

CITY OF RACINE

Comprehensive Energy Independent Community Plan

October 4, 2019

- Energy Baseline Analysis
- Preliminary Audit Summary

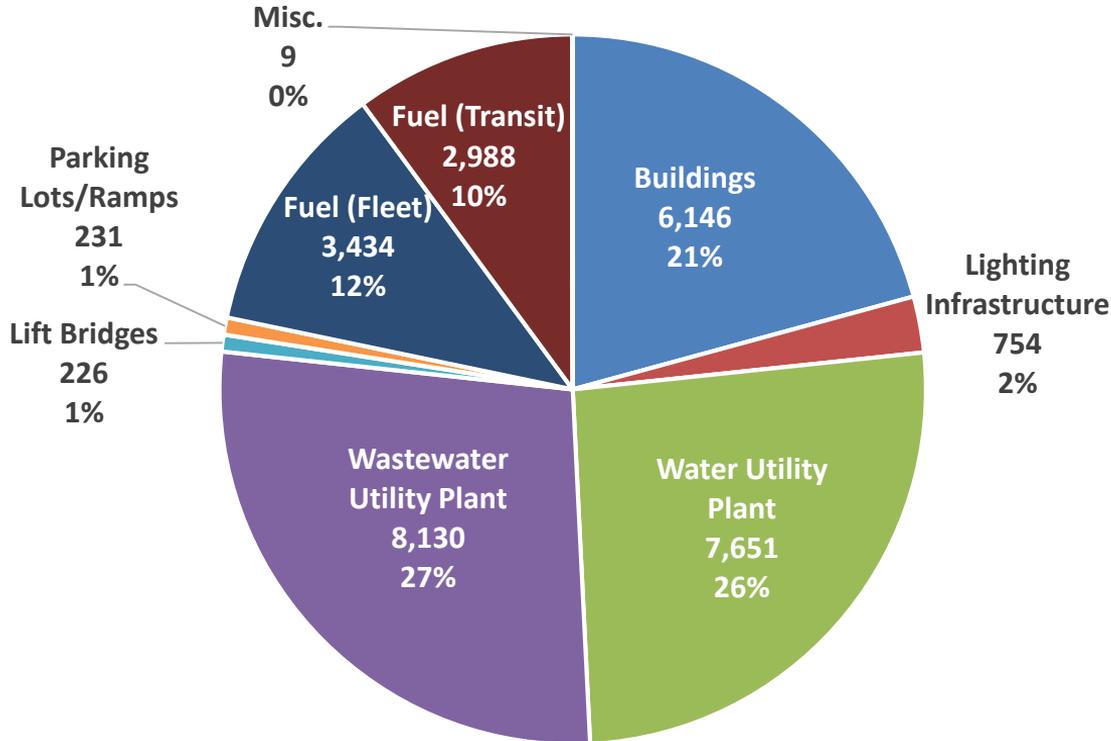
HGA

1.

