La Crosse County Climate Action Plan

LA CROSSE COUNTY

Exceptional services. Extraordinary place.

PART 1:

GOVERNMENT OPERATIONS PLAN

Contents

Contents 1

I. Acknowledgements *2*

II. Introduction *3*

III. Previous County Sustainability Efforts *4*

IV. Climate Action Plan Part 1 Scope *6*

V. Sustainability Assessments of County Operations *2*

A. Sustainability Indicators Reports & Greenhouse Gas (GHG) Emissions Inventory 9

B. Fleet Assessments 10

C. Energy Star Building Energy Portfolio Manager 12

VI. Plan Elements *15*

VII. Element 1: Organization Administration & Policy *16*

A. Procurement of Supplies and Services 16

B. Employee Education & Programming 17

C. Organization Administration & Policy Goals & Recommended Actions 17

VIII. Element 2: Natural Resources *19*

A. Managed Forests, Parks, and Greenspaces 19

B. Water & Stormwater Management 20

C. Natural Resources Goals & Recommended Actions 22

IX. Element 3: Commuting & Fleets *24*

A. Transit 24

B. Parking 25

C. Employee Commuting 25

D. County Fleets 26

E. EV Charging 29

F. Commuting & Fleets Goals & Recommended Actions 31

X. Element 4: Buildings and Energy *33*

A. Building Energy Efficiency 34

B. Solar & Renewable Energy 36

C. Buildings and Energy Goals & Recommended Actions 38

XI. Element 5: Waste and Pollution Mitigation *40*

A. Water Use 40

B. Paper Use 41

C. County Landfill 41

D. County Greenhouse Gas Emissions 44

E. Waste and Pollution Mitigation Goals & Recommended Actions 49

XII. Implementation & Evaluation *51*

A. Implementation 51

B. Evaluation 52

I. Acknowledgements

La Crosse County Climate Action Operations Plan, Staff Advisory Team

Ryan Westphal, Director, Facilities Department

Jadd Stillwell, Director, Solid Waste Department

Joe Langeberg, Director, Highway Department

Cathy Tschumper, Assistant Highway Commissioner/Shop Superintendent

Mike Horstman, Chief Deputy, Sheriff's Office

Matt Hanewall, Director, Land Conservation Department

Kathleen Stewart, Director, Zoning, Planning and Land Information Department

Charlie Handy, Community Development Manager, Zoning, Planning and Land Information Department

Assessments & Technical Assistance

Anders Olson, Sustainability Analytics LLC

Matthew Christman, Program Specialist, Wisconsin Clean Cities

Xcel Energy & Sawatch Labs

General Advising

Regan Watts, Recycling & Sustainability Coordinator, Eau Claire County

Wisconsin Local Government Climate Coalition

Authors

Dillon Constant, County Planner, Zoning, Planning and Land Information Department

Travis Key, Sustainability Intern, Zoning, Planning and Land Information Department

II. Introduction

This plan recommends actions La Crosse County can take to achieve cost savings and carbon neutral operations by 2050.

This plan is "Part 1" of a two-part Climate Action Plan (CAP) that serves as an operational guide for La Crosse County government's climate action and sustainability efforts. **Sustainability is the practice of managing consumption of natural resources to avoid destabilization of the planet's ecological balance, while meeting present needs without compromising humanity's ability to meet future needs.** La Crosse County can improve its sustainability through actions that balance the needs of residents, private employers, and the environment to mitigate negative impacts they may have on each other. This operations plan recommends actions La Crosse County should take to improve the sustainability of its buildings, vehicle fleets, administrative operations, internal policies, and provision of services to residents between 2024 and 2050. The intended audience of CAP Part 1 is primarily the County leadership, staff, and elected officials charged with implementation of this plan.

There's a limited supply of many resources, such as land, water, fertile soil, minerals, and hydrocarbons, that La Crosse County relies upon to maintain adequate services for residents. Negligent consumption of these natural resources affects the global ecological balance and proliferates the negative impacts of climate change. Unsustainable patterns of consumption around the world have contributed to climate change, and by adapting some of its own behaviors, the County can do its part to alleviate its impacts on global climate. Greater organizational sustainability can be achieved through "climate action", that is, by doing what La Crosse County can to achieve the co-benefits that result from mitigating increasing global temperatures resulting from human-induced climate change.

Sustainability is rooted in managing consumption of finite resources to achieve longevity, efficiency, resilience, and cost savings. As finite resources, and products made from finite resources, become scarcer, costs for materials necessary to maintain County services will increase. In addition to climate change mitigation and natural resource preservation, the County has a clear interest in proactively engaging in sustainable activities which may reduce long-term expenses and leverage new economic opportunities resulting from advances in sustainability-oriented industries. Economic opportunities and private sector-related goals and recommendations are covered in more detail in Part 2 of this plan, the Community Plan.

As both stewards and consumers of valuable natural resources, La Crosse County is an organization of influence that has a particular responsibility to:

- Reduce use of products that contribute to greenhouse gas (GHG) emissions.
- Improve resilience and prepare for increasingly frequent weather disasters resulting from changing global climate conditions.

- Facilitate adoption of modern transportation and renewable energy technologies.
- Lessen human-induced impacts to the environment.
- Promote "smart growth" of urban landscapes.
- Ensure that public services are provided to residents equitably, efficiently, and cost effectively.

To represent the intent of this plan, and the County's broad vision for local sustainability, the following Purpose Statement was drafted by the Staff Advisory Team that helped form this plan:

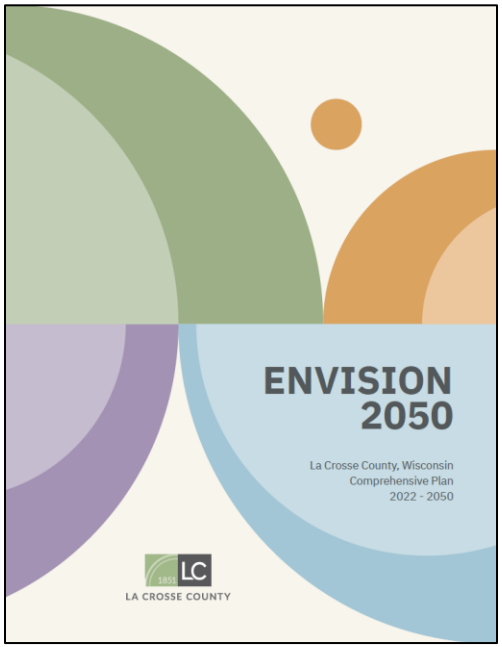
La Crosse County recognizes its responsibility to operate in accordance with the principles of sustainability to better serve residents and support long-term local health and prosperity. We will work toward effective, efficient, sustainable government operations that meet present needs while minimizing waste and negative impacts on the environment and future generations. We will prepare for, and adapt to, changing global conditions to improve our ability to endure potential challenges related to climate and resource availability. The culmination of climate action efforts will result in the achievement of carbon neutral County operations by 2050.

