



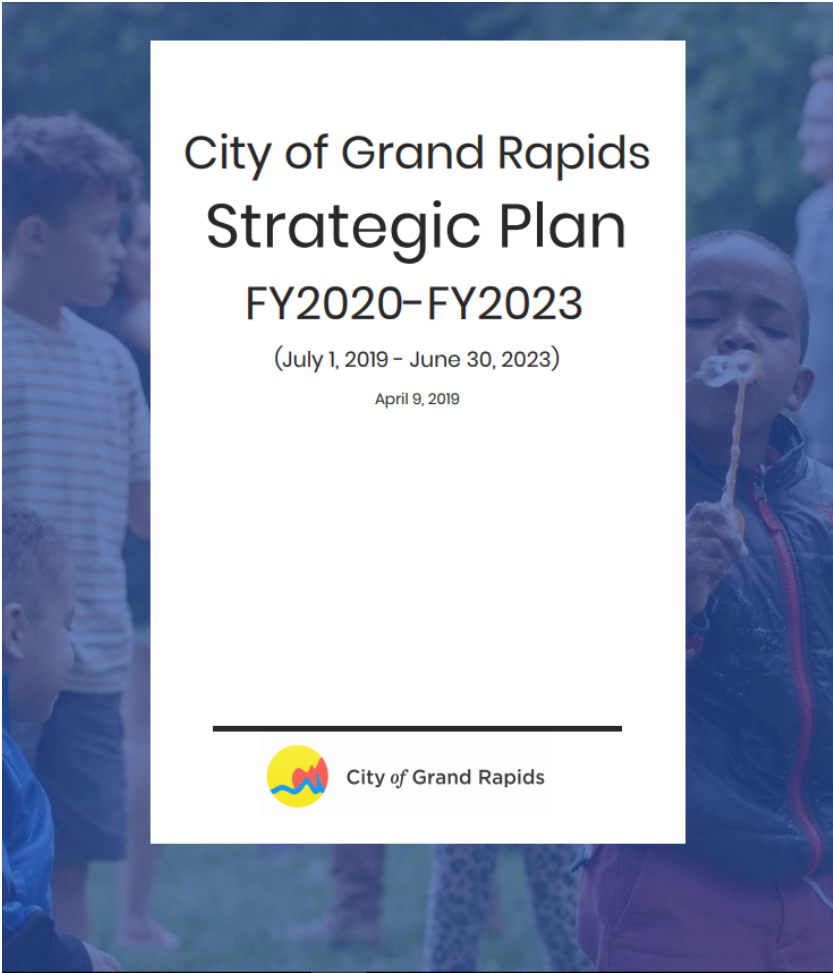
# City of Grand Rapids Zero Cities Project

Rise Up & Drawdown Conference  
Alison Sutter, September 25, 2019



CITY OF  
GRAND  
RAPIDS

# Energy and Carbon in the City's Strategic Plan



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

**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%

# Zero Cities Project

- Three-year grant funded project to develop a policy roadmap toward a zero net carbon building sector by 2050
  - Zero net carbon: produce on-site, or procure, enough carbon free renewable energy to meet the building operations' energy consumption
- 12 U.S. cities selected to participate
- Policy process informed by technical analysis that will include community collaboration and a focus on equity
- Meant to create a plan the City will implement to achieve the zero net carbon goal by all buildings – with economic incentives and planning programs
- USGBC West Michigan partnership, The Wege Foundation support

Boston, MA  
Boulder, CO  
Cambridge, MA  
Grand Rapids, MI  
Minneapolis, MN  
New York, NY  
Palo Alto, CA  
Phoenix, AZ  
Portland, OR  
San Francisco, CA  
Seattle, WA  
Washington, D.C.

# Zero Cities Project

## Project Phases & Timelines



Zero Cities is a partnership with:



# Grand Rapids

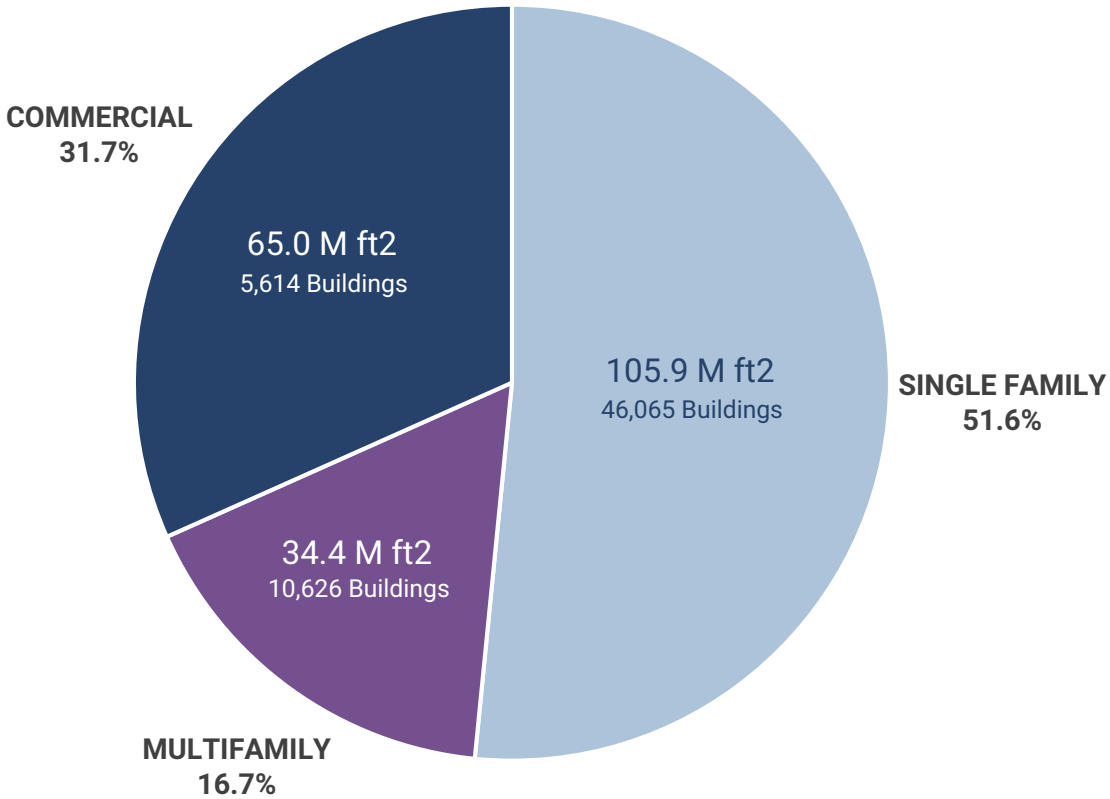
## Preliminary Building Stock Assessment

version: 2019.07.01

This building stock assessment consists of baseline and future projections of energy consumption, greenhouse gas emissions, and fuel types by building type and size, and includes information about historic “building intervention rates” such as sale transaction rates and renovation rates by major building types and size. The intents of the assessment are to (1) inform and direct future Zero Cities project work, (2) create a tool for analyzing the likely greenhouse gas emissions and energy impacts of the policies and strategies developed through Zero Cities project work, and (3) create a set of common metrics between Zero Cities project participants (eleven cities in total).

**The following findings are for informational purposes only. This document is not for public distribution and should not be reproduced or redistributed to any other person or in any form. This material is based on current public information that is believed to be reliable, but we do not represent it as accurate or complete, and it should not be relied on as such.**

