

# HOW MUNICIPALITIES ARE LEADING THE TRANSITION TO ELECTRIC VEHICLES

WISCONSIN ACADEMY OF SCIENCES, ARTS & LETTERS LOCAL GOVERNMENT SUMMIT

OCTOBER 27, 2021



# PANELISTS



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# City of Middleton - Fleet Transition Plan

Kelly Hilyard, Sustainability Coordinator





## Roadmap for Fleet Transition

- Community Engagement and Collaboration
- Energy Goals
- Planning Documents: Comprehensive Plan, Sustainability Plan, Energy Plan, 5-year Fleet Transition Plan
- Implementation
- Data and Measuring Success

# Middleton's Sustainability Timeline

- 2009 Sustainability Committee Constituted
- 2010 Sustainable City Plan
- 2016 Climate Referendum
- 2018 100% Renewable Energy Resolution
- EIGP Seven City Energy Planning Grant
- 2019 Full time Sustainability Coordinator
- 2020 Energy Plan Complete
- 2021 Comprehensive Plan Complete
- 2021-22 First EVs! Fleet Transition Plan



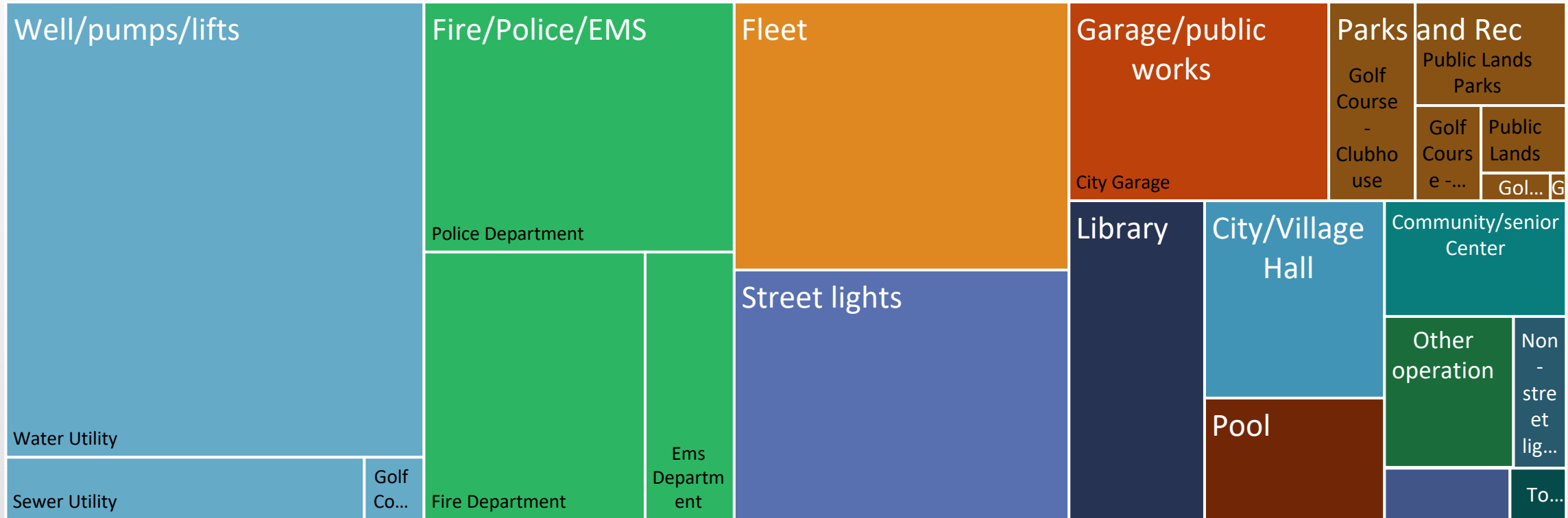
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# Goal of Energy Planning



- Develop a **baseline energy use profile** for municipal operations
- Identify **energy savings opportunities** to reduce energy and costs to each municipality
- Create a **near-term energy plan** for each municipality
- Leverage **collaborations and lessons learned** by working together

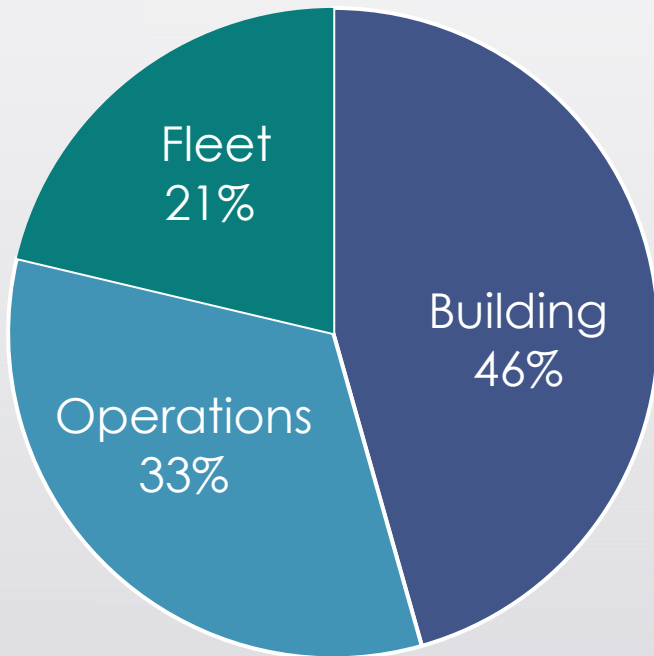
# Middleton: Relative Carbon Impact of Energy