In 2020 the La Crosse County Board of Supervisors passed Resolution #21-8/20, adopting the goal to reduce energy consumption and achieve carbon neutrality for all county facilities by 2050. Part 1 of this plan has been made to guide county leadership towards achievement of that goal. The County and its residents recognize the need to proactively mitigate the impacts the climate change. Through implementation of policies, programming, and public investment, La Crosse County intends to make great strides in local sustainability.

III. Previous County Sustainability Efforts

For over a decade La Crosse County has acknowledged the need for a proactive approach to address indisputable evidence of climate change by reducing extreme dependence on fossil fuels, such as coal, oil, petroleum, and natural gas, and lessening humans impacts to the natural environment. In 2009, the City of La Crosse and La Crosse County adopted the Joint Strategic Plan for Sustainability to mitigate climate change and its possible effects on residents. The 2009 Joint Plan followed "The Natural Step" model with recommendations emphasizing reductions in fossil fuel use, waste reduction, and increased recycling. As years have passed, support and implementation of the Joint Plan has periodically waxed and waned.

In August 2020, La Crosse County passed a resolution committing the County to achieving carbon neutrality by 2050. By 2021, some fossil fuels had soared to their highest prices in nearly a decade, and municipalities around the country recognized the United States is dangerously dependent on finite, foreign resources for transportation and energy.



In September 2022, in accordance with s. 66.1001 of Wisconsin Statutes, La Crosse County's updated comprehensive plan, Envision 2050, was adopted by the La Crosse County Board following a two-year process. Envision 2050 reflects strong public support for sustainability, climate action, and planning.

The comprehensive planning process was guided by a diverse range of stakeholders who participated on the Comprehensive Plan Advisory Committee (CPAC). With CPAC input and significant engagement of the broader community, staff identified 28 goals, 111 recommendations, and 5 guiding core values. Sustainability emerged as a top core value, and the Plan includes 2 sustainability goals and 15 recommendations, including recommendation "b)1. Develop a county-wide energy plan". Components of this plan will serve as the county energy plan.

This Operations Plan specifically supports the following Comprehensive Plan recommendations and associated actions:

Sustainability Chapter

- Recommendation a) *Pursue sustainability initiatives for county facilities and operations.*
- Recommendation b) *Promote sustainability programs, policies, and actions throughout La Crosse County.*

Agriculture, Natural, and Cultural Resources Chapter

- Recommendation c) *Sustain and enhance ground and surface water resources in La Crosse County.*

Transportation Chapter

- Recommendation c) *Lead efforts to plan and develop infrastructure for alternative energy vehicles, automated vehicles (AV's), connected vehicles (CAV's) and other emerging transportation technology.*

Utilities and Community Facilities Chapter

- Recommendation c) *Manage solid waste and wastewater treatment facilities in an environmentally sensitive manner.*
- Recommendation e) *Promote sustainable environmentally sensitive energy resources.*

The climate action plan also supports two priorities identified in the 2024 County Board 5-Year Strategic Plan:

1. Carbon Neutrality.
2. Environmental Stewardship.

IV. Climate Action Plan Part 1 Scope

This Government Operations Plan (Part 1) presents recommendations that emphasize improvements to County-owned and maintained land, facilities, fleets, and infrastructure.

To support the community's core values, comprehensive plan recommendations, and County Resolution 21-8-20, county officials identified the need to adopt an updated, modern sustainability/climate action strategy. Broadly, to achieve the County's established goal of carbon neutral operations by 2050, its government operations must:

1. Collect and analyze data about the County's resource consumption, specifically energy use and emissions data.
2. Reduce emissions from buildings and energy use by transitioning to renewable energies, upgrading heating and cooling infrastructure, and weatherizing buildings.
3. Reduce emissions from fleet vehicles and commuting employees by making data-driven vehicle use and procurement decisions, upgrading fleets to hybrids and EVs, and removing barriers to alternative modes of transportation.
4. Divert waste from the landfill and capture as many emissions from the landfill as possible.
5. Increase "carbon sinks" and greenspaces which absorb and offset emissions that cannot be eliminated by other actions.

This Operations Plan presents recommendations that emphasize improvements to County-owned and maintained land, facilities, fleets, and infrastructure. Recommendations for internal, administrative programming and policy improvements are also detailed. To achieve the County's goal of carbon neutrality by 2050, recommendations provided primarily relate to the following:

- Expanding renewable energy and energy efficiency at County facilities.
- Reducing waste and pollution produced by county operations.
- Preserving natural resources and County managed lands.
- Increasing county staff's access to, and use of, sustainable modes of transportation.
- Educating staff on best practices for sustainable operations.

To apply this plan effectively, the County must collaborate across multiple departments to carry out a diversified approach to sustain the quality services provided to the public. To facilitate collaboration, the Staff Advisory Team (SAT), comprised of representatives from multiple County departments was established. Members of the SAT are listed in the Acknowledgements section. During meetings, SAT members:

- Shared sustainability assessment findings,
- Identified sustainability issues and opportunities,
- Established the Operations Plan's goals and recommendations,
- Reviewed the draft Operations Plan.

V. Sustainability Assessments of County Operations

To understand the County's environmental impact, a series of data-driven assessments were conducted. A greenhouse gas (GHG) inventory, 2 vehicle fleet assessments, and building energy consumption benchmarking were performed in 2023 to provide baseline data representing present county consumption and GHG emissions. Assessment findings provide summaries of existing conditions that aided the planning team's determination of how far the County is from achieving its sustainability goals. The assessments inform goals and recommendations presented in this plan.

Two concurrent fleet assessments were performed to increase confidence in the results and to capture all our small, medium, and heavy-duty fleet vehicles that may not have been included in just one of the assessments.

In 2022, La Crosse County's total operational GHG emissions were 15,255 metric tons of CO_2e. County Government Operations may account for ~2.1% of county-wide emissions.

A. Sustainability Indicators Reports & Greenhouse Gas (GHG) Emissions Inventory

La Crosse County has completed sustainability indicators reports annually since 2012. Some data has been available dating back to 2007, so that is used as the base year that sustainability progress is compared against. The purpose of these annual reports is "to monitor and highlight improvements or setbacks in the pursuit toward sustainability." (*La Crosse County Sustainability Indicators Report*, 2021) Most of the energy consumption data provided in this plan is derived from the Sustainability Indicator Reports. For more information, refer to those reports.

"Government Operations Indicators" tracked by the 2022 Sustainability Indicators Report includes:

- Electricity Usage
- Natural Gas Usage
- Facility Energy Use Intensity
- Vehicle Fuel Usage
- Water Usage
- Paper Usage
- GHG Emissions

In 2023, using 2022 data, La Crosse County expanded the report to include an employee commute survey and a GHG assessment for the first time. Scope 1 (direct emissions), Scope 2 (indirect emissions), and some Scope 3 (further indirect) emissions.