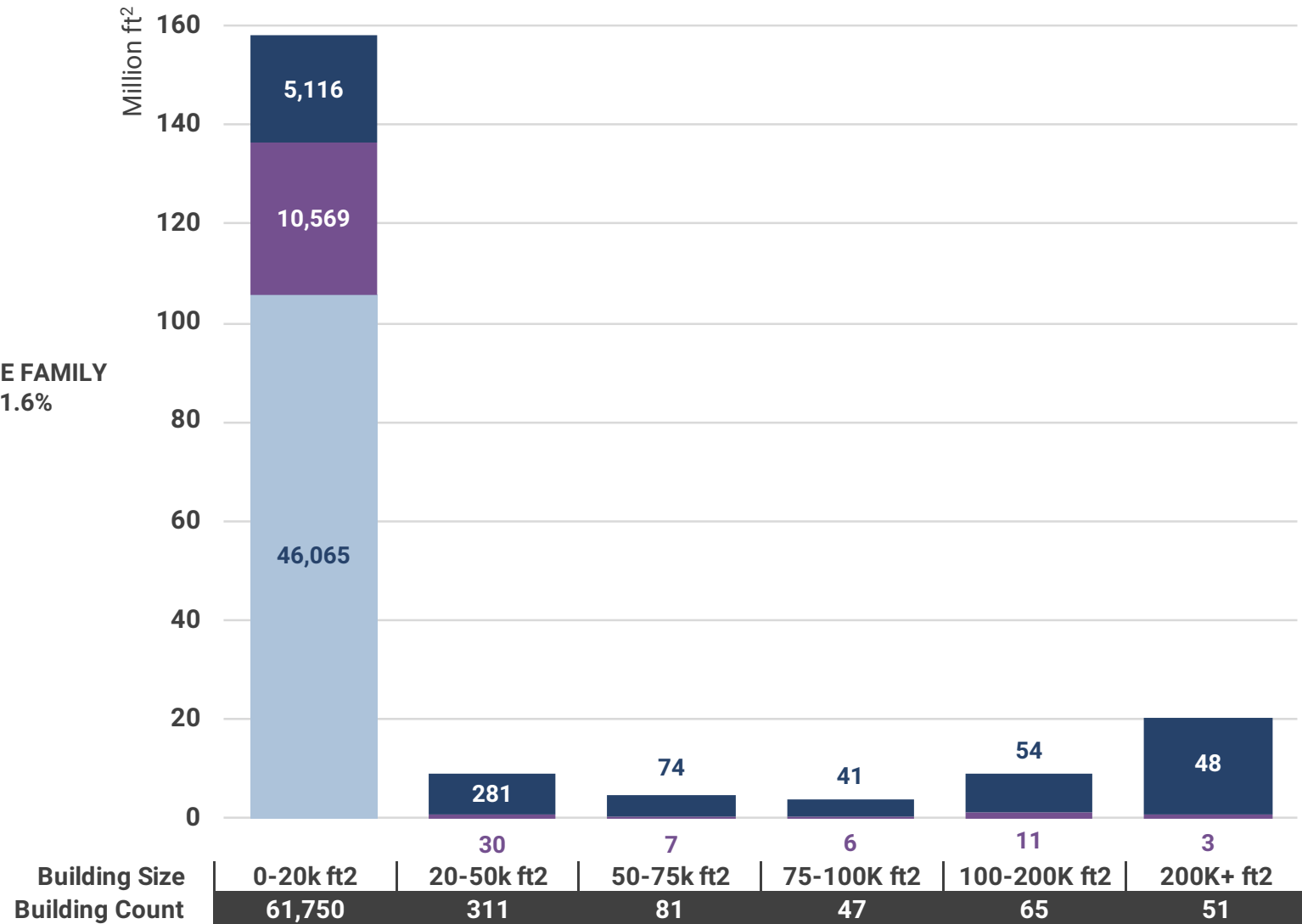
### Current Building Area by Type



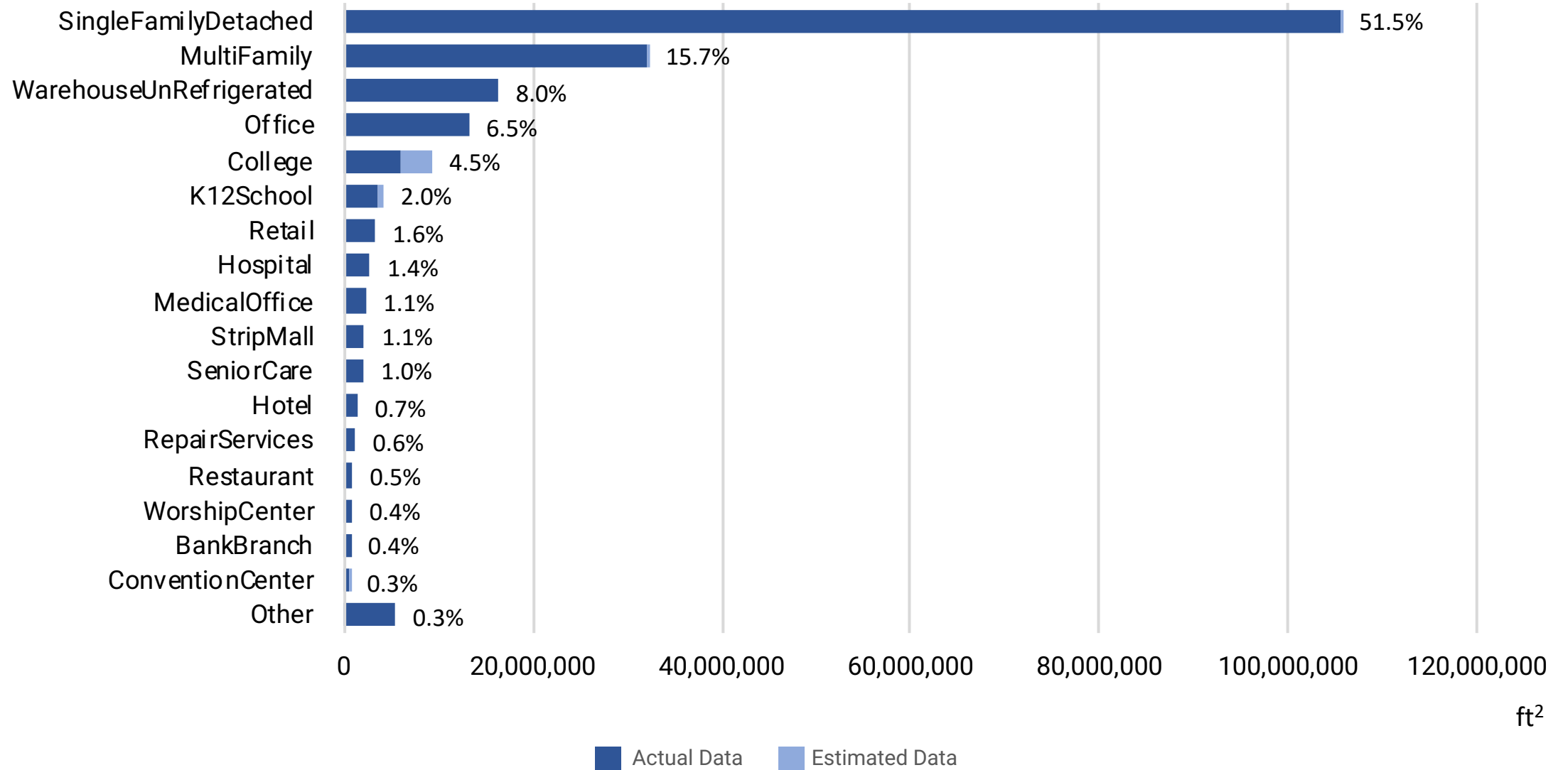
### Current Building Stock

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

