



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

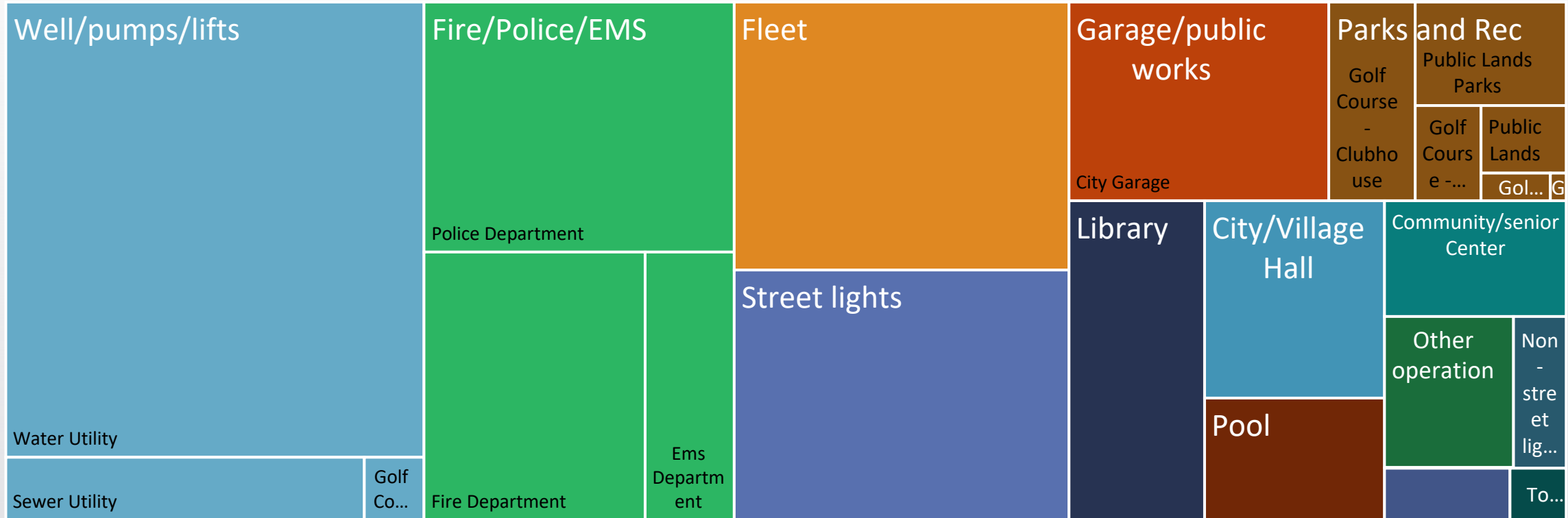


Goal of Energy Planning



- 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

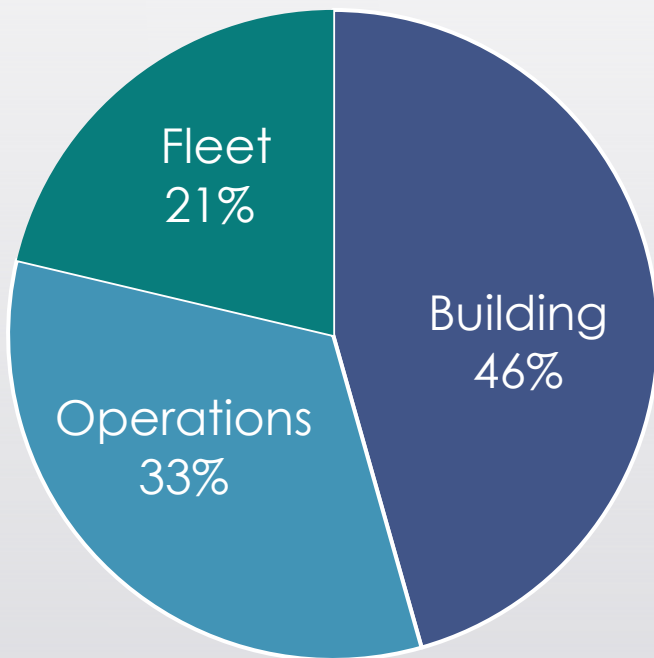
Middleton: Relative Carbon Impact of Energy