GHGs are gases that absorb infrared radiation in the atmosphere and impact climate. These gases are often produced from combustion of fuels and other organic matter. Figure 1 illustrates the differences between Scope 1, 2, and 3 emissions. The GHG assessment quantifies most of the local greenhouse gas emissions resulting from the County's operations to estimate the County's baseline "carbon footprint". The County can compare its climate action and carbon

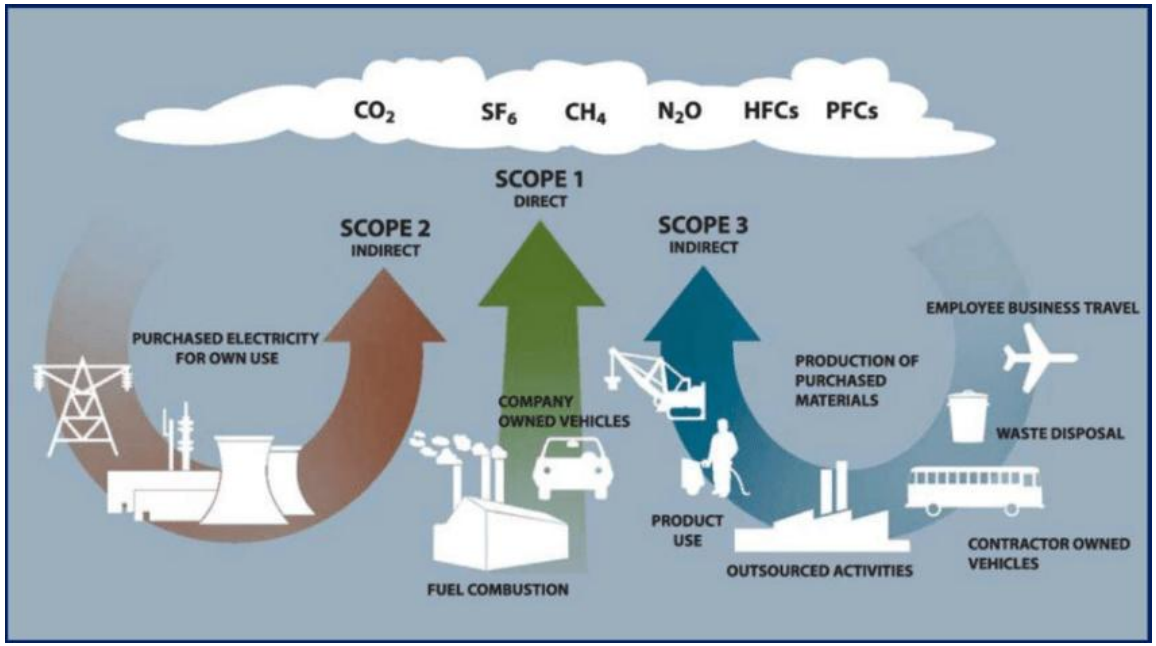


Figure 1. GHG emissions "scope" types. Source: Fisher, B.P., (2012). 2012 Campus Emissions Report: College of Charleston. Researchgate.net

neutrality progress against the 2023 baseline measurements by calculating its carbon footprint in future years. The GHG inventory was conducted to meet ICLEI standards for measuring and calculating CO2e emissions. ICLEI-Local Governments for Sustainability is an international organization that works with over 1,500 local governments worldwide to measure and plan for their sustainability goals.

It should be noted that the County Housing Authority and several buildings in the library system operate semi-autonomously from County Administration. These departments are co-funded by other municipalities. The County Library Department operates the Bangor, Campbell, Holmen, Onalaska, and West Salem libraries, and the Housing Authority owns many low-income housing units. No libraries or County Housing Authority buildings have been included in any of the sustainability assessments associated with this plan.

Independent living long-term care buildings, such as Hillview Terrace, Carroll Heights Apartments, Maplewood Apartments, Monarch Manor, and Regent Manor also have not been included in the estimation of the County carbon footprint. The emissions produced at these facilities can largely be attributed to the activities of residents rather than the activities of La Crosse County. While they

Indicator	2007	2021	2022	% Change '21 - '22	% Change '07 - '22	Cost Savings '07 - '22#
Electricity (kWh)	10,200,000	7,970,000	7,880,000	-1.10%	-22.80%	$ 1,470,000
Natural Gas (therms)	478,918	286,751	300,836	16.80%	-37.20%	$ 787,000
Vehicle Fuel (Gasoline, gallons)	84,200	74,200	74,600	0.50%	-11.40%	$ 357,000
Vehicle Fuel (Diesel, gallons)	137,000	124,000	174,000	40.4%	27.2%	- $197,000
Compressed Natural Gas (gallons)	15,000*	16,000	11,000	-31.3%	-36.40%	/
Water Usage (gallons)	21,820,000	12,750,000	12,680,000	-0.5%	-41.90%	/
Paper Usage	4,780,000	150,000	1,540,000	2.5%	-67.8%**	$1,000,000**
Waste Landfilled (tons)	722,000	861,000	828,000	-3.8%	14.7%	/
Landfilled Waste Recycled (tons)	178,000	224,000	159,000	-29%	-10.7%	/
Waste Converted to Energy (tons)	333,000	334,000	351,000	5.1%	5.4%	/
Municipal Recycling Collected (tons)	316,000	823,000	786,000	-4.5%	148.8%	/
GHGs from Electricity (mt CO2e)	6,034	2,292	2,195	-4.2%	-63.6%	/
GHGs from Stationary Combustion (mt CO2e)	2,563	1,547	1,623	4.9%	-36.7%	/
GHGs from Mobile Combustion (mt CO2e)	2,098	1,871	2,395##	28%	14.2%	/
GHGs from Fugitive Refrigerants (mt CO2e)	/	/	16	/	/	/
GHGs from Fugitive Methane (mt CO2e, Landfill)	31,920	8,311	6,900	-17%	-78.4%	/

Notes: * = 2015 ; ** = 2009-2022 ; # = assuming 2007 level of consumption in 2023 dollars ; ## = 5,097 if including Landfill equipment and SMRT Bus

Figure 2. Selected metrics from the 2022 Sustainability Indicators Report (Olson, 2023).

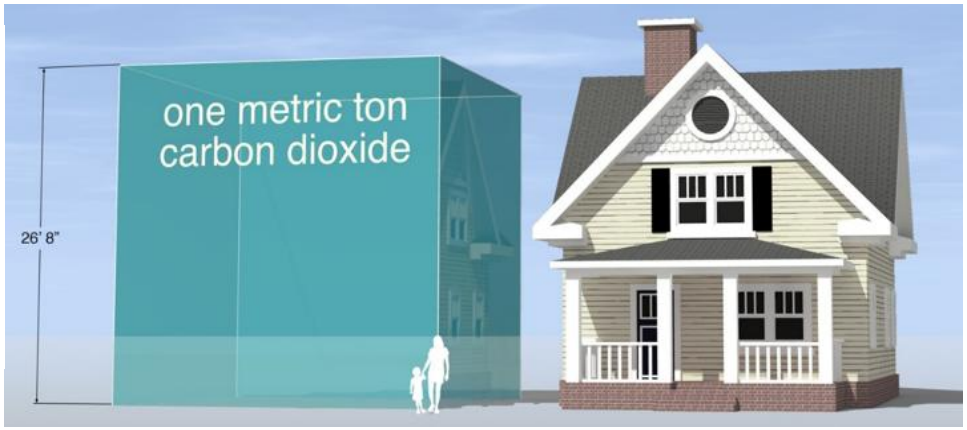


Figure 3. Visualization of the scale of one metric ton of carbon emissions. Source: Carbonvisuals.com

are not included in the estimation of La Crosse County's carbon footprint, La Crosse County has the authority and ability to complete energy efficiency and sustainability improvements at these locations as owners of the facilities.