Energy Baseline Analysis

City Operations Carbon Footprint

2018 Source Emissions Breakdown



❖ Units=Tons of eCO2

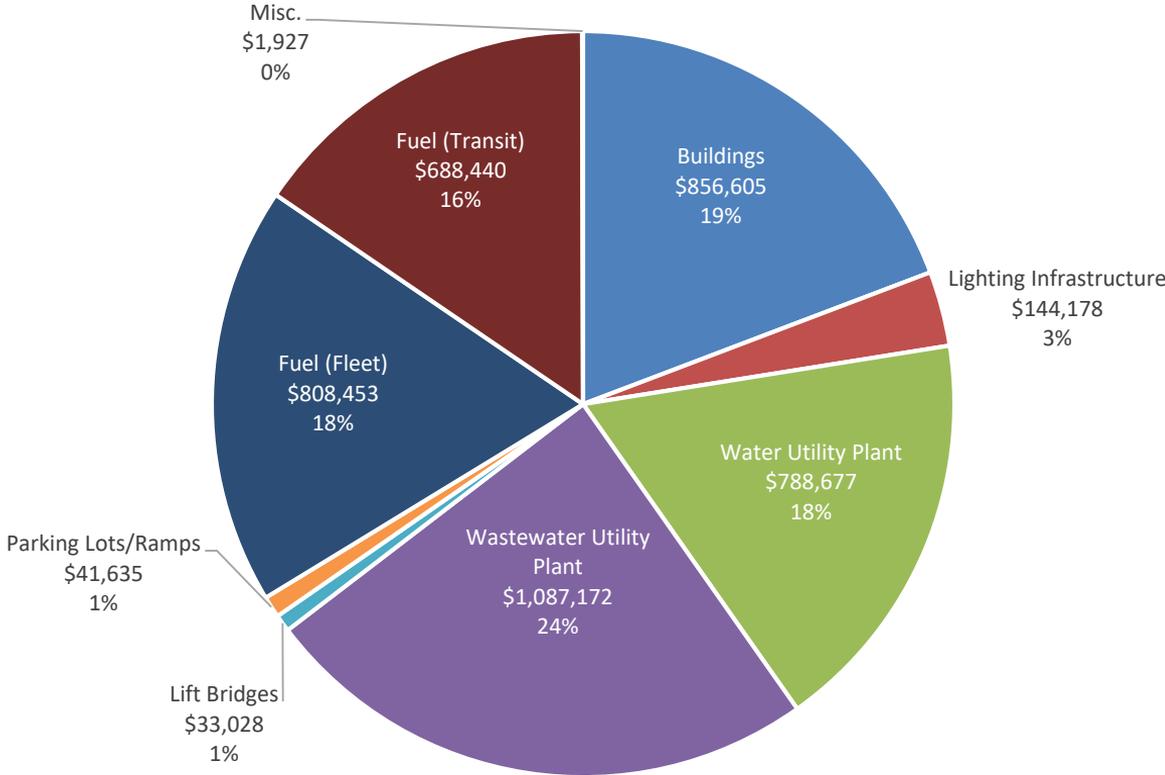
❖ 2018 Emissions

❖ ~29,600 tons



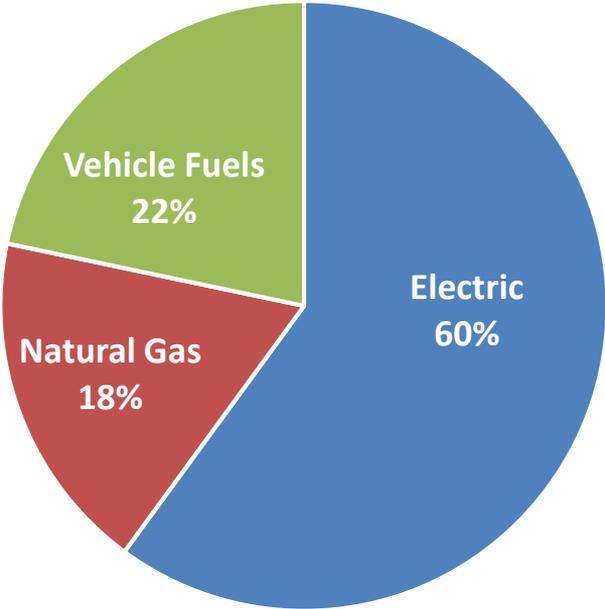
City Operations Carbon Footprint Cost

2018 Fuel Cost Breakdown