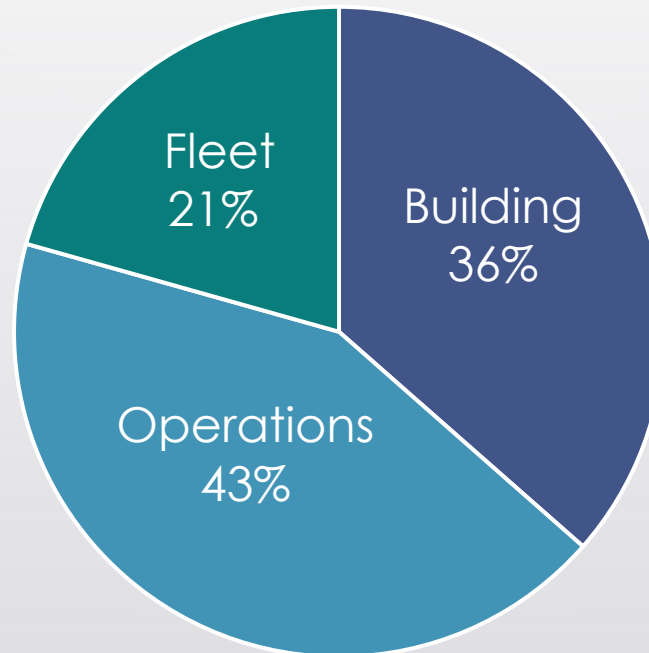
- Airport
- City/Village Hall
- Community/senior Center
- Fire/Police/EMS
- Fleet
- Garage/public works
- Library
- Non-street lighting
- Other building
- Other operation
- Parks and Rec
- Pool
- Street lights
- Well/pumps/lifts

Energy and GHG Inventory

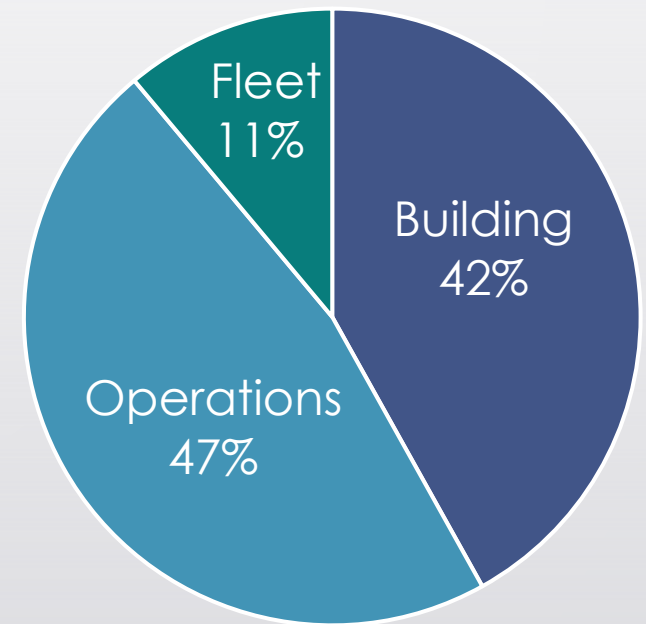
2018 Consumption (kBtu)



2018 Costs (\$)



Carbon dioxide emissions (CO_{2e})