Figure 2 is a compilation of several individual metrics designed measure separate GHG sources contributing to the County's overall carbon footprint. These operations include County fleet vehicles, building energy consumption, employee commuting, and landfilled solid waste.

The 2022 GHG inventory calculated the total La Crosse County operational emissions to be 15,255 metric tons of carbon dioxide equivalent (CO2e). While a county-wide GHG inventory has not been completed, some data indicates that La Crosse County operations may account for about 2.1% of total, county-wide emissions. For comparison, Eau Claire County, which is a similar sized county in western Wisconsin, estimated their carbon footprint to be around 10,200 metric tons CO2e in 2018. County operations accounted for 0.4% of total GHG emissions in the county. Through a similar approach to climate action, Eau Claire County had reduced its carbon footprint to 6,200 metric tons CO2e, a 39.2 % reduction, by 2021.

B. Fleet Assessments

Xcel Fleet Electrification Advisory Program

Xcel Energy is the largest energy provider for La Crosse County and through Xcel's Fleet Electrification Advisory Program (FEAP), a fleet assessment was conducted by Sawatch Labs to collect data about the county's light and medium-duty vehicles. Utilizing GPS and data from the vehicle sensors/computers, metrics were collected from real-world vehicle use. Sawatch Labs assessed which vehicles within the fleet are candidates for electrification and locations within the county that would serve as suitable charging sites to support an electrified fleet. The result of the assessment includes a map and list of the best locations for Level 2 EV charger installations and which departments would benefit most from electrification of specific vehicles.

Data collection occurred between November 2023 and February 2024. During the collection period, which county operations were conducted as normal with Sawatch Labs' devices installed via the OBD2

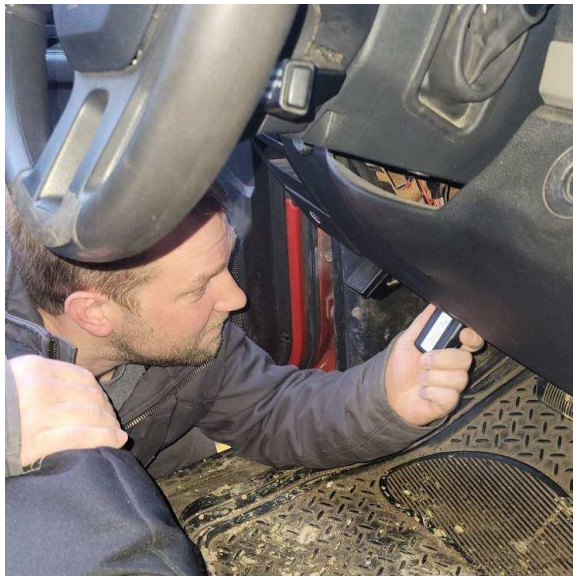


Figure 4. La Crosse County staff installing sensors to collect fleet use data.

port in each vehicle. Data was collected for light-duty (x38) and medium-duty (x2) 40 vehicles. These vehicles had traveled 131,591 miles in that time.

The region experienced irregular temperature extremes during the collection period, with temperatures ranging from -11 to 68 degrees Fahrenheit. Such variability in conditions were accounted for by Sawatch Labs' analysis, and result in even more reliable results that indicate how weather may affect year-round La Crosse County vehicle performance if certain vehicles were transitioned to electric.

Wisconsin Clean Cities Empower Vehicle Fleet Assessment Program

In partnership with Wisconsin Clean Cities (WCC), an additional fleet assessment was conducted in parallel with the Sawatch Labs assessment. The free WCC assessment used vehicle make and model data, vehicle age, value estimations, annual miles traveled, and idling time to estimate annual emissions from 147 county vehicles. Some overlap in findings from light and medium-duty vehicle analysis was intended, with additional analysis of heavy-duty fleet vehicles in the WCC assessment. The study also evaluated feasibility and implementation of alternative fuel vehicles.

As part of the WCC assessment, planning staff coordinated with all County departments to complete the most comprehensive vehicle asset inventory La Crosse County has ever performed. The data was compiled by La Crosse County and analyzed by WCC to determine vehicles that may be feasible candidates for transition to new vehicles powered by alternative fuel sources, such as biodiesel or electric. The results of this study focused on vehicles nearing the end of their replacement cycle, though all vehicles were included in GHG emission calculations. Based on an average replacement period of 15 years or 125,000 miles, WCC identified 13 vehicles as eligible candidates for replacement within the next 5 years. When considering conversion of each of the 13 vehicles eligible for replacement, EV options saw immediate cost savings in addition to even greater savings over the total life of the vehicle (Figure 5 and Figure 6).