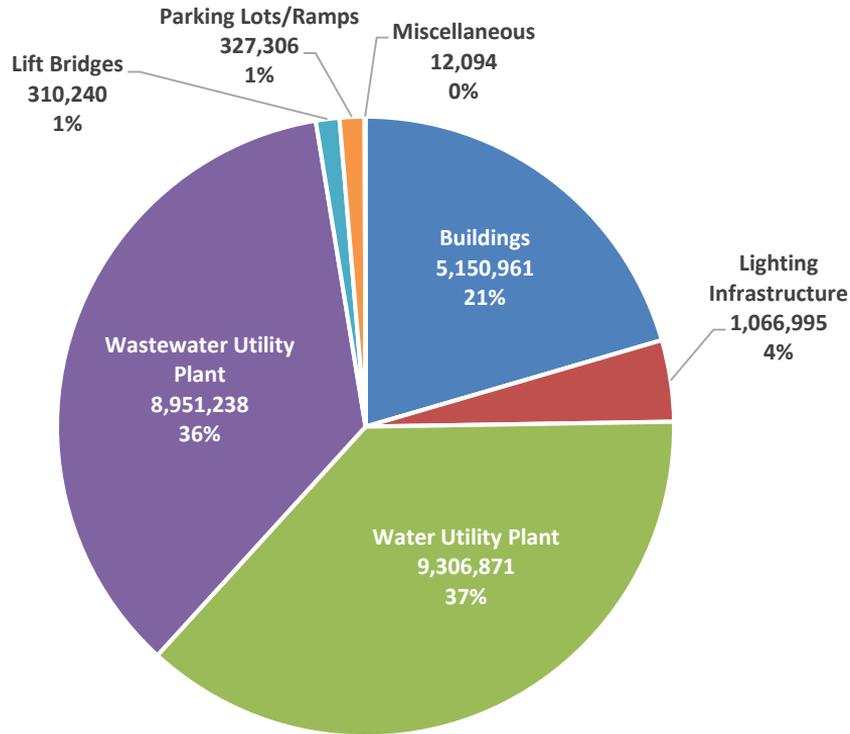


City Operations Carbon Footprint

2018 eCO2 % Breakdown



City Operations Electric Breakdown

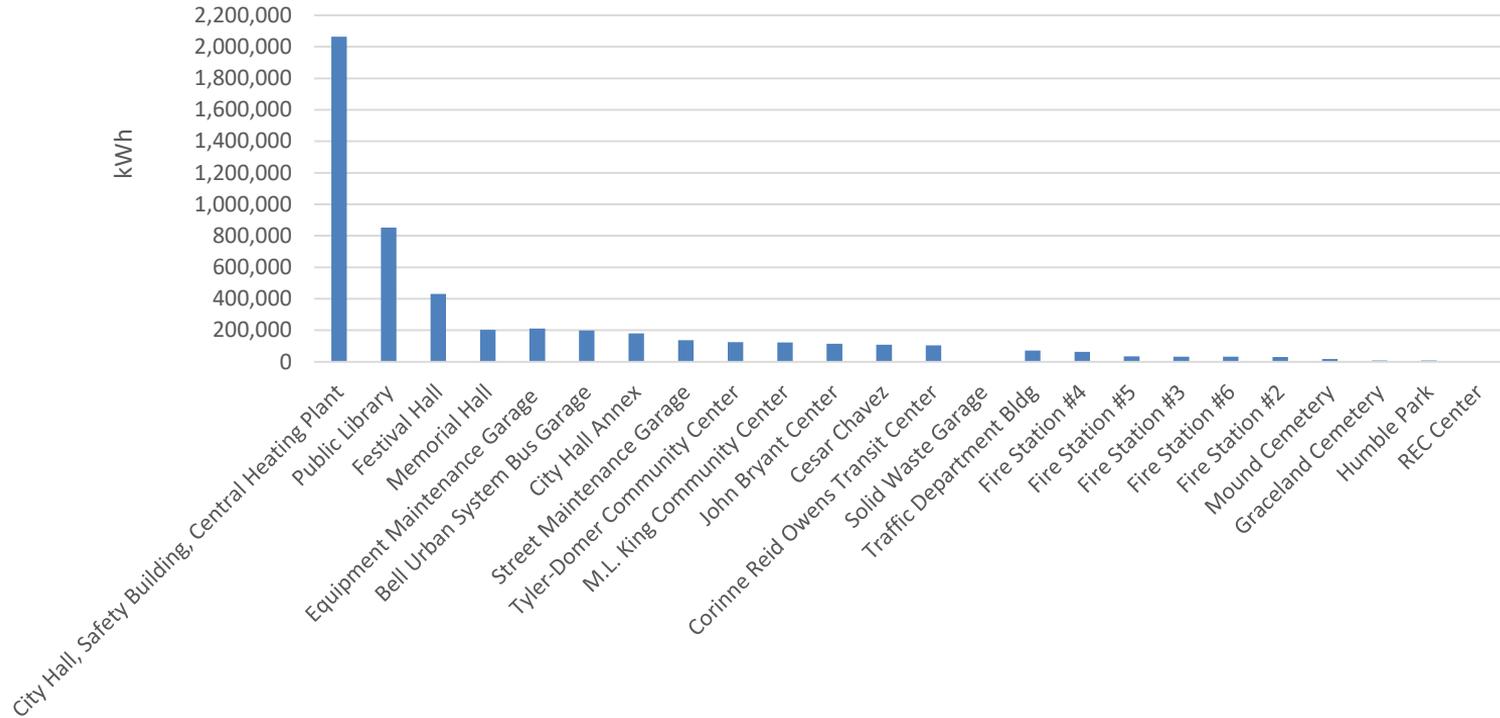


2018 Building Electric Usage Breakdown

- ❖ Units=kWh
- ❖ 2018 Electric Total
 - ❖ ~25,125,700 kWh
- ❖ 2018 Electric Cost
 - ❖ ~\$2,431,000