Overview of recommendations



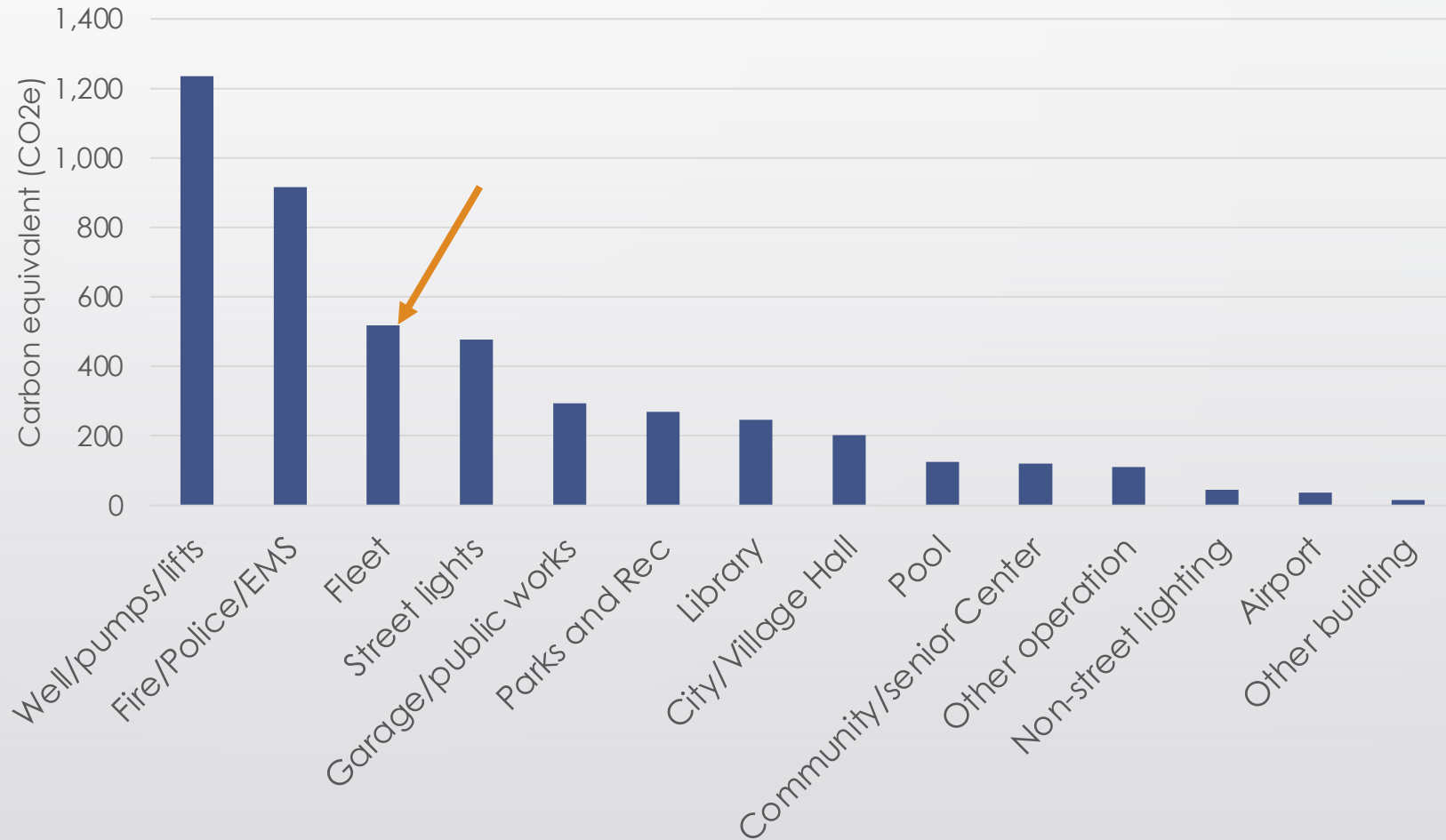
Building efficiency	Streetlighting	Fleet	Solar	Policies / Processes
LED upgrades Lighting controls HVAC controls Specific community investments	LED lighting upgrades	Police Hybrids Light-duty electric vehicles	Phased installations Policy for purchased renewable energy	Framework for data collection Operational / 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 (CO₂e)



Middleton current vehicle fuel usage

Department	Number of vehicles	Gallons	CO ₂ (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 ₂ (metric tons)		Fuel cost	
		Current	Alternative	Current	Alternative
Police	21	172	104	\$49,865	\$24,460
Light-duty	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