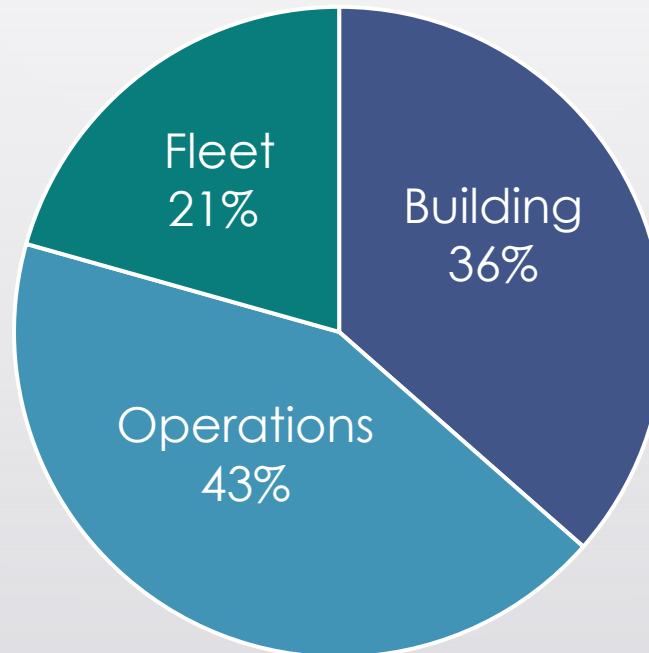
- Airport
- City/Village Hall
- Community/senior Center
- Fire/Police/EMS
- Fleet
- Garage/public works
- Library
- Non-street lighting
- Other building
- Other operation
- Parks and Rec
- Pool
- Street lights
- Well/pumps/lifts

# Energy and GHG Inventory

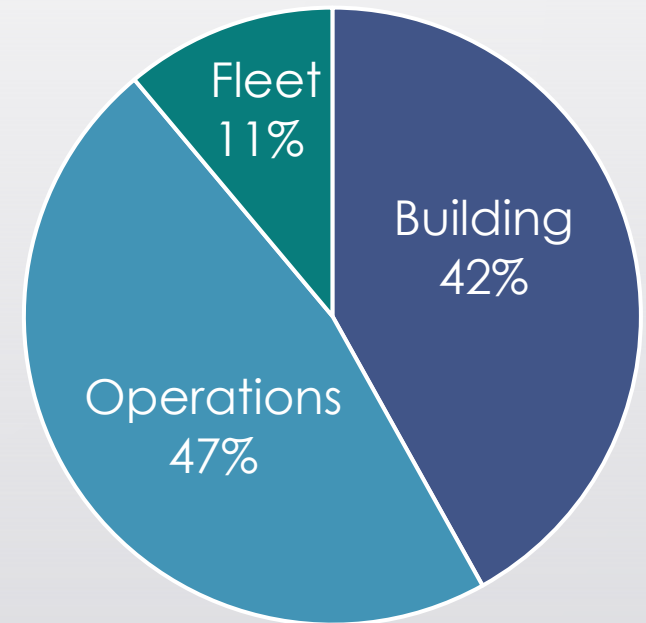
2018 Consumption (kBtu)



2018 Costs (\$)



Carbon dioxide emissions (CO<sub>2e</sub>)





# Overview of recommendations



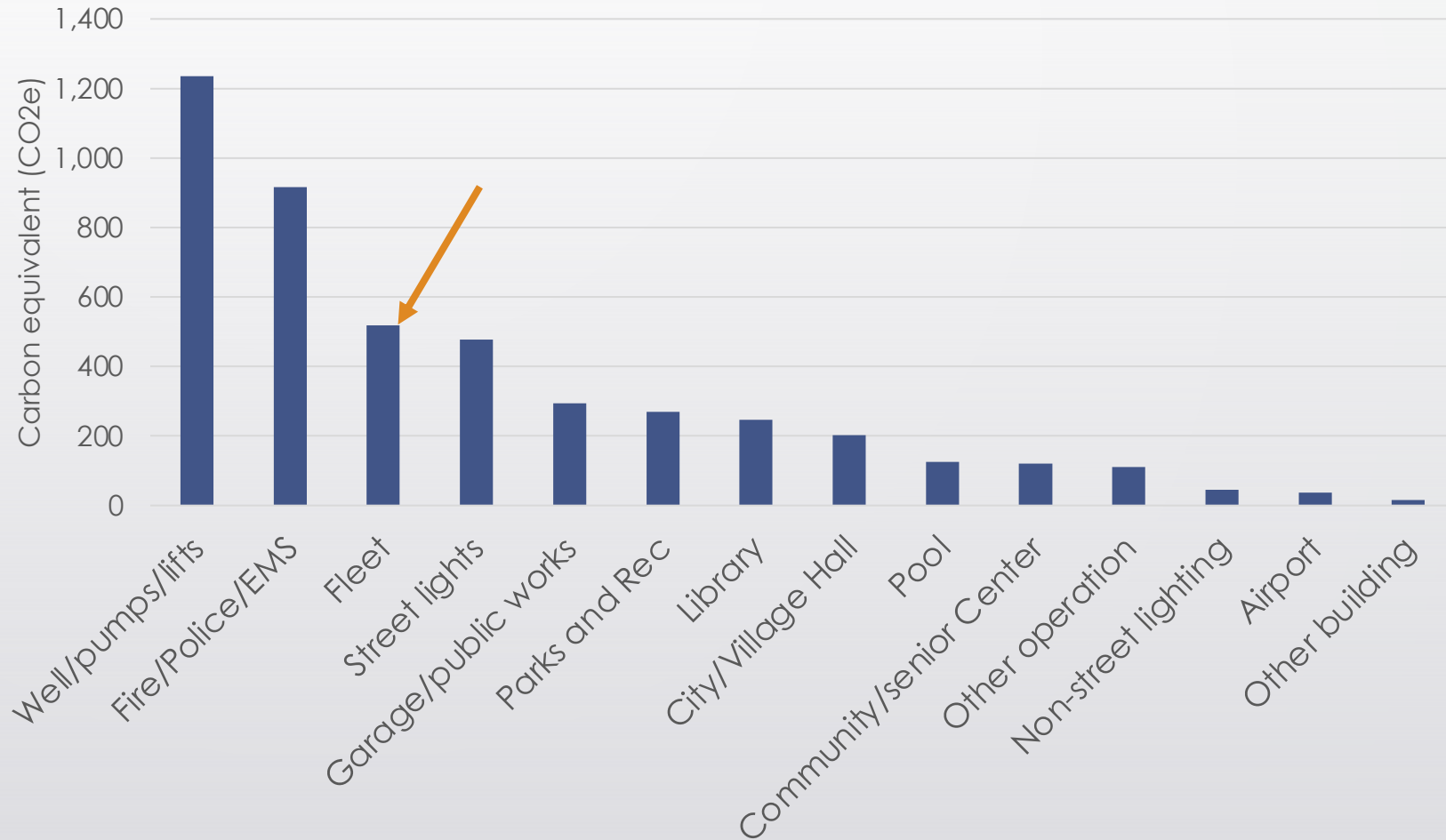
Building efficiency	Streetlighting	Fleet	Solar	Policies / Processes
LED upgrades Lighting controls HVAC controls Specific community investments	LED lighting upgrades	Police Hybrids Light-duty electric vehicles	Phased installations Policy for purchased renewable energy	Framework for data collection Operational / purchasing policies New construction design guidelines Community-targeted