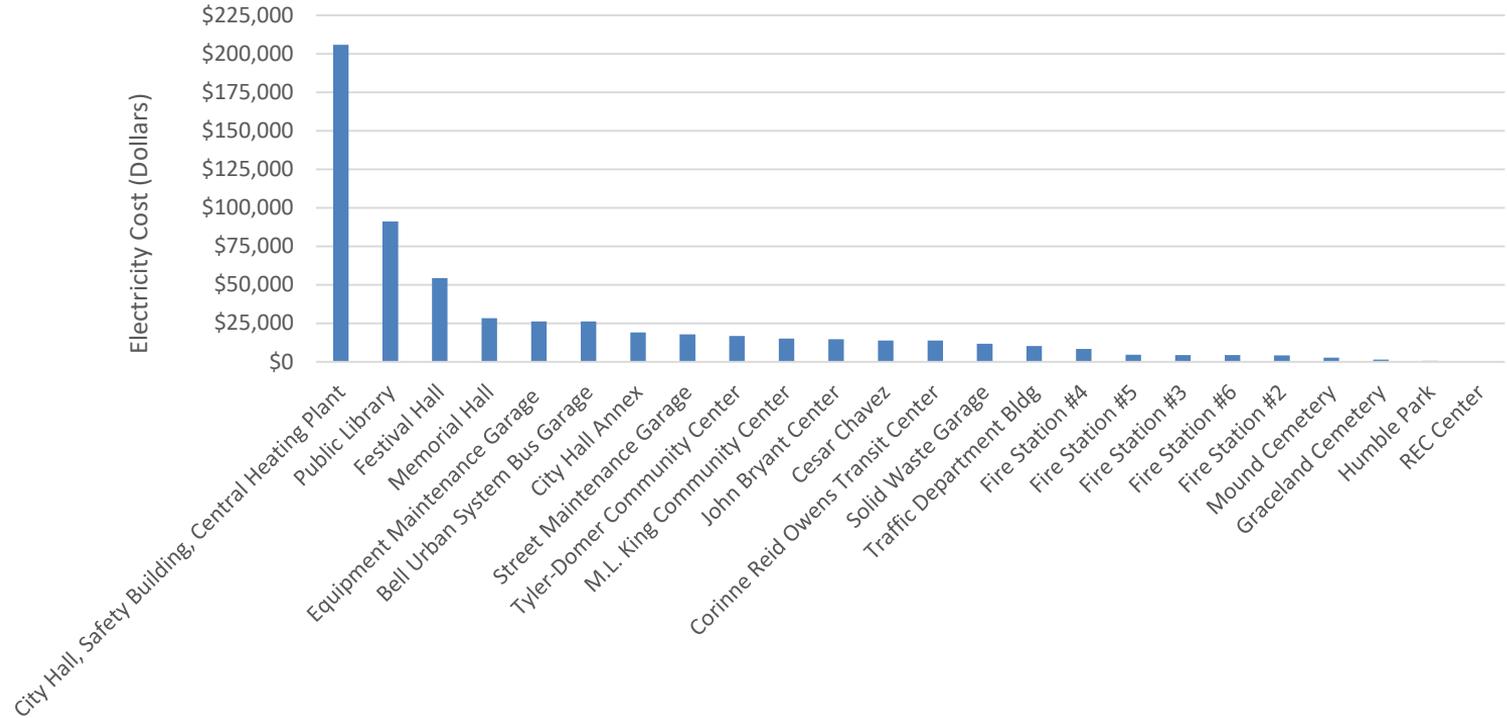
City Operations Electric Breakdown

Racine Buildings Electric Consumption

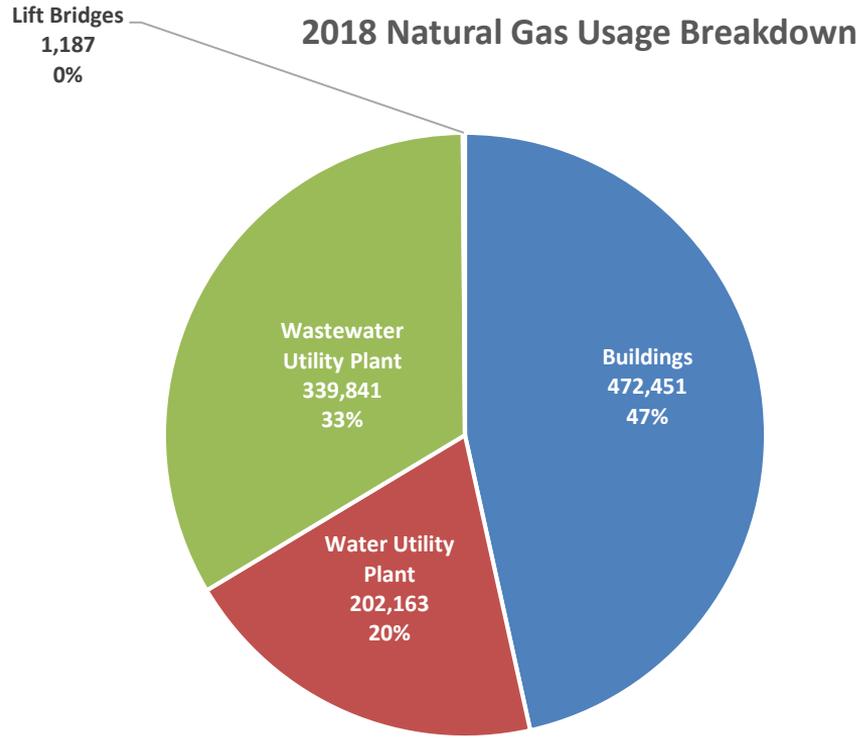


City Operations Electric Breakdown

Racine Buildings Electric Costs



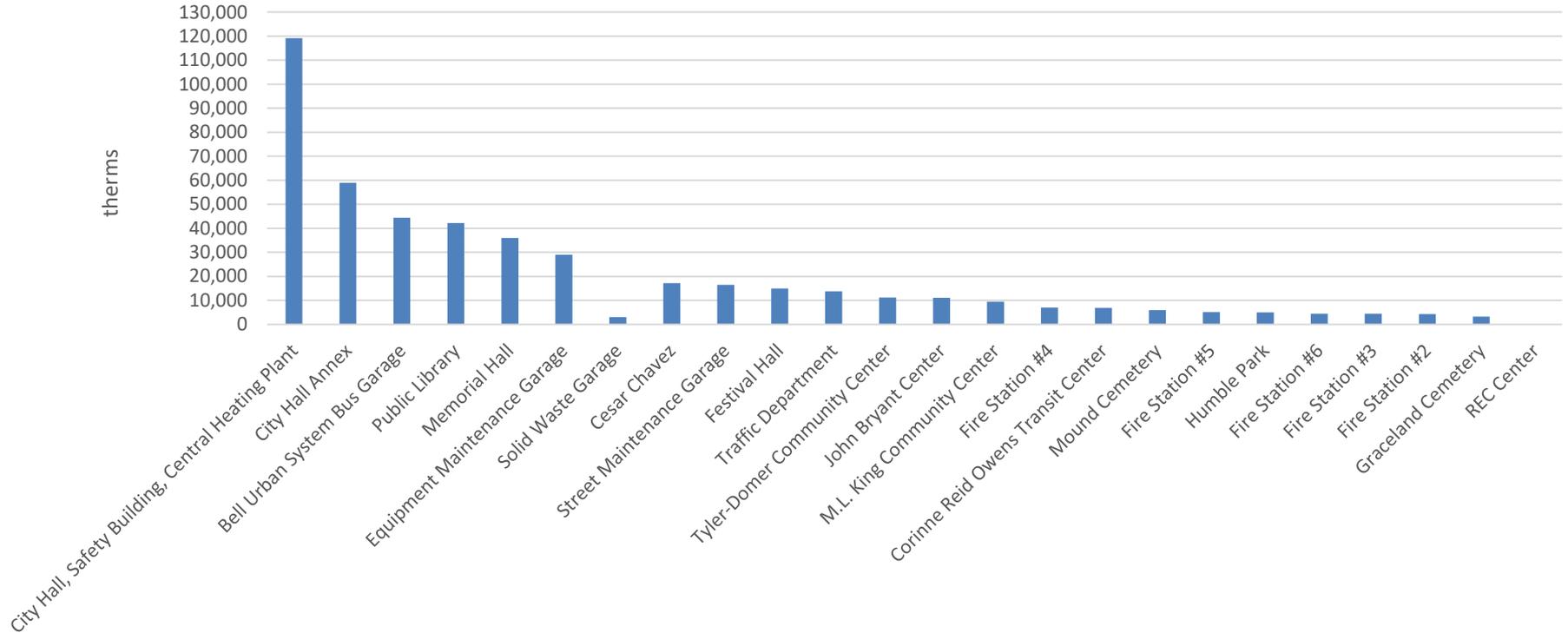
City Operations Natural Gas Breakdown



- ❖ Units=Therms
- ❖ 2018 Natural Gas Total
 - ❖ ~473,600 therms
- ❖ 2018 Natural Gas Cost
 - ❖ ~\$261,600

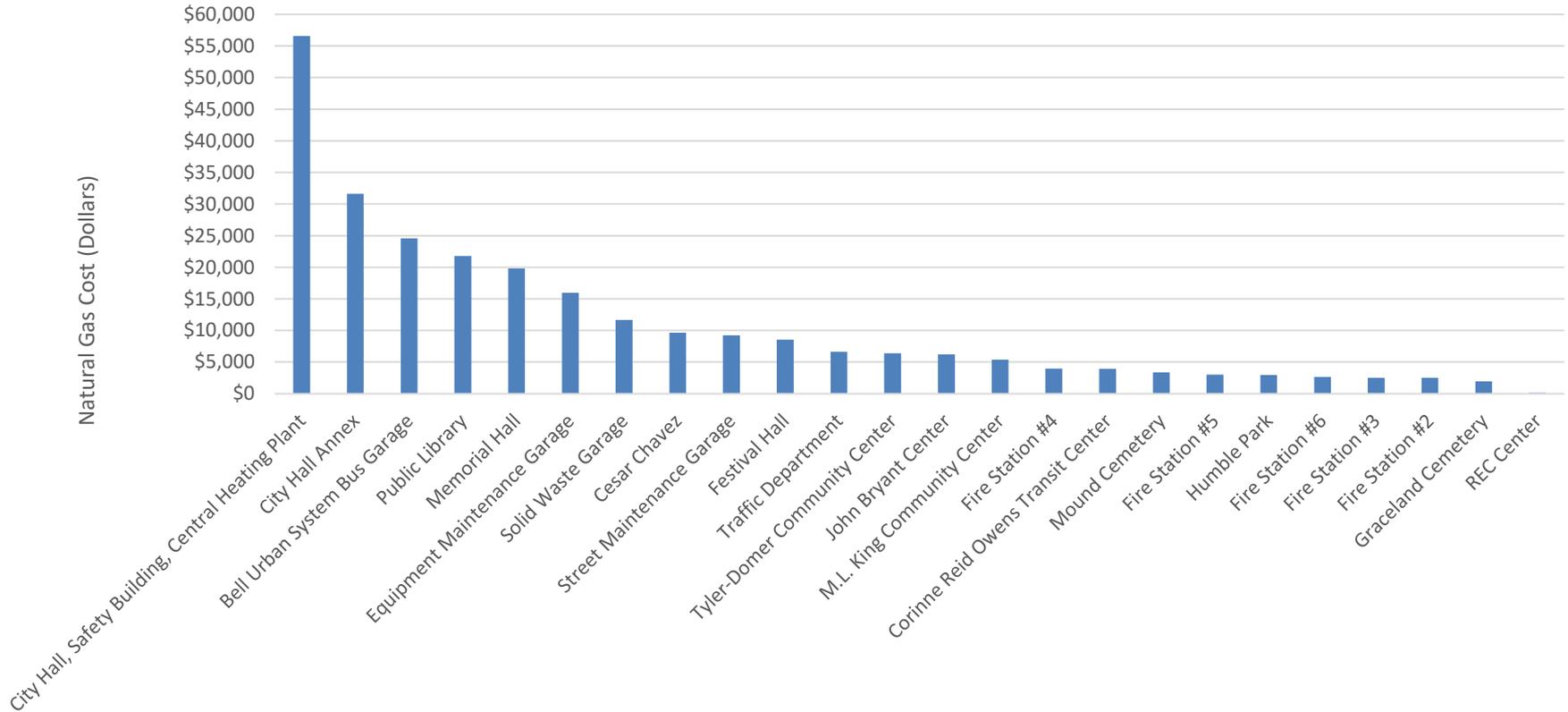
City Operations Natural Gas Breakdown

Racine Buildings Natural Gas Consumption



City Operations Natural Gas Breakdown

Racine Buildings Natural Gas Costs



Benchmarking

- ❖ EPA Energy Star Portfolio Manager Tool
- ❖ 30+ Buildings input into system
- ❖ Continue to work with City staff to locate data
- ❖ City staff will maintain account at completion of study

The screenshot displays the EPA Energy Star Portfolio Manager interface. At the top, there is a navigation bar with 'MyPortfolio', 'Sharing', 'Reporting', and 'Recognition' tabs. A notification banner at the top right states: 'Portfolio Manager Metric Updates: On August 27, 2018 performance metrics in Portfolio Manager were updated for U.S. buildings to reflect current market data. You may notice a change in your current and historic 1-100 ENERGY STAR score or other metrics. After logging in for the first time after these updates have been made, you'll need to click the "Refresh Metrics" button to see your new metrics within the Dashboard. For more information, visit www.energystar.gov/icsupdates.' Below this, a 'Dashboard' section shows 'Metrics current as of 07/05/2019 10:21 AM EDT'. A search bar and a 'Refresh Metrics' button are present. The main content area features a table of properties. The table has columns for Name, Energy Current Date, ENERGY STAR Score, Site EUI (kBtu/ft²), and Source EUI (kBtu/ft²). The table lists several properties, including five 'Epa_Station' entries, 'Parking', 'Racine Bryant Center', 'Racine Chavez Community Center', 'Racine City Hall Annex', and 'Racine City Hall Public Safety/Central Heating Plant'. A 'Manage Portfolio' section on the left provides instructions on how to transfer ownership, upload multiple properties, download the portfolio to Excel, set baselines/targets, and add sample properties.