### Current Building Area by Size

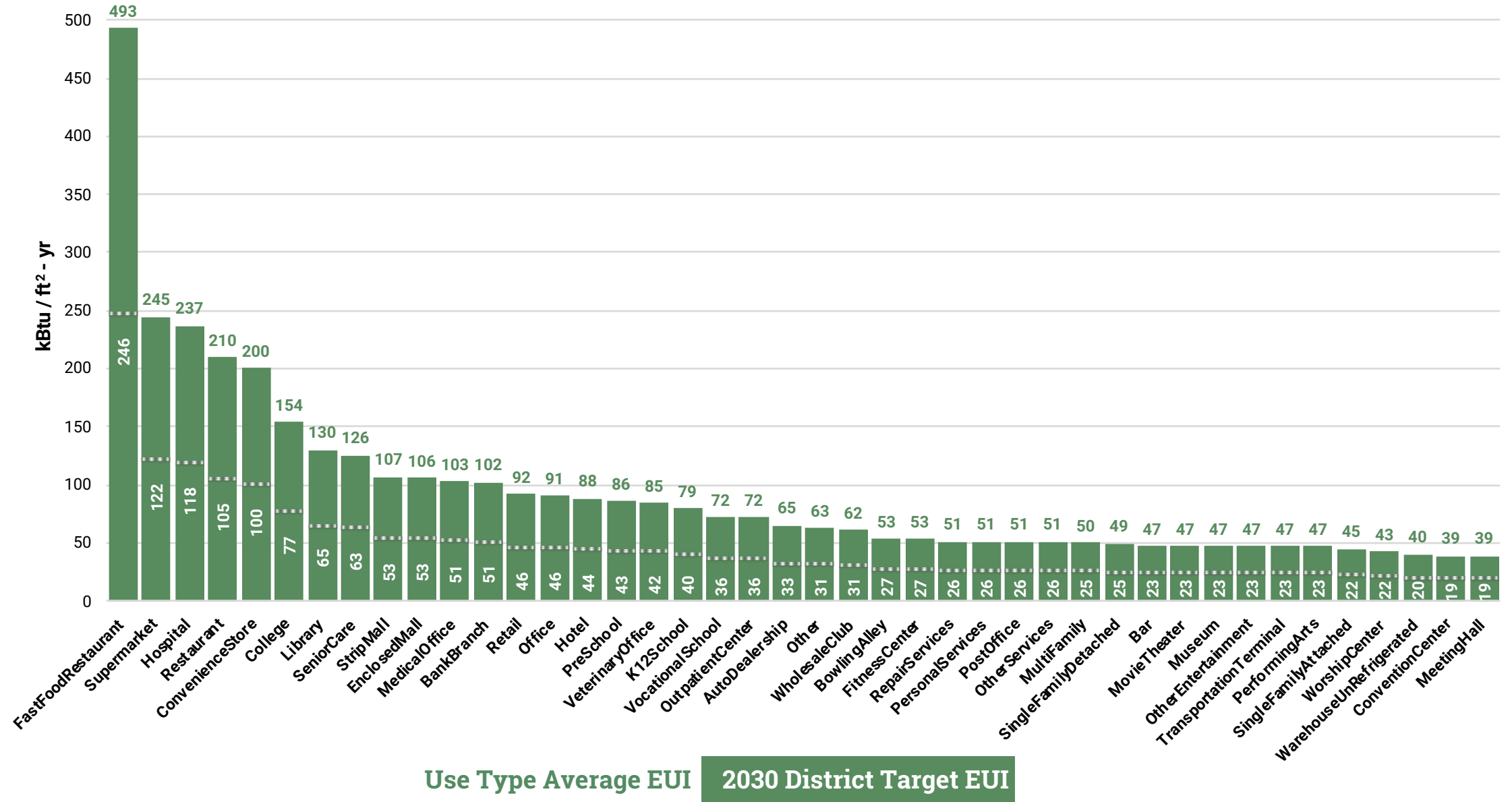


## Current Building Area by Type

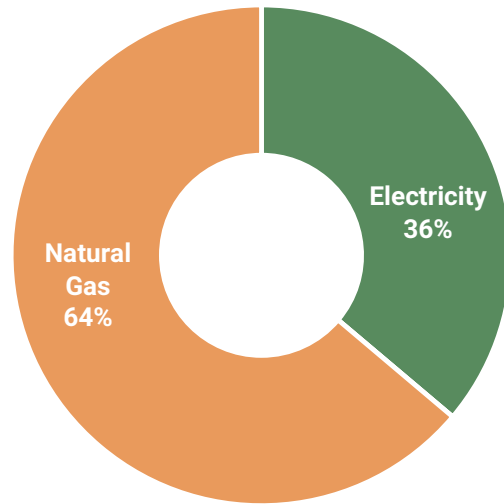




