renovation pilot on at least 5 homes



Present to the City Commission in 2023 a package of policies that will achieve equitable decarbonization within buildings



Create a plan for and begin implementing programs and policies, including a “Whole Homes” navigator style program



Incorporate building sector specific goals and key strategies into the Climate Action and Adaptation Plan







# stakeholders to engage

## project initiation

- Investors
- City’s Economic Development, Community Development, and Planning Departments
- Project developers

## design & construction

- Designers, Engineers, Contractors
- City’s Design Team, Dev. Center, and Building Inspections
- Construction Companies
- Building Owner/Operator
- City Residential Rental Cert. Program
- Real Estate Companies
- Building Management Companies

## people

- Tenants & Residents
- Neighbors
- Employees
- Community-based organizations and Neighborhood Associations



residential housing partner will:

manage the housing renovation pilot program

Oversee renovation of at least 5 diverse residential homes

Equity-centered approach focused in Neighborhoods of Focus

Assist with measuring health, financial, energy and carbon outcomes

Leverage other existing programs

Support design of “Whole Homes Navigator” program

will seek to understand:

What works best for people

Co-benefits when affordability, health, and sustainability are addressed simultaneously

apply learnings to improve services to the community

Residential Housing Partner – Green Star

- Green Home Institute
- SEEDs of Promise
- Building Bridges
- Elevate



housing partner



# Potential approaches based on building type

## Single Family Residential

- Community Development's Housing Rehabilitation and Lead Hazard Control Programs
- Weatherization
- Whole Homes Navigator Program
- **Affordable Housing Fund**

## Multifamily Residential

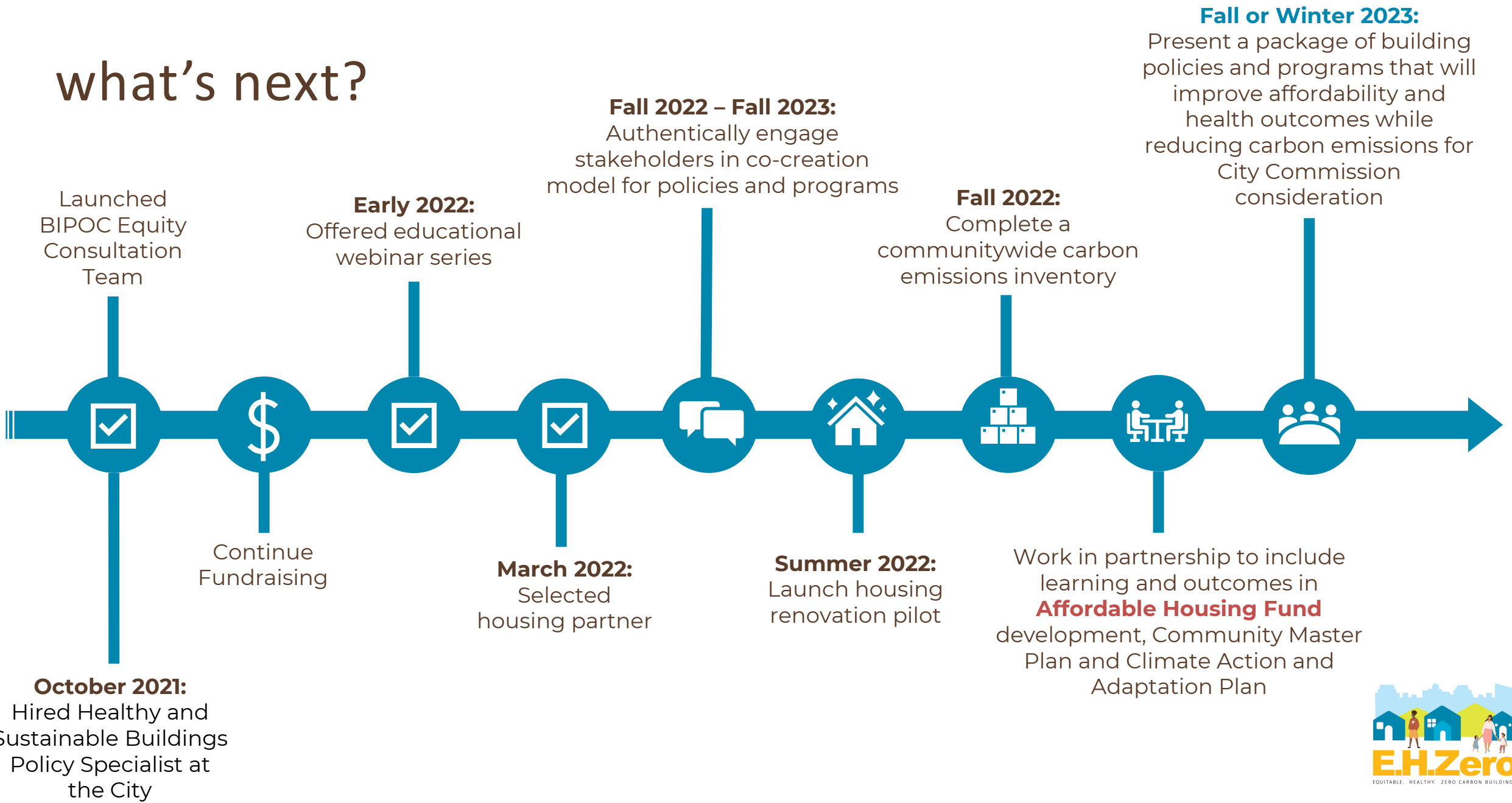
- Community Development's Housing Rehabilitation
- Weatherization
- Grand Rapids 2030 District
- Economic Development incentives
- **Affordable Housing Fund**

## Commercial

- Grand Rapids 2030 District
- Economic Development incentives
- Building Performance Standard (BPS)

On-site solar installation  
State Building Codes (New construction / major renovation)  
Utility voluntary greenhouse gas emissions goals / energy waste reduction  
Federal and State Funding (BIL, IRA (green bank), etc.)  
Community Master Plan  
Climate Action and Adaptation Plan

# what's next?







WEBSITE



NEWSLETTER



TRAININGS

Training and Information Coming Soon

# Affordable Housing Fund Opportunities

- Support rehabilitation, efficiency, health and resilience improvements in low-income existing housing
- Require fund recipients to incorporate a minimum amount of energy efficiency / decarbonization, climate resilience and healthy housing elements
- Leverage existing and recently funded programs (green bank, rehabilitation, lead hazard, healthy housing, etc.)
- Consider engaging with E.H.Zero and/or Community Collaboration on Climate Change (C4)
- Require/incentivize:
  - Enroll in the Grand Rapids 2030 District (multifamily only)
  - High efficiency electric readiness or implementation (electrification – appliances, heating/cooling, vehicle charging)
  - Generate or procure renewable energy
  - Incorporate climate resilience into design and operations
  - Incorporate environmental and climate justice
  - Achieve an environmental and/or health based 3<sup>rd</sup> party building design certification (LEED, WELL, Living Building, etc.)
  - Inclusion of utility costs with rent

# Opportunity

- For every \$1 invested in energy efficiency, \$3 is saved



CITY OF  
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THANKYOU

Alison Waske Sutter, Sustainability and Performance Management Officer

616-456-3689

[asutter@grcity.us](mailto:asutter@grcity.us)