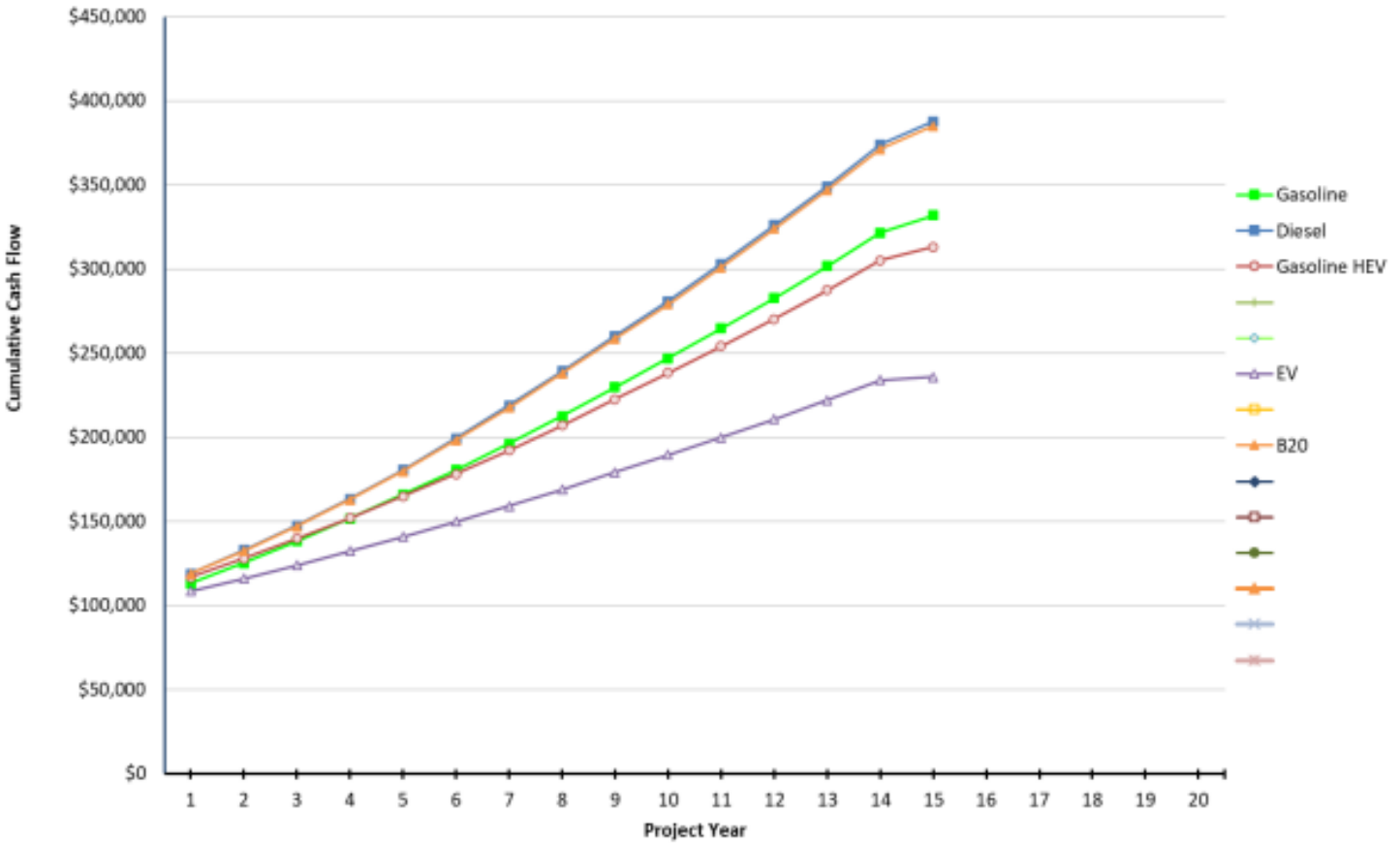
	2024 Chevrolet Silverado LT 2WD 4CYL Gas	2024 Chevrolet Silverado LT 2WD 6CYL DSL	2024 Chevrolet Silverado LT 2WD 6CYL B20	2024 Ford F-150 XLT 2WD HEV	2024 Ford F-150 Lightning Pro
Price Per Vehicle	$49,995	$52,385	$52,385	$52,325	$49,995
Depreciation	$89,304	$93,573	$93,573	$93,466	$89,304
Fuel	$78,161	$68,585	$65,953	$62,529	$24,662
Diesel Exhaust Fluid	$0	$1,106	$1,106	$0	$0
Maintenance and Repair	$122,352	$180,927	$180,927	$111,851	$77,139
Insurance	$39,586	$40,820	$40,820	$40,789	$39,586
License and Registration	$2,640	$2,640	$2,640	$4,620	$5,280
Total Cost of Ownership	$332,043	$387,650	$385,017	$313,255	$235,971

Figure 5. Total Cost of Ownership Over 15 Years for Highway Passenger Truck Options. (Note: The options listed above are illustrative. This is not a comprehensive list of options for fleet vehicle replacement.)

WCC created a baseline of current vehicle and fleet performance indicators, evaluated vehicle options, and conducted a cost-benefit analysis. The cost-benefit analysis considered total cost of ownership

and total investment/return on investment of alternative vehicle transitions. WCC also provided recommendations related to siting electric vehicle charging infrastructure at county facilities based on priority vehicle replacements identified within the study.

Figure 6. Cost Estimates by Fuel Type. Source: Christman, M., Fleet Analysis: La Crosse County, WI. Wisconsin Clean Cities.



The County will continue to partner with WCC to participate in the US Department of Energy funded EMPOWER Workplace Charging program. WCC will continue to advise on EV feasibility to further EMPOWER's mission to increase EV use and access among commuting workers.

C. Energy Star Building Energy Portfolio Manager

Energy Star Portfolio Manager is an energy benchmarking tool designed for commercial buildings. The County gained a comprehensive look at total energy consumption by County owned facilities by measuring and entering all 47 locations with 53 utility meters' data into Portfolio Manager. Continuous

measurement of county facilities in conjunction with information such as gross floor area, occupancy, weekly operating hours, number of computers, etc., allows La Crosse County to identify underperforming buildings, set investment priorities, and track water use, waste, and greenhouse gas emissions.

The County began benchmarking facility energy consumption in July 2023. Total metered greenhouse gas emissions resulting from county owned facilities totaled an approximate 3914 tons of CO2e in 2022.

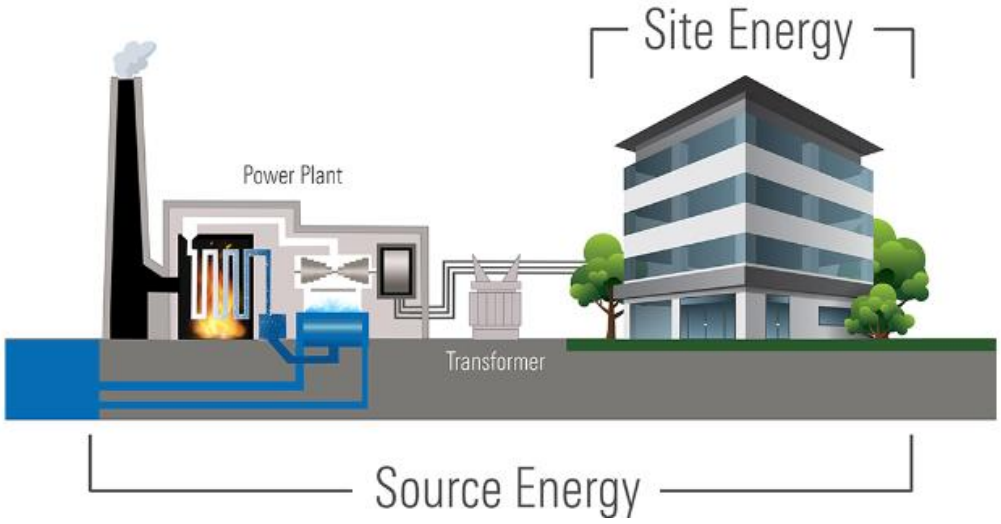
Name	Energy Current Date	ENERGY STAR Score	Site EUI (kBtu/ft²)	Source EUI (kBtu/ft²)
Landfill 29770163	11/30/2023	73	60.0	103.4
Administrative Center 28873183	09/30/2023	59	68.1	140.8
Parks and Prop, Human Health Services 29267521	11/30/2023	49	86.8	178.2

Figure 7. Source: EPA Energy Star Portfolio Manager. Source: Xcel Energy Bills.

Based on the use of a site, building characteristics and data available at the time of assessment, and energy consumption, 3 of 47 locations have received Energy Star scores (see table below). Characteristics of buildings are based on many basic assumptions. It may be beneficial to complete more robust building energy audits to comprehensively evaluate the efficiency of buildings.