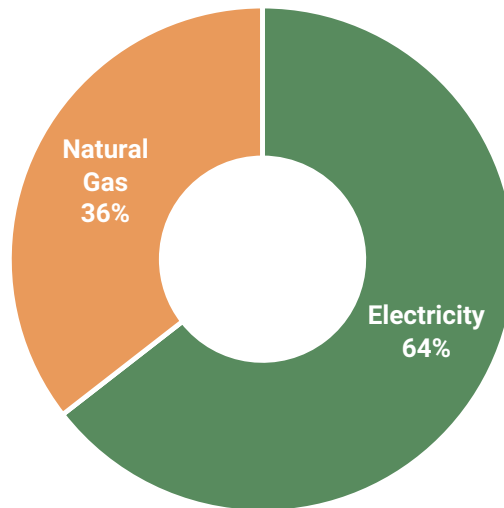
## Use Type Average EUIs and 2030 District Target EUIs



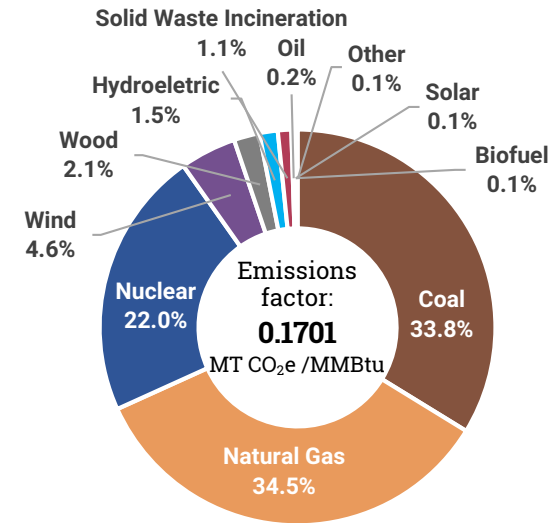
### Current Fuel Mix: Energy Consumption