# Energy Plan Priorities

- Energy Efficiency: lighting, HVAC, plug loads
- **Fleet Transition to EV/Hybrids**
- LED Streetlight Transition
- Solar Opportunities – Targeting specific wells

2018 Carbon impact (CO<sub>2</sub>e)



# Middleton current vehicle fuel usage

Department	Number of vehicles	Gallons	CO <sub>2</sub> (metric tons)	Fuel cost
Police	21	20,190	172	\$49,865
Light-duty	7	1,225	10	\$3,025
Emergency Vehicles	3	5,490	47	\$13,560
Pickups	27	12,885	110	\$31,830
Heavy-duty	18	8,100	83	\$24,300
Other	37	10,705	97	\$28,350
Total	113	58,595	518	\$150,930



# Middleton potential savings: alternative vehicle adoption

Department	Number of vehicles	CO <sub>2</sub> (metric tons)		Fuel cost	
		Current	Alternative	Current	Alternative
<b>Police</b>	21	172	104	\$49,865	\$24,460
<b>Light-duty</b>	7	10	6	\$3,025	\$1,180





# Police Vehicles: Lifetime Savings

	Lifetime	Incremental Vehicle Cost	Annual Cost Savings	Lifetime Savings	Payback Period	Lifetime Carbon Reduction
Hybrid Patrol SUV	8	3,500	1,640	10,200	1.2	41%
Hybrid Patrol Sedan	8	3,500	2,170	14,560	1	55%
Electric Motorcycle	8	390	825	8,600	.4	35%

## Opportunities:

- Interdepartmental Collaboration
- [Sustainability Leadership Collaborative](#)
- State Charging Infrastructure Planning/Municipal Energy Planning

## Challenges:

- Energy Data Tracking
- Budget Cycle
- Technology Changes – Risk
- Battery Recycling and Recalls



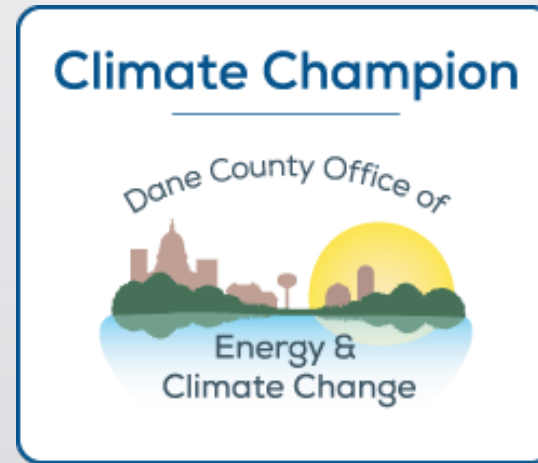
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# Thank You!

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# FLEET BY THE NUMBERS

- ✓ Acquisitions, Maintenance, Fueling, and Sale for **1,400** City vehicles (not including Metro, Water Utility)
- ✓ **38** Full-Time Staff
- ✓ **9** Fuel Stations
- ✓ **4** Repair Garages
- ✓ **2** Shifts
- ✓ **3** Part-time Apprentices
- ✓ **3** Part-time Custodial Staff