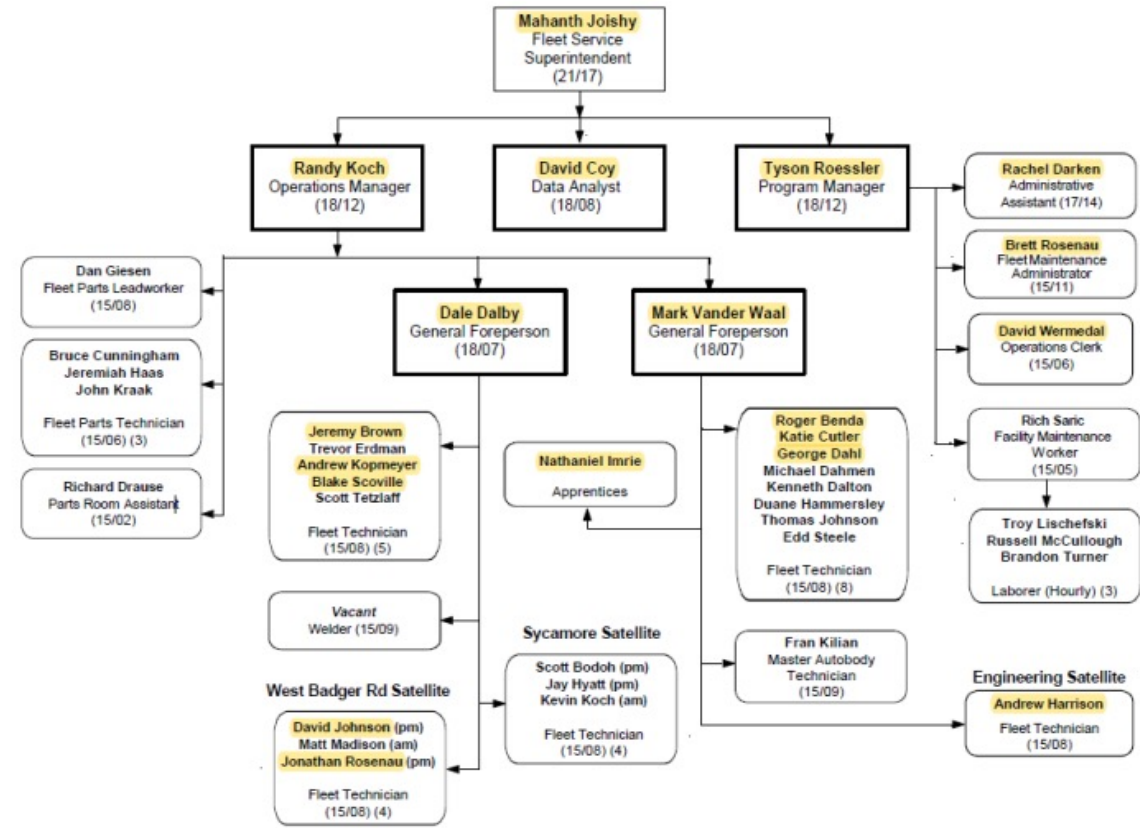


NEW FLEET HQ BUILDING



- ▶ 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

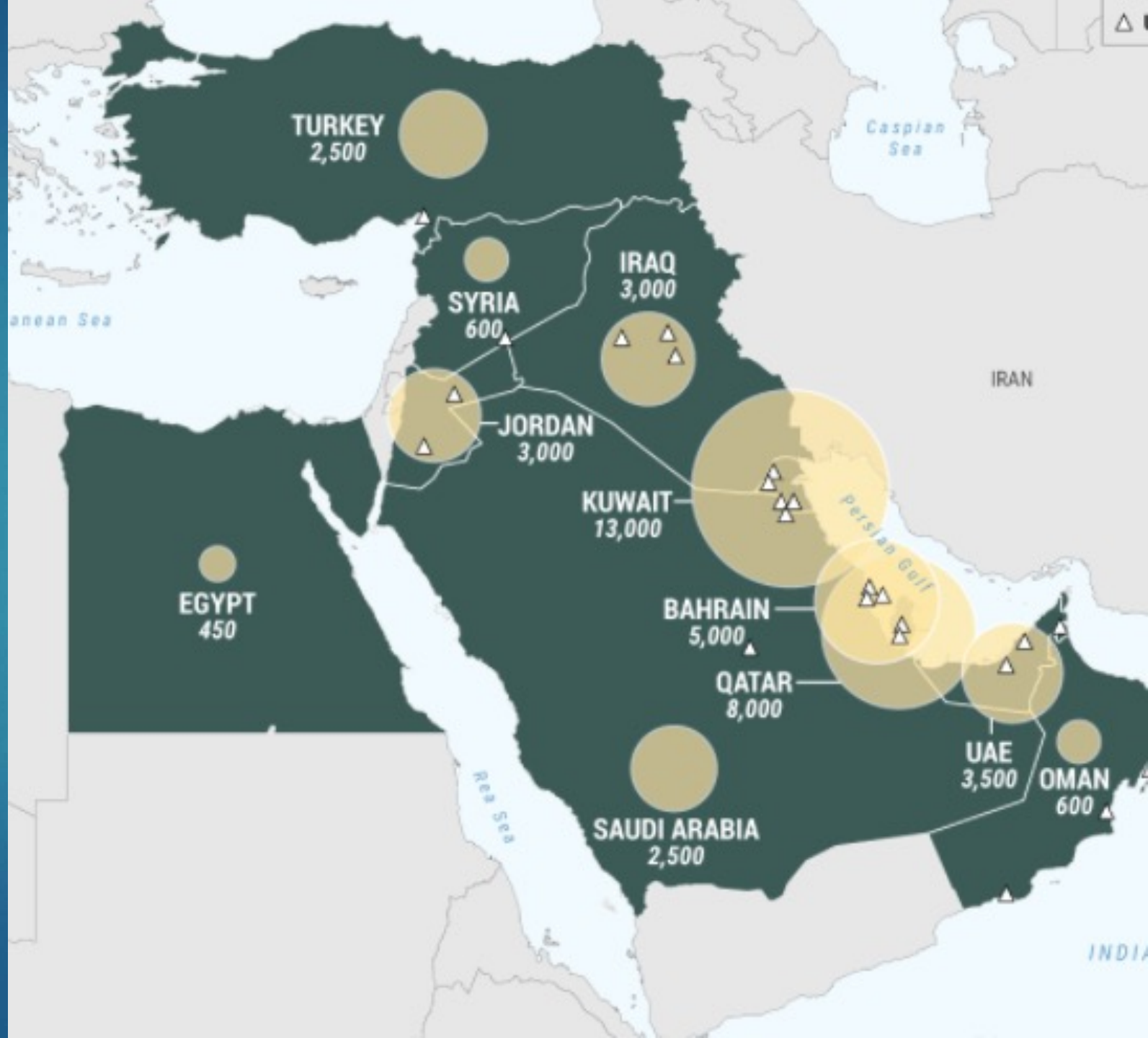
HISTORIC HEAT WAVE

PORTLAND

SATURDAY	SUNDAY	MONDAY
108°	112°	116°