Sites with Energy Star scores above 75 (on a scale of 0-100), are considered top performers amongst other similar sites logged from around the country in Energy Portfolio Manager. Energy Star provided a comparison of how La Crosse County's buildings are performing in comparison to other similar buildings. La Crosse County should strive to achieve Energy Star Certifications to verify the efficiency of building energy use.

Figure 8. Source: EPA Energy Star. The Difference Between Source and Site Energy.



Portfolio Manager automatically estimates "energy use intensity" (EUI) as energy per square foot (kBTU/ft2) of a structure based on energy bill information and known building characteristics. Buildings with lower EUI are considered more efficient. Figure 7, which is generated by Portfolio Manager, from Appendix J, represents EUI values for the 45 locations in the

County's portfolio. The buildings are sorted by the percent difference from national median EUI scores at each site. The higher the EUI value, the more energy is consumed at a site relative to a structure's size, which can imply a site has low energy efficiency. The data in Appendix J is incomplete, so further assessment is necessary to completely evaluate EUI at all metered locations.

Figure 7 provides estimates for "source EUI" and "site EUI". The difference between source and site energy is illustrated in Figure 8. Source EUI is a more reliable measure to consider, as it represents primary energy and secondary energy. Primary energy is generated on site (example: burning natural gas for building heat and energy), and secondary energy represents energy products produced off-site (example: purchasing energy generated by a utility and transmitted through the power grid). By shifting to more efficient site energy, such as solar energy, La Crosse County may reduce its demand for source energy, thus reducing its Scope 1 and Scope 2 emissions and saving money. The relationship between source energy/EUI and site energy/EUI is represented by the graphic below:

The site in Figure 7 with the highest EUI is the "Gas to Energy" (G2E) building at the landfill, which takes methane from the landfill to produce energy for Gundersen Health System buildings nearby. This building has a specialized use which produces a lot of metered energy within a small structure, which explains why it has such a high EUI. In this case, the EUI score of G2E does not imply inefficiency. Instead, structures metered as consuming, rather than generating, a lot of energy per square foot should be addressed to improve efficiency, create cost savings, and reduce County emissions. EUI is a useful measure of overall energy efficiency in buildings but not for meters that do not contribute to uses such as heating, cooling, lighting, etc. In the case of meters like G2E, raw energy consumption and emission data should be used to measure efficiency.

Even if La Crosse County were to not improve the efficiency of its buildings, source energy producers/utilities continue to reduce their own emissions by increasing their use of renewable energy, EUI may remain consistent, and emissions generated from source energy would be reduced. If the County intends to not only reduce emissions, but to also reduce energy costs, building energy efficiency should be improved to the greatest extent possible. The buildings identified by Energy Star as producing the most GHG emissions is consistent with those identified by the 2022 Sustainability Indicators Report.

VI. Plan Elements

The County's Climate Action Plan team has adapted Project Drawdown's categories to apply to its own climate action approach as the 5 "elements", primarily the organization's goal to be carbon neutral by 2050. To reduce emissions "sources" and strengthen emissions "sinks", Part 1 presents 5 elements, which are categories of climate action focus areas. Each element includes a preliminary description of existing conditions, followed by goals and recommendations. Recommendations related to each element are intended to reduce emissions "sources" and strengthen emissions "sinks".

The 5 Elements:

1. Administration & Policy
2. Natural Resources
3. Commuting & Fleets
4. Buildings & Energy
5. Waste Reduction & Pollution Mitigation

Part 1

ELEMENT 1:

ADMINISTRATION AND POLICY

VII. Element 1: Organization Administration & Policy

This section describes internal, organizational programs and policies related to sustainability. Recommendations for additional programs and policies to increase organization sustainability are provided.

A. Procurement of Supplies and Services

County operations such as supply procurement and waste disposal are Scope 3 GHG emitting sources outside the direct control of the county but are still influenced by county operations. For example, La Crosse County cannot dictate whether paper companies limit their impact to the environment, but La Crosse County can choose to purchase paper from a company that causes the least impact to the environment. Reducing and offsetting all Scope 3 emissions is encouraged, but it is not required to obtain carbon neutral status. Quantitatively tracking all supply chain related emissions can be complex.

If many organizations/consumers share the same preference for more sustainably produced paper, they may influence other paper companies to respond by acting more sustainably and better satisfying the demands of the market. While sources of indirect emissions resulting from County procurement practices are relatively minimal and are difficult to quantify, it's still important for these emissions to be reduced or eliminated to reduce impacts to the environment.

As county services and operations continue to modernize and follow technological trends, there will be continued procurement of electronics. E-waste often contains heavy metals and other toxic materials that, if not properly disposed of or recycled, can contaminate soil and groundwater resources. The Electronic Product Environmental Assessment Tool (EPEAT) is a resource that allows for more informed decision-making for the procurement of many electronic products. These products are rated according to the Global Electronics Council through a set of environmental performance criteria including life cycle, longevity, materials selection, and corporate environmental performance.

B. Employee Education & Programming

Various County departments have provided a variety of programming, resources, training, and education opportunities for employees. Through coordination with Human Resources, Information Technology, and Administration departments, among others, the organization may evaluate sustainability education and programming that could be provided to employees.

Many employees may have a desire to act more sustainably but could use information and guidance that assists them in their personal and professional lives. Informed and educated employees may in turn educate others in their networks who are not members of the La Crosse County organization. Increased employee awareness of sustainable practices can result in organizational cost savings and increased efficiency.

C. Organization Administration & Policy Goals & Recommended Actions

Goal 1: Engage employees on climate action and ensure they are climate competent.

- Action 1.1. Create online employee training modules related to waste reduction, energy savings, and natural resources conservation.
- Action 1.2. Establish an employee sustainability policy and make sustainability part of new employee and new supervisor orientation.
- Action 1.3. Include sustainability data and climate research in La Crosse County employee newsletters.

Goal 2: Utilize new and existing partnerships to further sustainability in the region and foster new opportunities for collaboration.

- Action 2.1. Advocate for state and federal policy improvements related to building codes, renewable energy, transit, and more (WLGCC).
- Action 2.2. Collaborate with the Climate Action Plan Staff Advisory Team to implement this plan. Plan implementation relies on multiple leads.
- Action 2.3. Establish a climate action work group with other local and regional governments to collaborate on shared ventures and share guidance. Partner with other area organizations in shared/group purchasing ventures.
- Action 2.4. Increase staff capacity to complete sustainability and climate-related projects. Consider partnering with WisCorps to hire LTEs.

Goal 3: Allocate the funding necessary to achieve the goals of the Climate Action Plan.

- Action 3.1. Make recommendations on funding related to sustainability initiatives during the annual budget process.
- Action 3.2. Create savings reports that illustrate saved resources due to the sustainability efforts of the County.

- Action 3.3. Establish a climate action and sustainability fund to support implementation of the climate action plan.
- Action 3.4. Support staff with trainings and certifications related to sustainability and building efficiency principles that can be implemented to reduce County energy expenses.