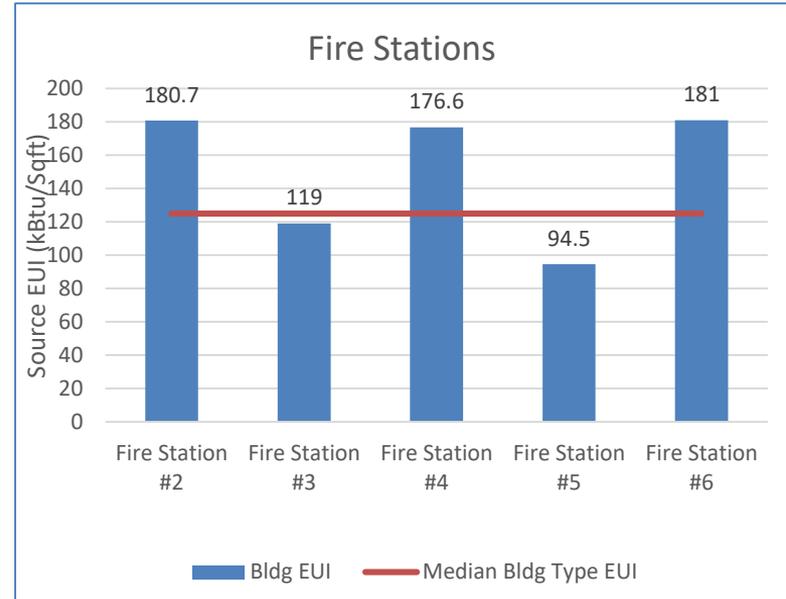
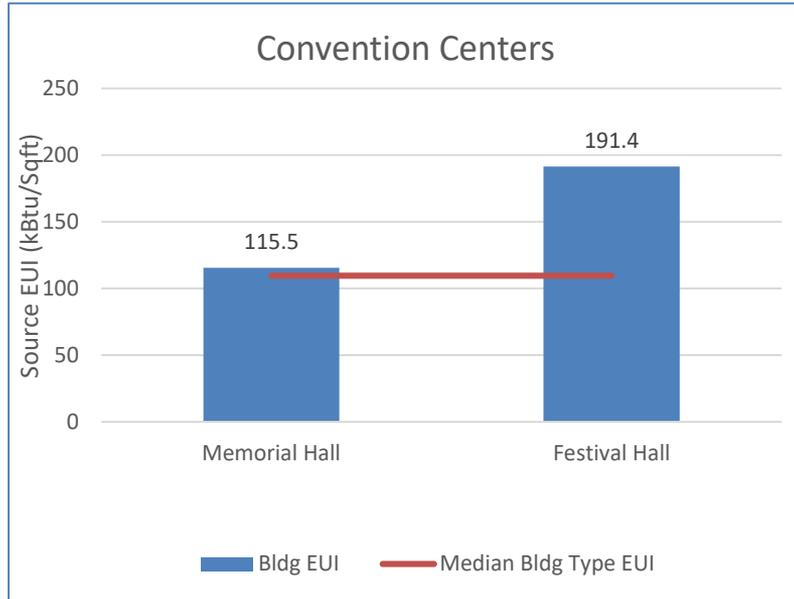
Name	Energy Current Date	ENERGY STAR Score	Site EUI (kBtu/ft ²)	Source EUI (kBtu/ft ²)
Epa_Station # 6 7539042				
Epa_Station #2 7538283				
Epa_Station #3 7538451				
Epa_Station #4 7538442				
Epa_Station #5 7538601				
Parking 7363375				
Racine Bryant Center 6932926	03/31/2019	NA	77.1	114.9
Racine Chavez Community Center 6883642	03/31/2019	NA	96.2	130.8
Racine City Hall Annex 6892563	04/30/2019	82	71.1	85.7
Racine City Hall Public Safety/Central Heating Plant 7101281	03/31/2019	NA	42.9	115.0

Benchmarking

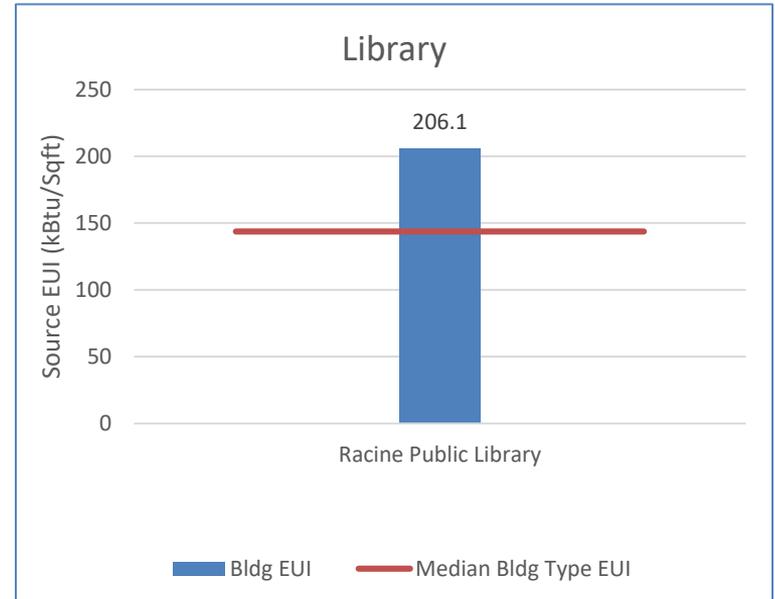
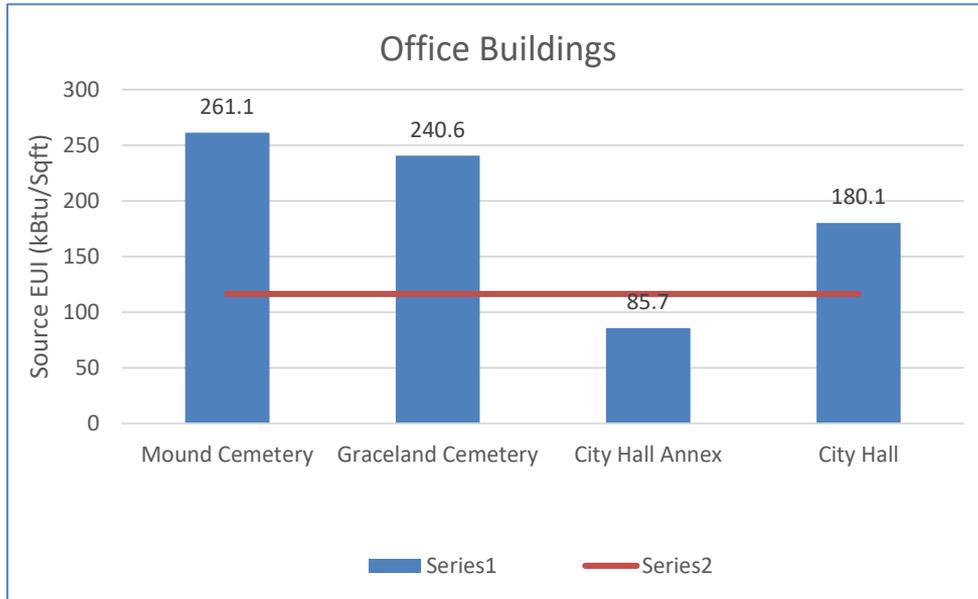
❖ From original building list the following have been excluded for now due to no utility information:

- ❖ Incinerator Building
- ❖ Hampden Place Garage
- ❖ Park Service Center
- ❖ Recreational Supply Building
- ❖ Lakeview Community Center (Fire)
- ❖ North Beach Bath House
- ❖ Wustum Museum
- ❖ All Golf Course Buildings
- ❖ Horlick Concession/Storage Building
- ❖ All Racine Zoo Buildings
- ❖ Radio Repair Facility

Benchmarking

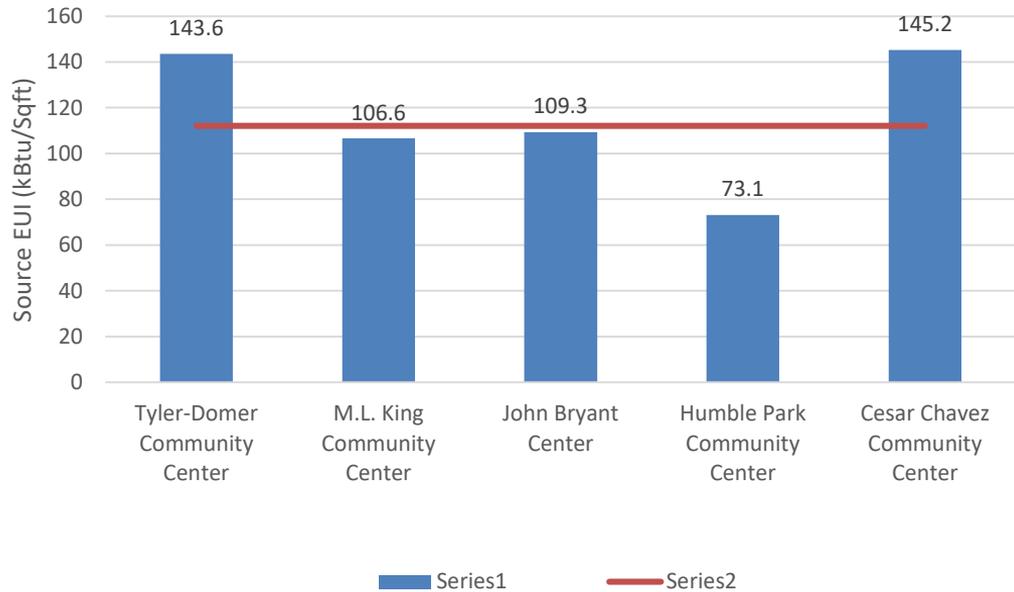


Benchmarking

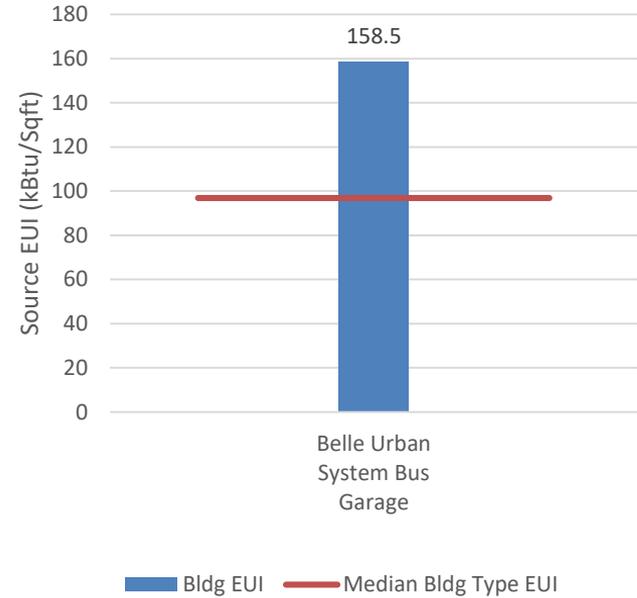


Benchmarking

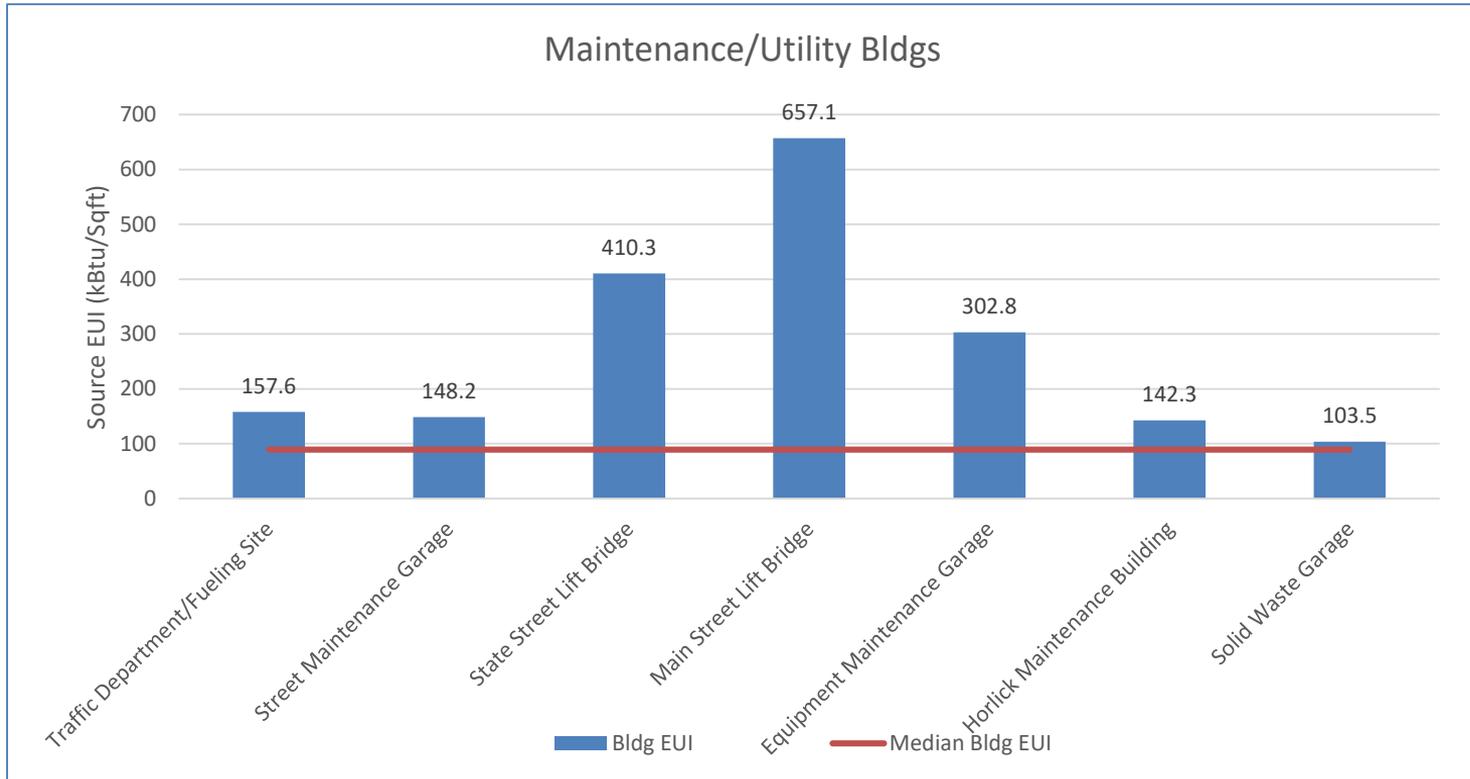
Recreation Facilities



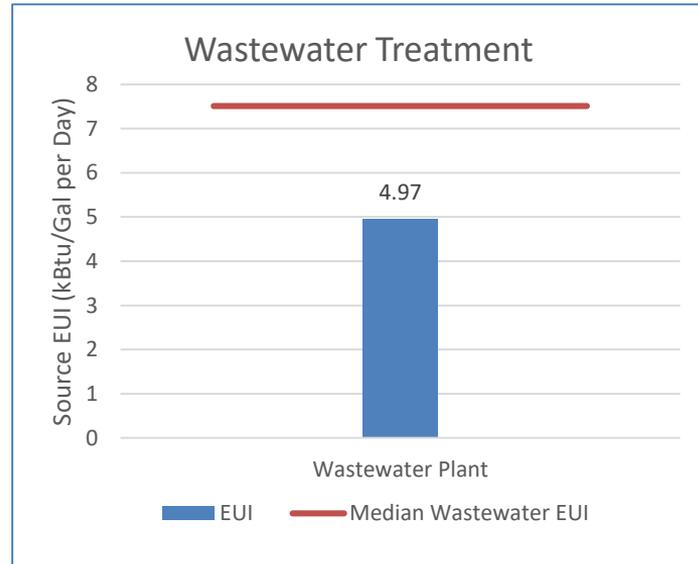
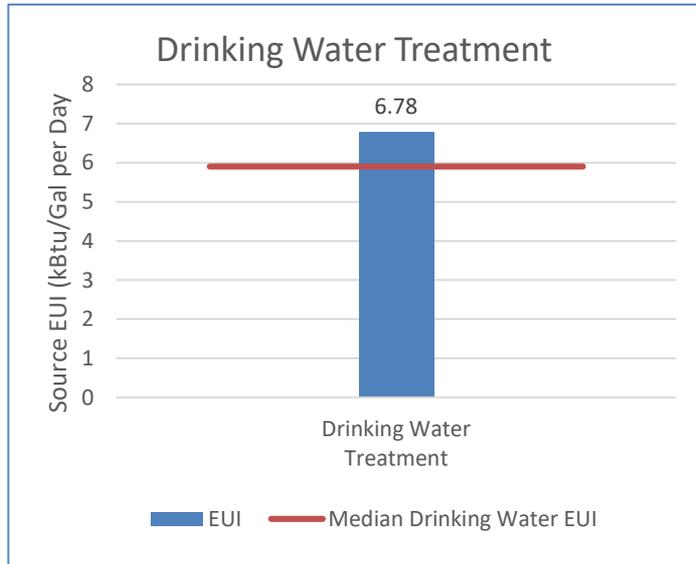
Repair Services