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. 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



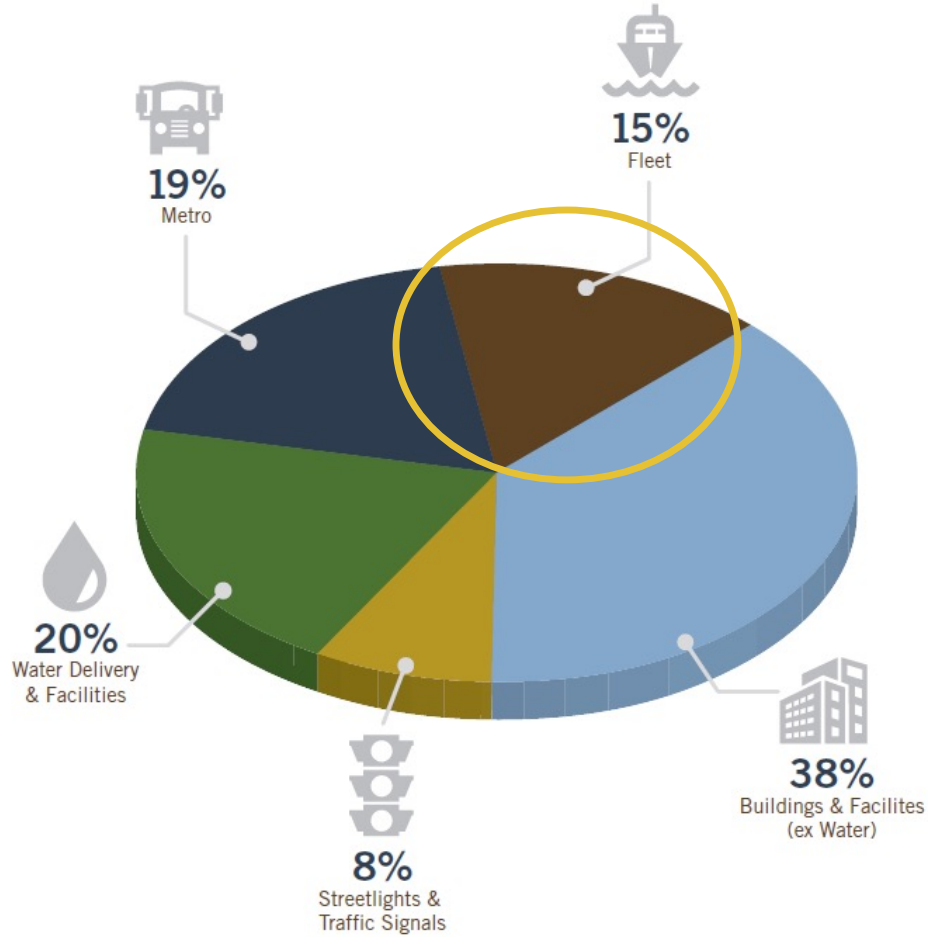




Climate Forward MADISON

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 CO₂ broken out by category.
- ▶ 15% of 81,141 = 12,171.15 tons CO₂