Goal 4: Collect data that will help the County understand the impacts of its operations and progress towards sustainability goals.

- Action 4.1. Continue to complete annual Sustainability Indicators Reports/GHG assessments to track reductions in the County's carbon footprint due to implementing climate action strategies.
- Action 4.2. Continue annual WDNR Green Tier Legacy Community Scoring to evaluate the sustainability of the County's operations relative to other member communities.
- Action 4.3. Perform a cost benefit analysis to determine which plan recommendations result in the greatest GHG reductions per dollar spent on climate mitigation and adaptation.
- Action 4.4. Assess emissions impacts and cost savings resulting from a variety of work options, including telecommuting, flex time, 4-day work week, etc. Amend policies to allow for work options that are proven to reduce energy bills and commuting emissions.
- Action 4.5. Complete a GHG inventory of Scope 3 emissions to quantify the indirect emissions from La Crosse County operations.
- Action 4.6. Complete emissions projections to estimate the County's timeline for achieving carbon neutrality and set realistic progress milestones.

Part 1

ELEMENT 2:

NATURAL RESOURCES

VIII. Element 2: Natural Resources

While the recommendations in other plan element sections are primarily related to reducing the production of GHGs at their source, this section provides recommendations related to previously described natural carbon sinks that can offset or absorb the GHGs produced by the County's operations. Once the County has done all it feasibly can to reduce its GHG emissions, it will likely need to create, conserve, or rehabilitate natural sinks to achieve its goal of carbon neutrality.

Much of what the County's Land Conservation Department does to protect local forests, watersheds, and soils is related to the conservation of carbon sinks. Land Conservation administers policies related to erosion control, stormwater management, animal waste management, and non-metallic mining reclamation. Many recommendations in this section are related to supporting and expanding the efforts of the Land Conservation Dept., Solid Waste Dept., and Parks/Facilities Dept. to improve the effectiveness of county-managed carbon sinks and protect local natural resources. Natural resource conservation-oriented actions will likely serve as GHG "offsets" necessary to achieve complete carbon neutrality of County operations.

A. Managed Forests, Parks, and Greenspaces

Managed Forests

The Land Conservation Department manages two forests: Bice County Forest (450 acres) and Hoeth County Forest (430 acres). Both forests are located along the northern edge of the county in the Town of Farmington. Bice Forest includes over 5.5 miles of recreational trails for biking, walking, and skiing in the winter. Camping and fires are not permitted. Hunting is permitted in both forests in accordance with state and local laws.

Coulee Experimental Forest (CEF) is owned and maintained by the Wisconsin Department of Natural Resources for forest watershed research, forest production, and wildlife habitat. CEF is 3,000 acres in size and straddles the boundaries of Town of Bangor, Town of Barre, and the southeast corner of the Town of Hamilton. It includes walking/biking and skiing trails. Camping and fires are not permitted. Hunting is permitted in both forests in accordance with state and local laws.

The 3,880 acres of managed forest in the county are valuable carbon sinks that can be further leveraged to offset County emissions.

Parks

There may be opportunities at La Crosse County parks to perform conservation activities and establish carbon sinks that will assist La Crosse County in achieving carbon neutrality. Some activities may include alteration of mowing activities to support native habitats, and implementation of activities to reduce flooding, stormwater runoff, and soil erosion. The County Facilities Department manages 5 parks:

- Goose Island Park, Stoddard
- Veteran' Memorial Park, West Salem
- Neshonoc Swarthout Park, West Salem
- Neshonoc South, West Salem

Figure 9. Goose Island Park. Source: TripAdvisor.

The Facilities Department also facilitates the leasing of about 210 acres of La Crosse County-owned land in West Salem for third-party farming. The County Farm master plan, proposing a mixed use, sustainable development of the property was adopted in 2009, but it has not yet been implemented.

Greenspaces

The County Highway Department maintains 280 miles of roads and road rights-of-way, including 2,281.42 acres of ditches and drainage areas within rights-of-way.

B. Water & Stormwater Management

La Crosse County buildings downtown are comprised of paved, impervious surfaces and buildings covering more than 95% of their respective lot areas (See Figure 10). As a matter of fact, most of downtown La Crosse consists of pavement while green space

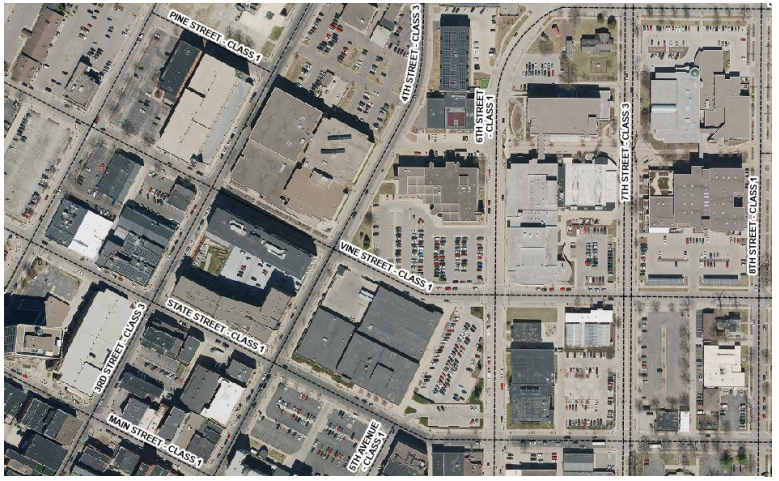
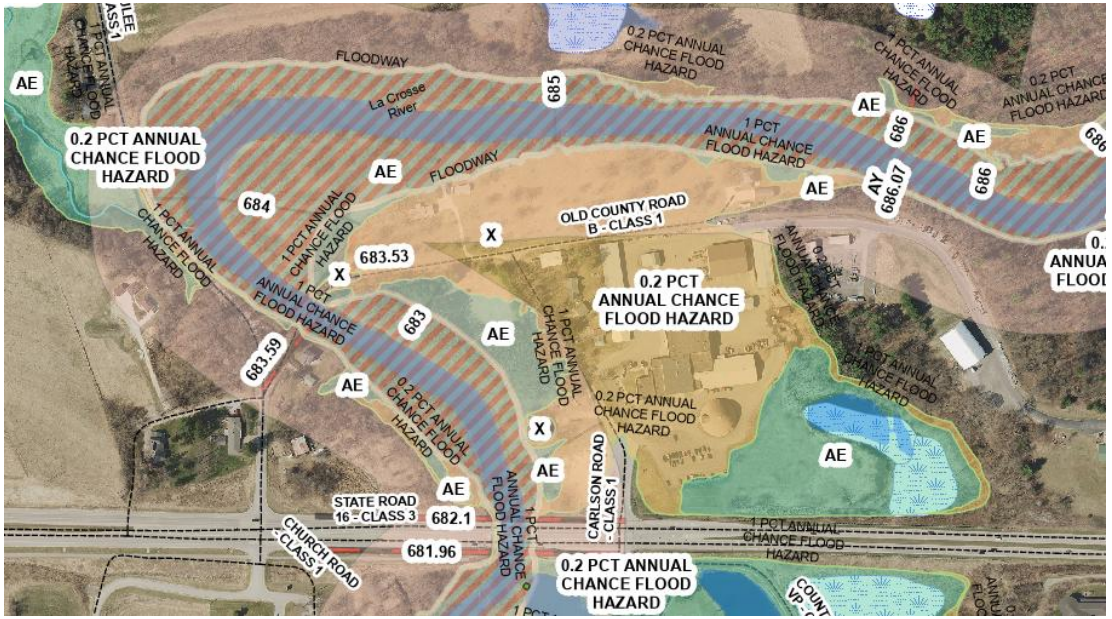


Figure 10. Aerial image of the La Crosse County downtown La Crosse campus. Source: Google Maps.

and vegetation is sparse. The aerial below illustrates just how much of downtown surrounding the La Crosse County Administrative Building, Health and Human Services Building, and Law Enforcement Center are paved.