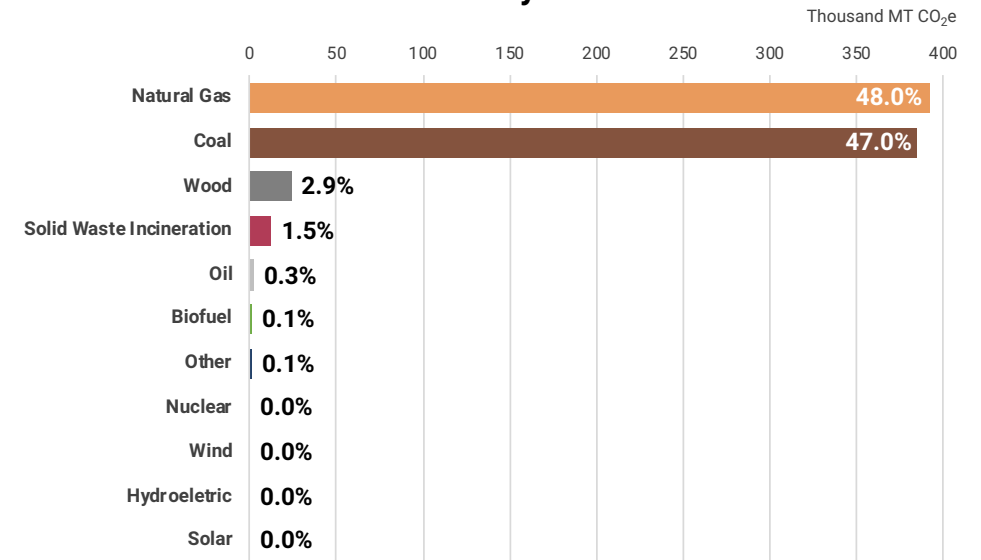
### Current GHG Emissions



### Current Electricity Grid Fuel Mix

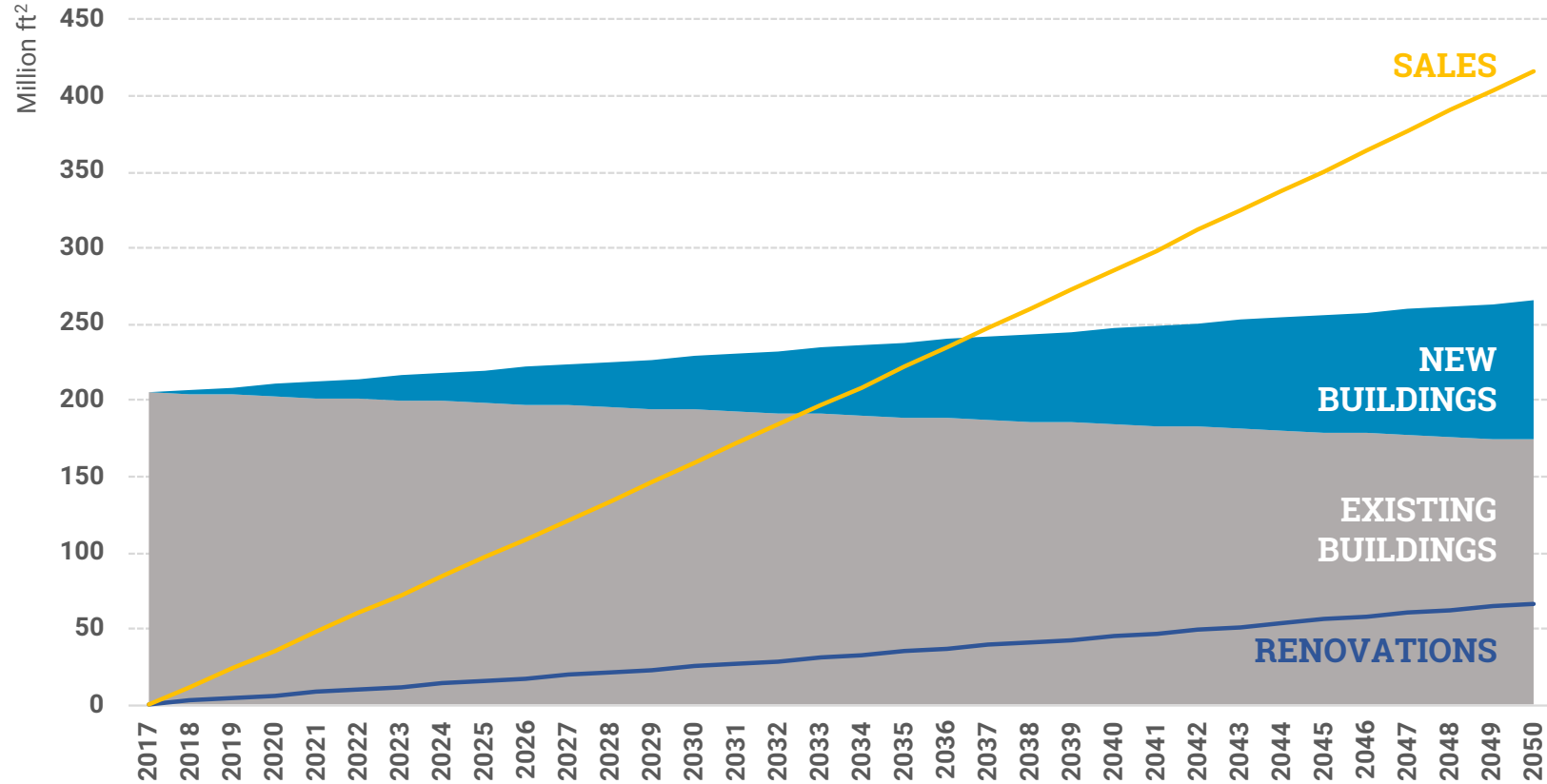


### Total Electricity Emissions

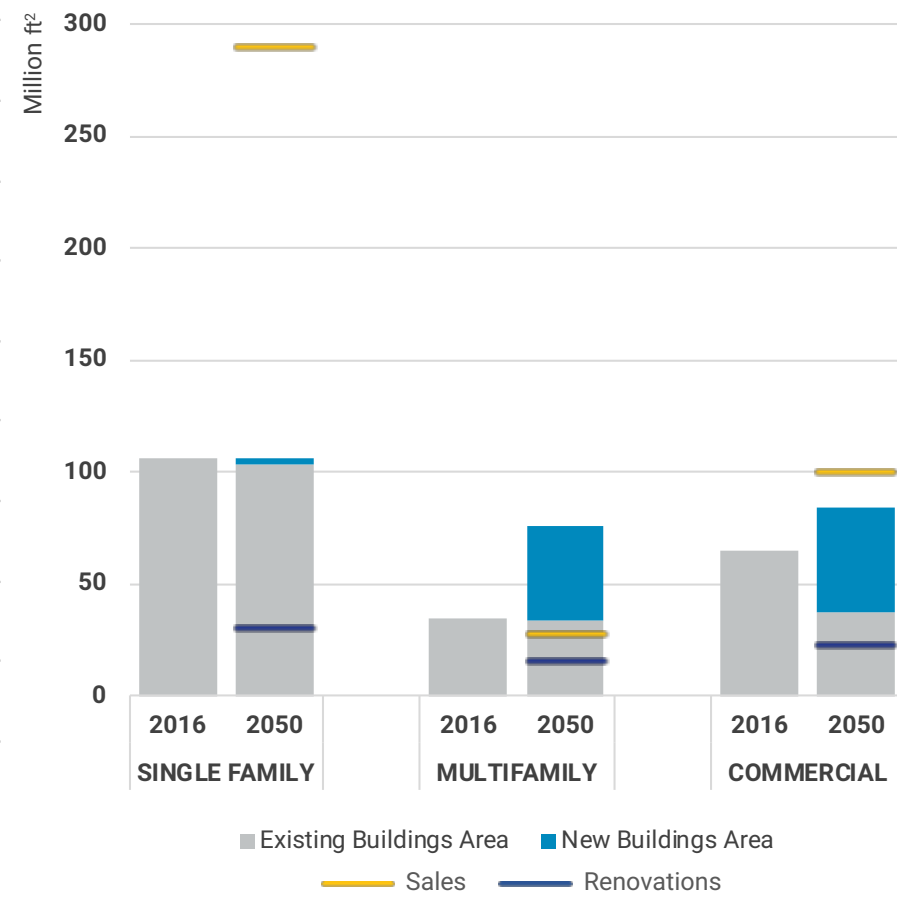


\*Emission factor provided by utility (not calculated through aggregation using EPA emissions factors)

### Building Area Trends



### Building Area by Type



## KEY TAKEAWAYS

Single-family residential buildings account for 40% of total building energy use and 39% of emissions.

Electricity supplies 36% of building energy but accounts for 64% of emissions. Electrification policies lead to higher emissions due to dirtiness and volatility of the grid.

The 1,114 buildings over 10,000 ft<sup>2</sup> (1.8% of all buildings) account for 41% of current total building energy use and 42% of building sector GHG emissions.

Renovation rates are currently projected to affect approximately half of existing buildings by 2050 (and nearly all of existing commercial buildings).

Sales rates are currently projected to affect more than 100% of single family and commercial buildings by 2050.

Significant commercial building demolition as well as new multifamily growth provides an opportunity for replacement with low or zero emissions new construction.

## POLICY IMPLICATIONS

Energy efficiency upgrades for SFR buildings have potential to significantly decrease emissions.