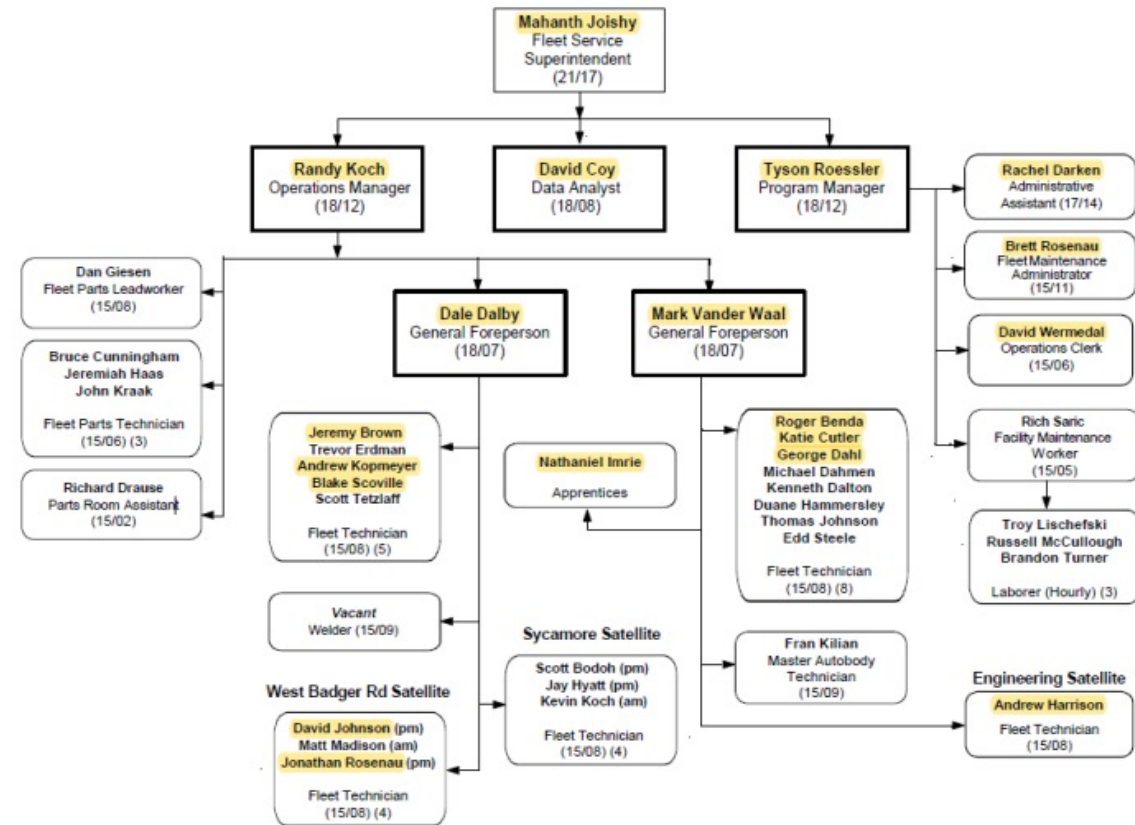


# NEW FLEET HQ BUILDING



- ▶ Featuring: Solar power panels, solar water heating panels, solar heating wall for building, solar EV chargers, CNG repair bays, City EV chargers, Public EV chargers, employee EV chargers, natural lighting