Since 2018



126.85K

LBS. OF CO2 REDUCED IN OUR MAIN FACILITY



1.15M

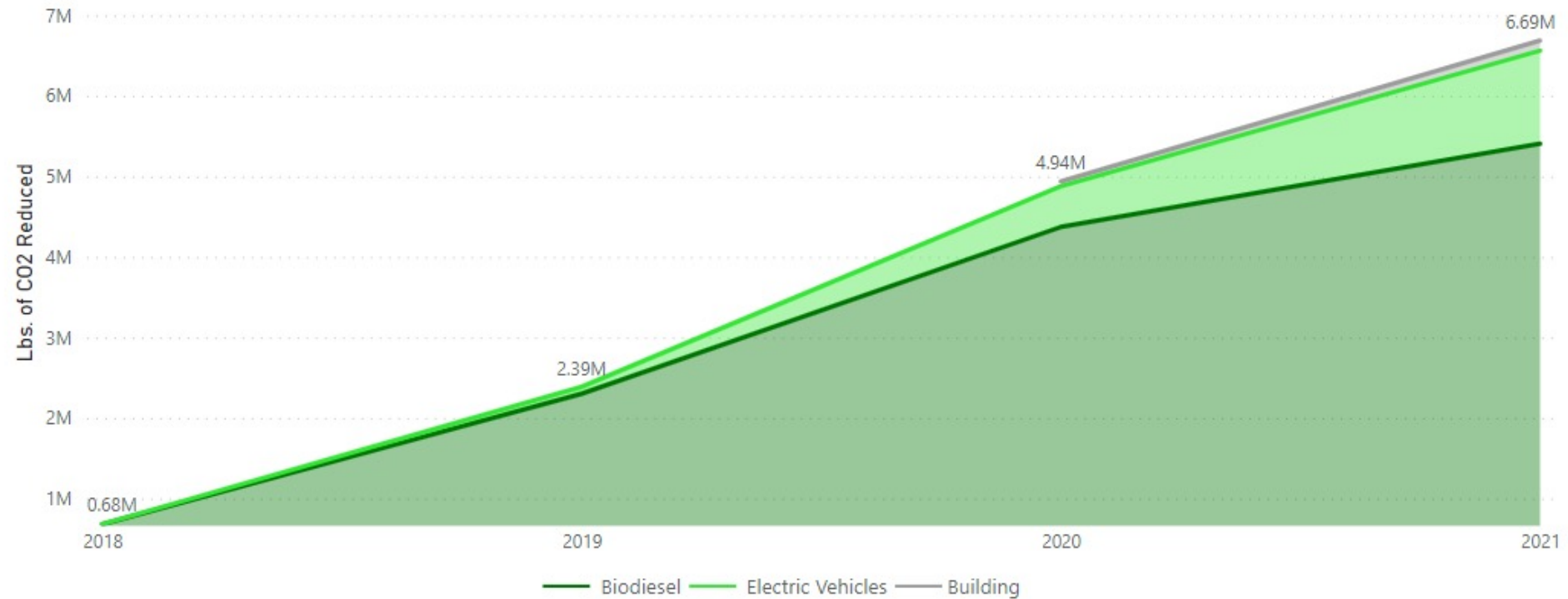
LBS. OF CO2 REDUCED BY ELECTRIC VEHICLES



5.41M

LBS. OF CO2 REDUCED BY BIODIESEL

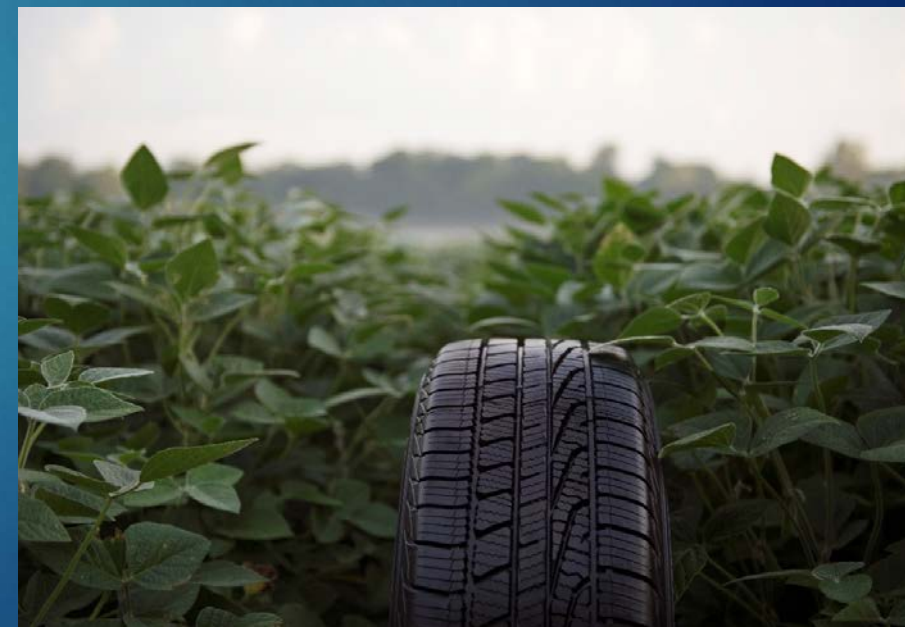
Cumulative CO2 Reductions by Type



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%.