Decarbonizing the electric grid, including renewable energy generation and procurement requirements, represents a significant opportunity to achieve emissions reductions.

Energy upgrade policies aimed at buildings > 10k ft<sup>2</sup> have the potential for significant emissions reductions in the existing building stock.

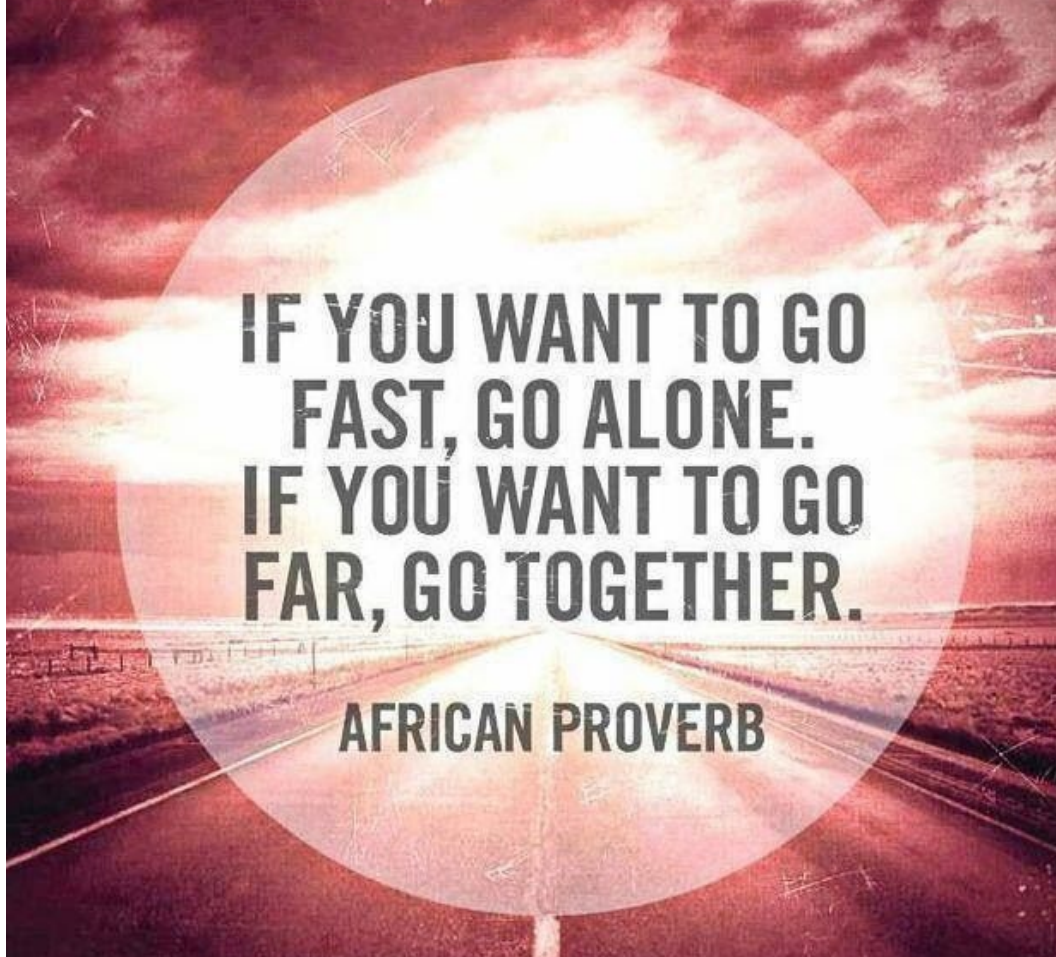
Point of renovation policies for energy upgrades have the potential to affect buildings and significantly decrease emissions.

Point of sale policies for energy upgrades have the potential to affect buildings and significantly decrease emissions.

ZERO Code provides an opportunity to avoid significant emissions in new commercial construction.

*Energy upgrades and decarbonization policies include: 1) improvements to the energy efficiency of a building and its systems, including a shift to electric systems that can be powered by renewable energy sources, and/or 2) the generation or procurement of*

\* Heavily dependent on accuracy of assumptions about fuel split, emissions factors, and new construction and sales rates. Subject to change if assumptions are updated.



**IF YOU WANT TO GO  
FAST, GO ALONE.  
IF YOU WANT TO GO  
FAR, GO TOGETHER.**

**AFRICAN PROVERB**

Alison Waske Sutter  
Sustainability and Performance Management Officer  
City of Grand Rapids  
asutter@grcity.us 616-456-3689