# NEW FLEET TEAM



**APPRENTICES:  
THE NEXT  
GENERATION  
OF  
AUTOMOTIVE &  
ENGINEERING  
PROFESSIONALS**





KOIN 6 WEATHER

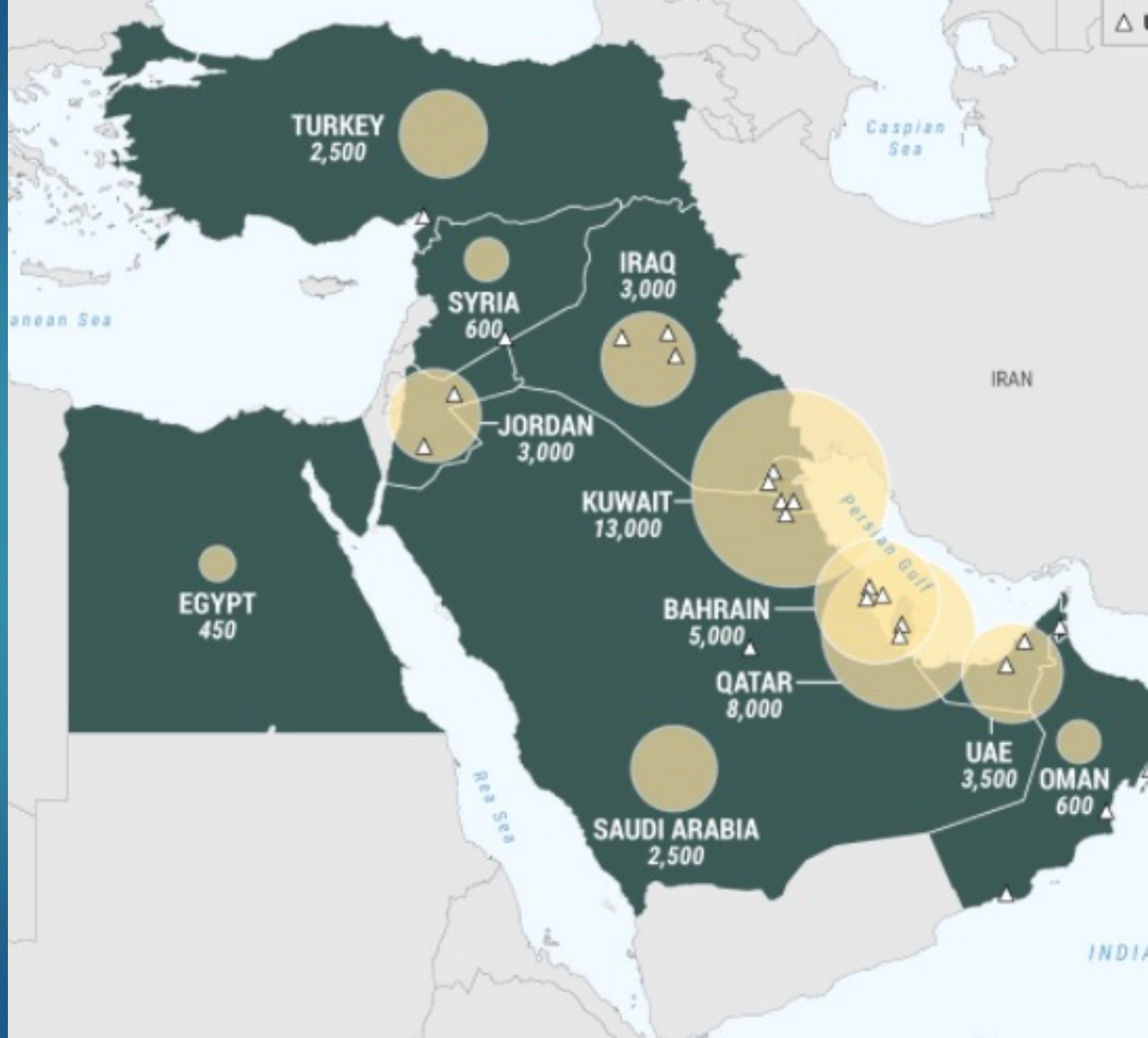
# HISTORIC HEAT WAVE

PORTLAND

SATURDAY	SUNDAY	MONDAY
<b>108°</b>	<b>112°</b>	<b>116°</b>
JUNE 26, 2021	JUNE 27, 2021	JUNE 28, 2021

A background image of a city skyline, likely Portland, Oregon, during a sunset or sunrise. The sky is a mix of orange, yellow, and blue, with the sun low on the horizon. The city buildings are silhouetted against the bright sky. A signature is visible in the bottom right corner of the graphic.

# UPSTREAM/ DOWNSTREAM EFFECTS OF FOSSIL FUELS



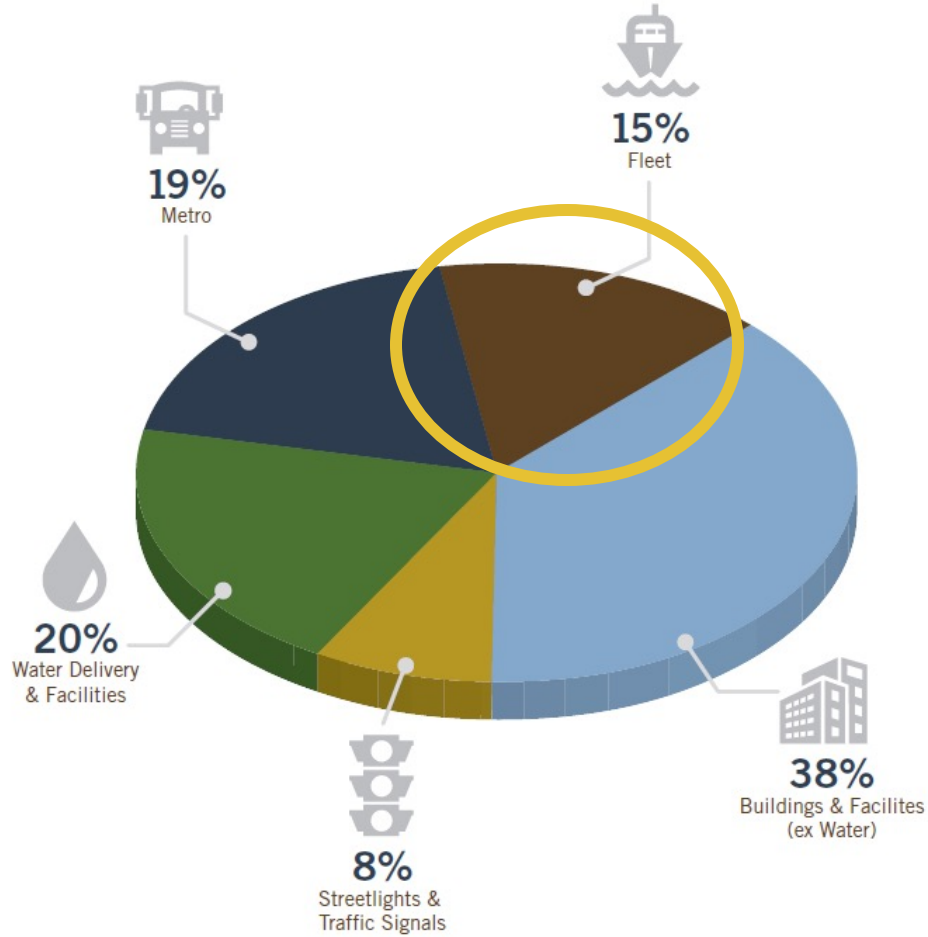




# Climate Forward MADISON

Investing in a clean, healthy, and more resilient future

**FIGURE A-2. BASELINE CARBON EMISSIONS FOR CITY OPERATIONS BY CATEGORY\***



*\*\*Excludes landfill, city employee commute, and City-owned housing emissions. Source: HGA based on ICLEI*

- ▶ Figure A-2 shows baseline city operations emissions were 81,141 tons CO<sub>2</sub> broken out by category.
- ▶ 15% of 81,141 = 12,171.15 tons CO<sub>2</sub>