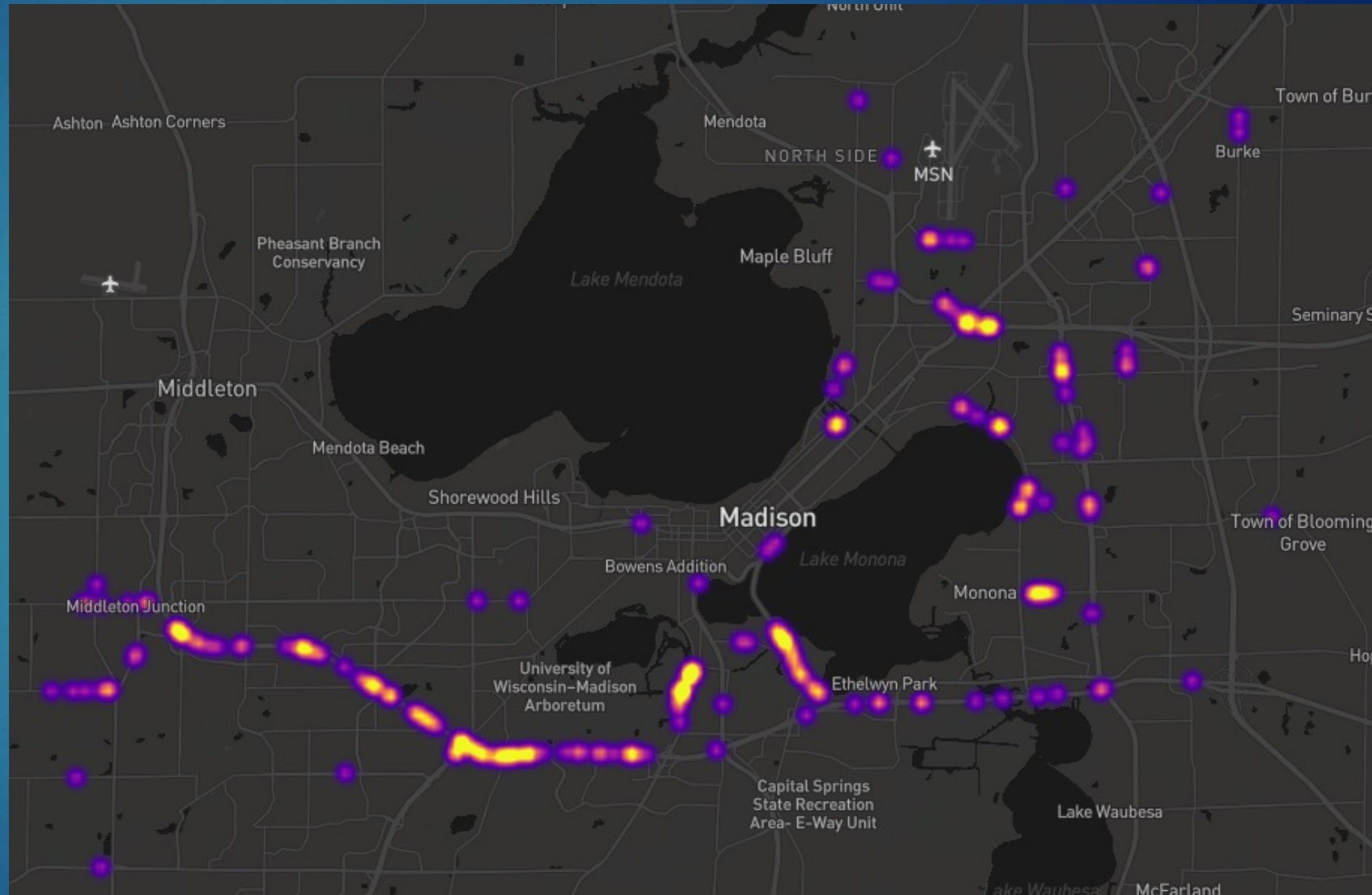
BIODIESEL

- ✓ 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



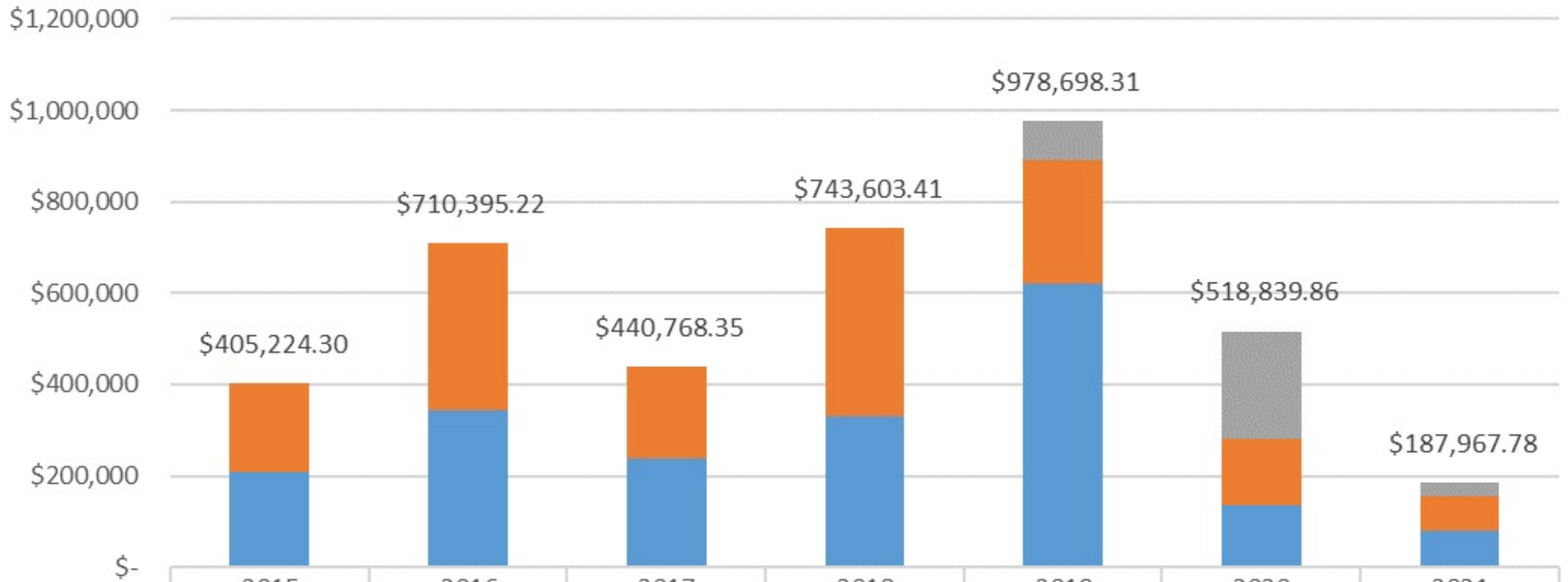
DEVICES & DISTRACTED DRIVING

- ▶ 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
Total	\$405,224.30	\$710,395.22	\$440,768.35	\$743,603.41	\$978,698.31	\$518,839.86	\$187,967.78