Benchmarking



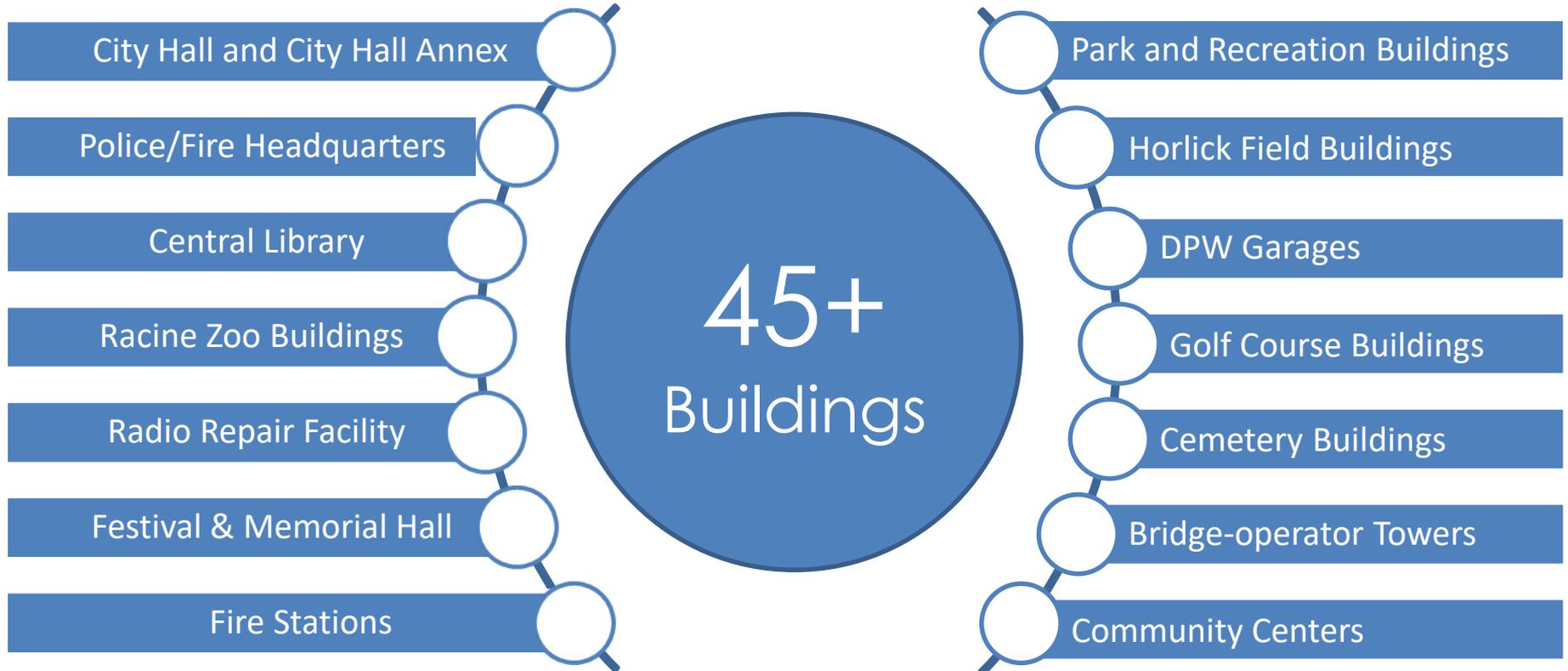
Benchmarking



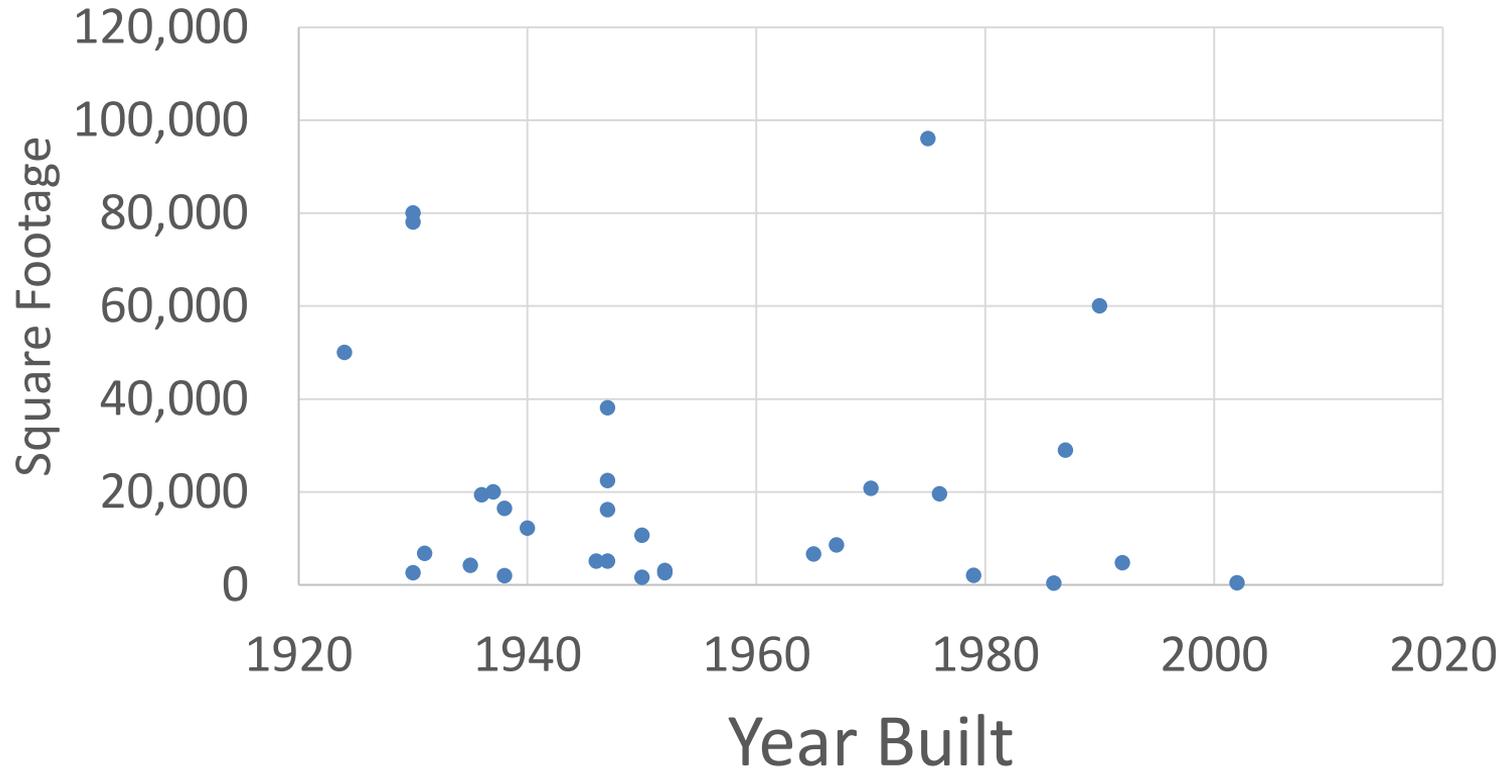
2.

Preliminary Building Audit Summary

City Owned Buildings



Building Age and Size



Prioritizing Investments

Building Energy Upgrade Priority

High
Priority

Low
Priority

City pays utility bills

Plans for long term
use

High usage

3rd party managed
bldg

3rd party pays
utilities

Light usage

Future demo
potential

Unknown future

Very limited usage

Prioritizing Investments

Building Energy Upgrade Priority

High
Priority

Low
Priority

City Hall
Library
Fire Stations
Most community centers

Golf Courses
Zoo Buildings
Memorial Hall

Public Safety Bldg
City Hall Annex
Humble Park
Lakeview Community Center
Festival Hall

Energy Audit Opportunities

- Continued tight operational management of building systems
 - HVAC scheduling
 - Continued equipment maintenance
 - Reasonable temperature setpoints and dead bands
 - Lighting schedules

Energy Audit Opportunities



Humble Park
Gym Lighting
Control Opportunity

Energy Audit Opportunities

- Implement lighting upgrades
 - Replace fluorescent with LED
 - Include occupancy sensors throughout
 - Include daylight sensors for lighting near windows

Energy Audit Opportunities



City Hall Lighting
Retrofit and
controls
opportunity

Energy Audit Opportunities

- Upgrade HVAC systems when at end of life
 - Convert constant volume systems to variable volume
 - Implement occupancy controls tied to HVAC systems
 - Install high efficiency condensing boilers

Energy Audit Opportunities



Library HVAC
Retrofit
Opportunity

Energy Audit Opportunities

- Weatherize and insulate envelope dominated buildings
 - Fire stations, Mound Cemetery

Energy Audit Opportunities



Insulation and
weatherization

HGA Next Steps

- Documents energy audit findings
- Finalize Solar PV assessments
- Compile total savings and cost
- Develop 3 timelines to achieve goals

The logo for HGA, consisting of the letters 'HGA' in a bold, sans-serif font, centered within a white square.

Thanks!

Any questions?

Contact:

HGA

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mbarnett@hga.com

608.554.5339

Benchmarking

❖ Buildings found with multiple same meter types

- ❖ Festival Hall (2 gas)
- ❖ Equipment Maintenance Garage (2 Electric)
- ❖ Belle Urban System Bus Garage (3 electric, 2 gas)
- ❖ DPW Transportation Building (5 Electric, 2 gas)
 - ❖ Traffic Department Accts (3 electric, 1 gas)
 - ❖ DPW Fueling Site Accts (2 electric, 1 gas)
 - ❖ 1 Elec Acct has no recent consumption
 - ❖ Gas Acct has no recent consumption