# Since 2018



**126.85K**

LBS. OF CO2 REDUCED IN OUR MAIN FACILITY



**1.15M**

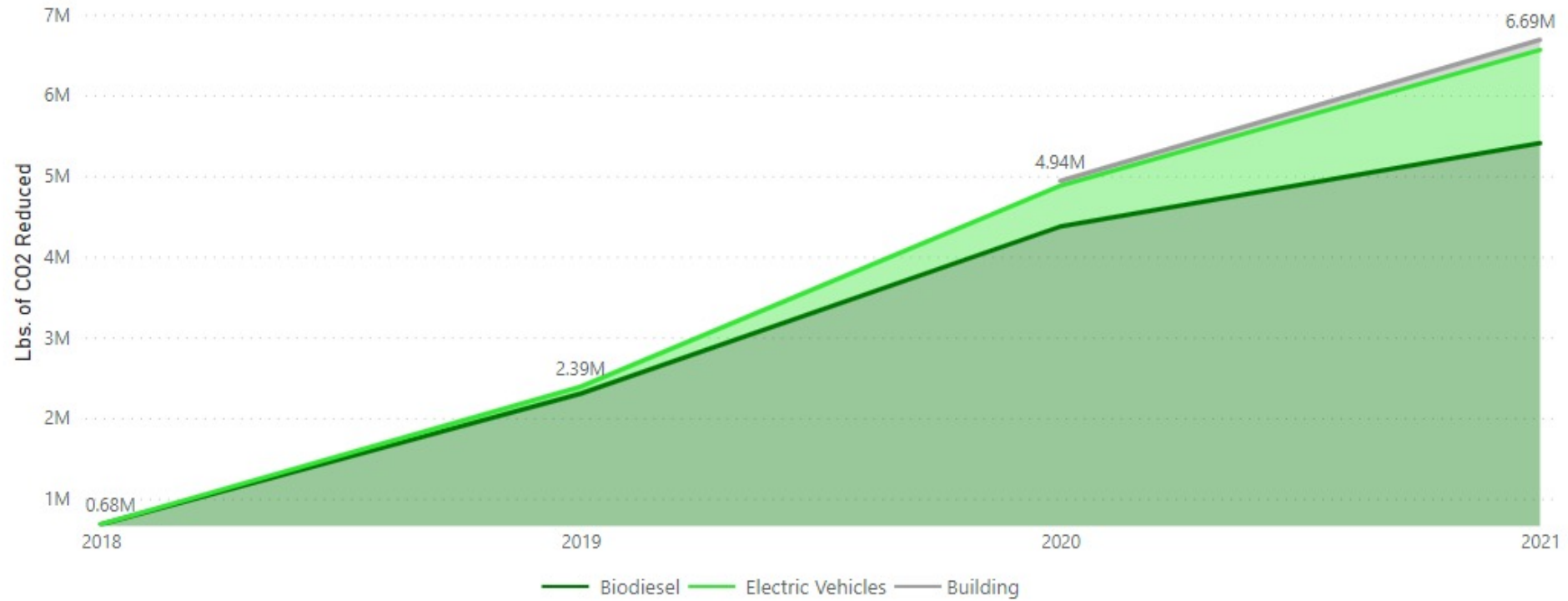
LBS. OF CO2 REDUCED BY ELECTRIC VEHICLES



**5.41M**

LBS. OF CO2 REDUCED BY BIODIESEL

Cumulative CO2 Reductions by Type



# TYPES OF EVs OWNED – 60 & COUNTING



# HYBRID-ELECTRIC VEHICLES & SOY TIRES



# ANTI-IDLING TECHNOLOGY

- ▶ All new Madison Fire Dept ambulances are arriving with anti-idle tech.
- ▶ This allows ambulances to continue working off an electrical system while the engine shuts off.
- ▶ Anti-idling is better for the environment by reducing air pollution and noise pollution. Engine maintenance also improves.
- ▶ Fuel savings are also achieved of up to 40%.