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

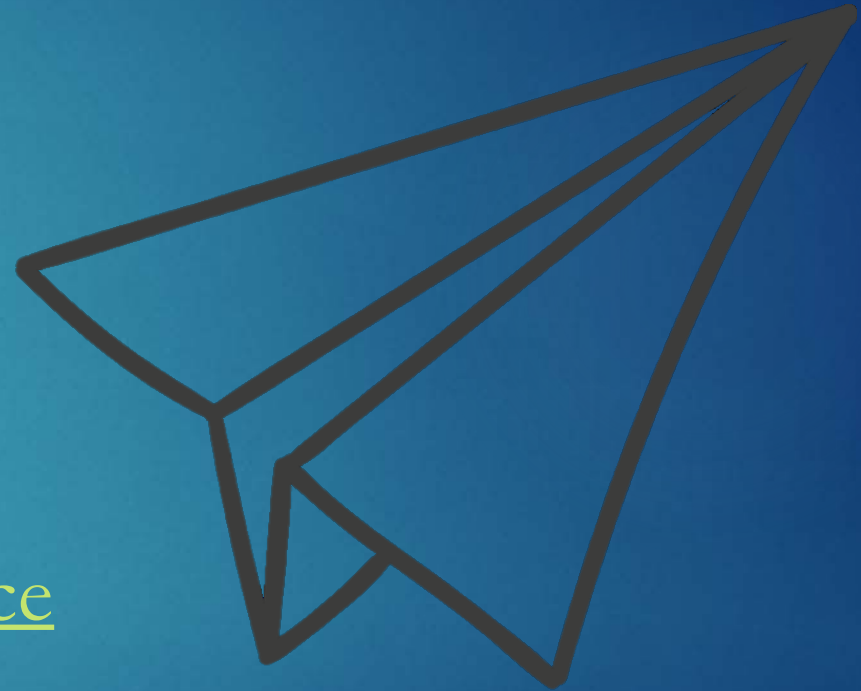


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 @MadisonWIFleet

 @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

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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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