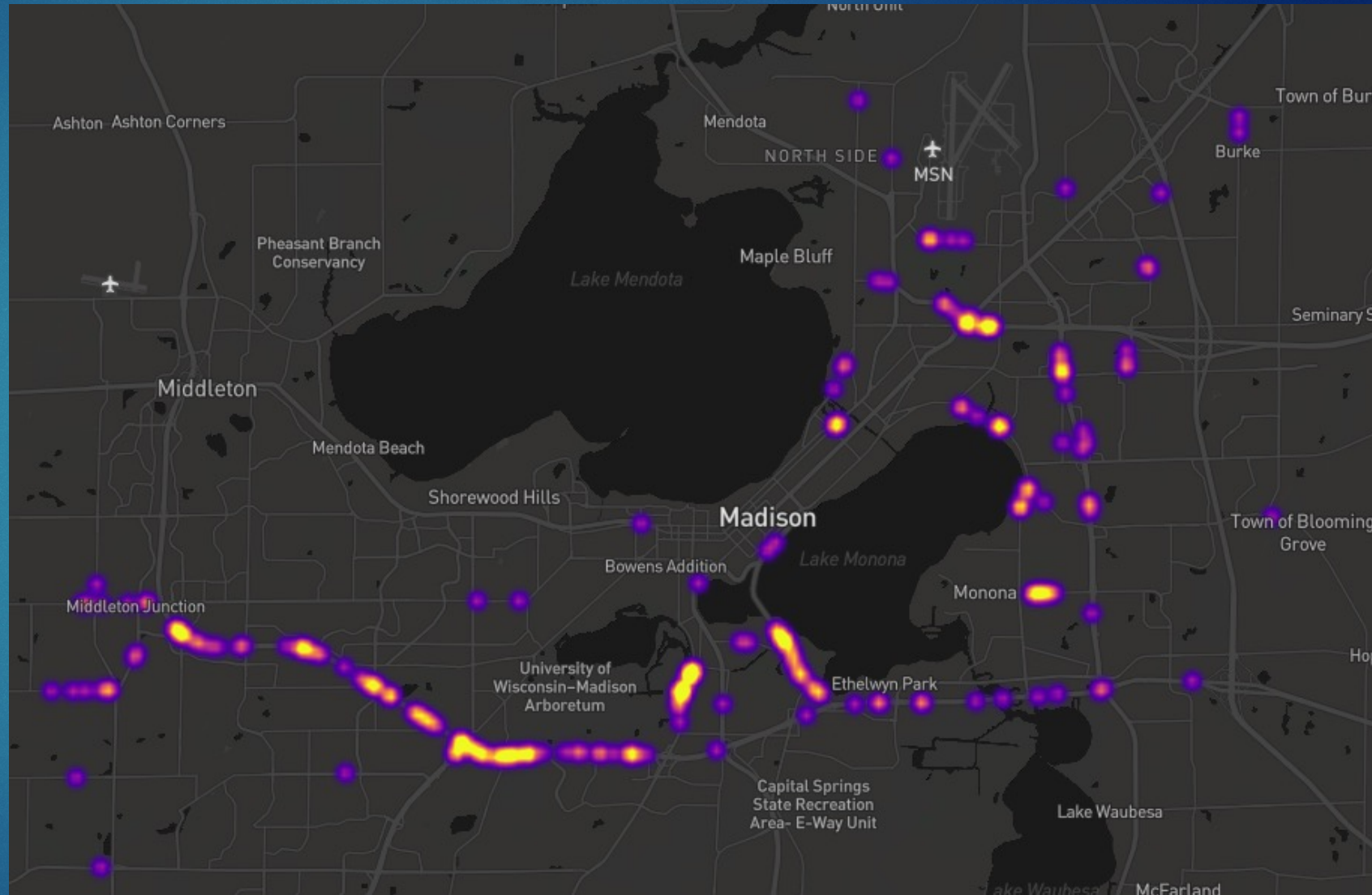
# BIODIESEL

- ✓ Renewable energy source
- ✓ Largely soybean, agricultural waste and waste oil based
- ✓ Grown and processed in Midwestern states- supporting local economy including WI
- ✓ Reduces emissions and carbon footprint
- ✓ Reduces dependence on foreign oil and gas
- ✓ Blends up to 20% or B20 in warm months
- ✓ Planning for B100 pilot





# LEVERAGING GPS TECHNOLOGY & OTHERS



# DEVICES & DISTRACTED DRIVING

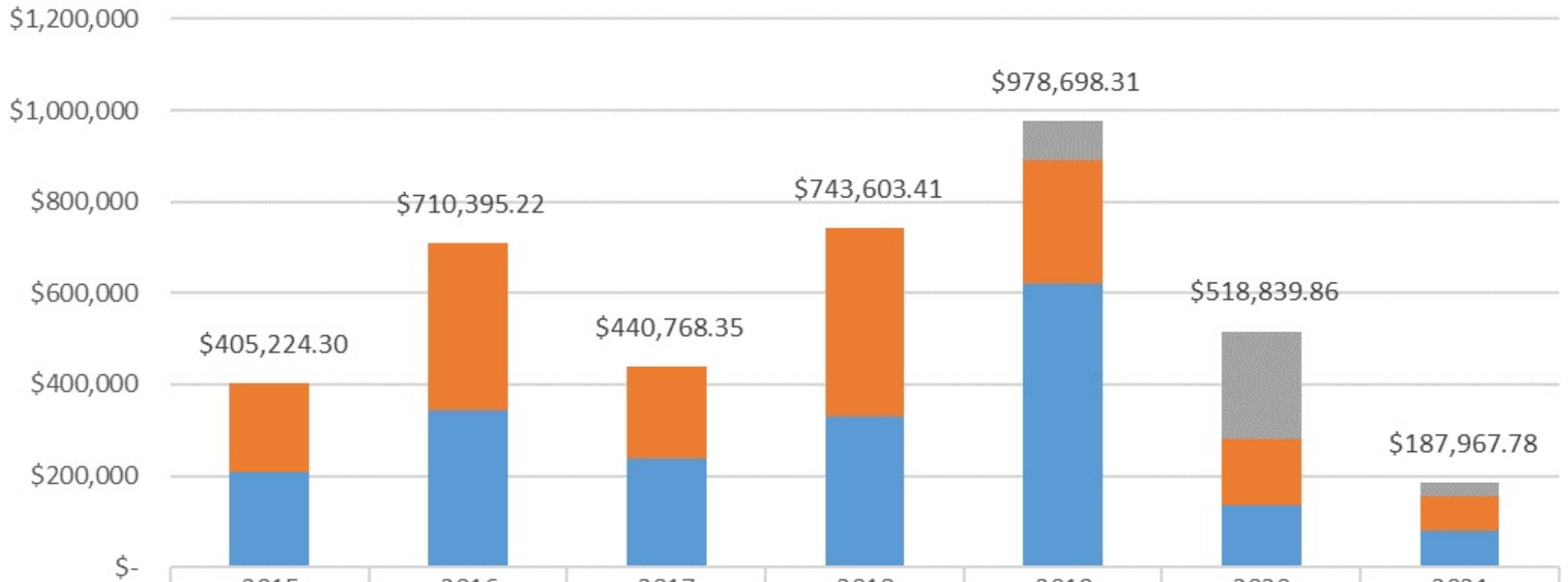
- ▶ Cell phones while driving cause 26% of all US traffic collisions
- ▶ Cell phone usage is like driving with .08 Blood Alcohol Level (legal limit)
- ▶ Hands-free sets are **NO** safer than handheld sets due to distraction
- ▶ Tackling this problem is about changing the culture of our workplace. We need **EVERYONE** to help.
- ▶ We are encouraging **ALL** fleets in the area, public and private, to adopt a cell phone ban





# FLEET COLLISION TRACKING

Accident Cost Throughout the City



	2015	2016	2017	2018	2019	2020	2021
Worker's Comp					\$84,137.95	\$236,873.23	\$28,837.14
Repairs	\$195,847.14	\$363,077.10	\$201,717.98	\$409,502.50	\$271,148.87	\$142,873.45	\$78,752.86
Liability	\$207,362.16	\$345,302.12	\$237,033.37	\$332,082.91	\$621,392.49	\$137,073.18	\$78,356.78
<b>Total</b>	<b>\$405,224.30</b>	<b>\$710,395.22</b>	<b>\$440,768.35</b>	<b>\$743,603.41</b>	<b>\$978,698.31</b>	<b>\$518,839.86</b>	<b>\$187,967.78</b>

# OUTREACH/PARTNERSHIP ACTIVITIES



Lorrie Lisek  
Executive Director  
Wisconsin Clean Cities



Mandela Barnes  
Lieutenant Governor  
State of Wisconsin



Maria Redmond  
Director  
Wisconsin Office of Sustainability & Clean Energy



Mahanth Joishy  
Fleet Superintendent  
City of Madison Fleet Service



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# 2021 AND BEYOND GOALS!

- ✓ Expand Solar Capacity-  
Charging and Buildings
- ✓ More Electric Trucks
- ✓ Fleet Rightsizing
- ✓ Biodiesel 100 pilot
- ✓ Paperless

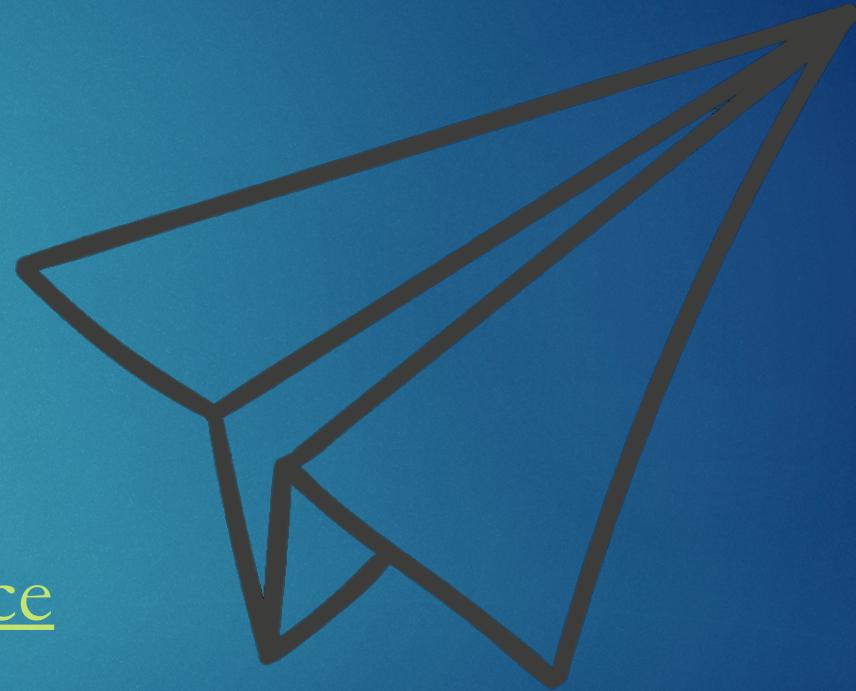


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 @MadisonWIFleet

 @MadisonWIFleet



# Our Route to Electric Buses

## Racine Receives \$6.1 million For New Electric Buses

Volkswagen was ordered to pay a settlement of \$2.9 billion to states. Wisconsin received \$67.1 million of that settlement.



Scott Anderson, Patch Staff  
Posted Fri, Nov 30, 2018 at 10:08 am CT

Like 493 Share

Reply



## The Journal Times

CITY OF RACINE

**Racine is Wisconsin's electric bus trendsetter. Here's why it is investing early in public transport's future**

Adam Rogan Mar 9, 2021 0 4 min to read

## The benefits of electric buses and multimodal transit in our communities:

- Environment
- Public Health
- Access & Connectivity
- Rider & Driver Experience
- Economics
- Innovation
- Brand



## The “Bus” Basics

- 9 Electric Buses
- Batteries
- Routes & Range
- Charging
- Solar Integration





# Funding Racine's Electric Buses: A Timeline

**November 2018** - \$6,190,906 from Volkswagen Transit Capital Assistance Grant Program

**May 2019** - Sustainability and Conservation Coordinator Hired

**October 2019** - City of Racine Electric Bus Analysis Completed

**June 2020** - \$3,183,723 from the Federal Transit Authority's (FTA) Low or No Emission Vehicle Program ("Low-No Program") with Proterra named as Project Partner

**September 2020** - \$2,094,640 from Volkswagen Transit Capital Assistance Grant Program



# Implementing Racine's Electric Bus Program: A Timeline

**Late 2020/Early 2021** - Proterra and City of Racine facilitate logistics and planning for electric bus program

**November/December 2021** - 9 electric buses with leased batteries + associated charging infrastructure delivery scheduled

**Spring 2022** - 9 electric buses in revenue service after training, maintenance and inspection.



# The role local elected officials can play in advancing electric buses and modern transportation options

- Recognize Your Community's Needs and Opportunities
  - Assets & Challenges
- The 5 T's
  - Training, Talent, Tourism, Technology & **Transportation**
- The 3 S's
  - **Savings, Sustainability & Service**



*THANK YOU!*

## Questions?

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