Figure 11. Flood hazard areas surrounding the La Crosse County Highway Dept. Source: FEMA.



With very little unpaved space at La Crosse County properties and surrounding properties, stormwater does not infiltrate well, and urban pollutants concentrate before running into the storm sewer system. More than 90% of land owned downtown by La Crosse County is occupied by parking lots and buildings.

To improve its climate resilience, La Crosse County should evaluate ways to improve the permeability of surfaces on its properties to reduce flooding and pollutant runoff into storm sewers and nearby waterbodies. Without the ability to infiltrate into porous, unpaved soils, it's difficult for stormwater systems to manage water resulting from heavy rainfall events or floods, which exacerbates flooding issues, can damage property, and can cause water and wastewater systems to fail. La Crosse County used $2,000,000 in ARPA funding in 2023 to establish a grant program for designing and constructing new stormwater management facilities in towns. The successful program will reduce flooding in several subdivisions that were approved in the past without requiring developers to install appropriate stormwater management.

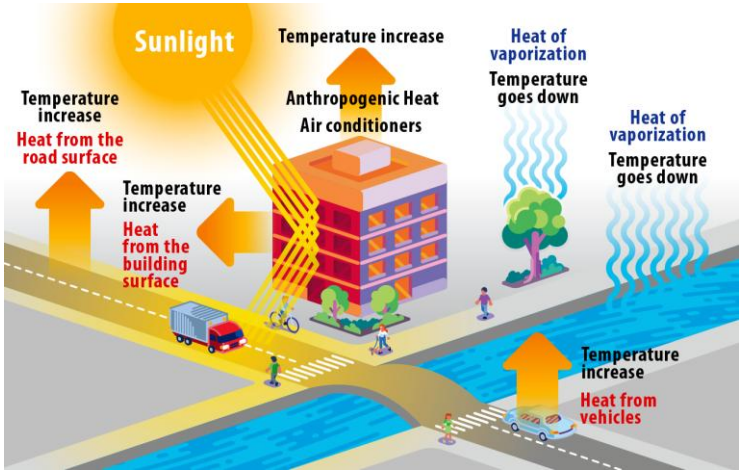


Figure 12. Graphic Illustrating the heat island effect. Source: Florida Local Technical Assistance Program.

Polluted runoff may also be of concern at a few Highway Department properties located near waterbodies where storm sewer facilities are not present and road salts and

vehicle fluids are stored (See Figure 11). The primary Highway Department building, located near West Salem, is mostly paved, located within several feet of the La Crosse River, and is almost entirely within a FEMA flood hazard area.

Long-term care locations likely result in less harmful pollutant runoff than highway shops and landfills, but Hillview is near Pammel Creek. Hillview is also located near wetland areas. Wetlands and stormwater retention areas serve as excellent treatment for stormwater pollutant runoff and allow gradual storm water infiltration (EPA, 2005).

Areas with many paved surfaces and dark surfaces, such as roofs and asphalt roads, absorb heat and create the "urban heat island effect". These areas are usually 1 to 7 degrees Fahrenheit warmer during the day and 2 to 5 degrees F at night and can adversely affect the health of pedestrians, and further reduce the efficiency of building HVAC systems (Gregory, J., & Azarijafari, H., 2021). The urban heat island effect is illustrated by Figure 12. There are differences in local temperatures depending on specific land use types within the urban heat island effect, which are illustrated by Figure 13.

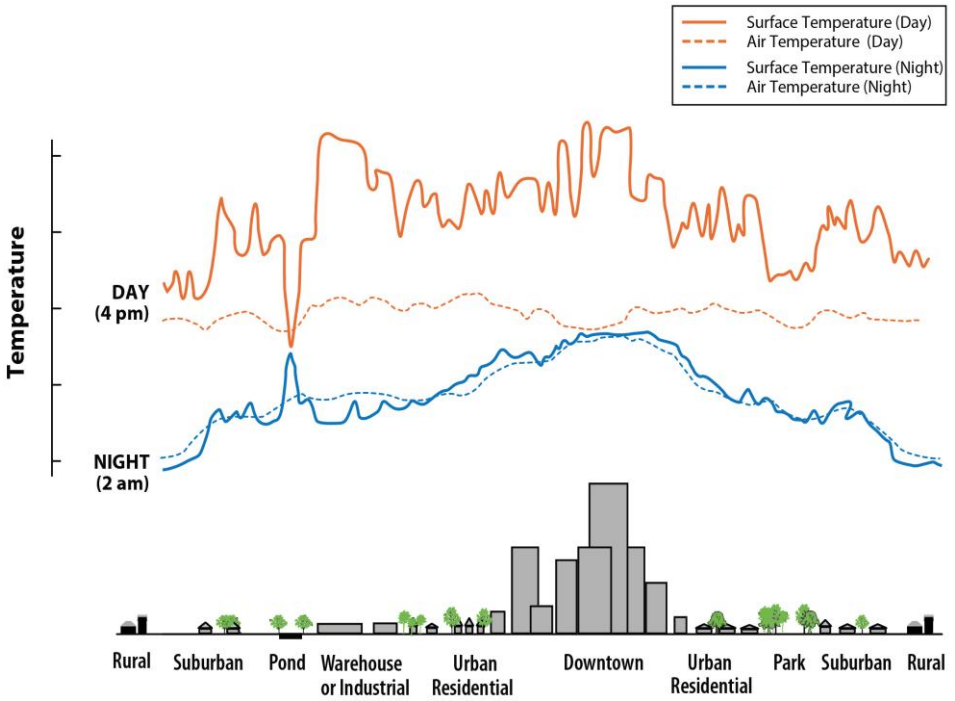


Figure 13. Source: Khaled Jabbar, H., et al.. (January, 2023). Urban heat islands: a review of contributing factors, effects and data.

C. Natural Resources Goals & Recommended Actions

Goal 1: Protect natural, undeveloped areas in the county to support climate resilience and offset carbon emissions.

- Action 1.1. Plant native species of vegetation in County rights-of-way along county highways and town roads.
- Action 1.2. Assess forestry and agricultural program carbon credits for their potential offsets with scope 1 and scope 3 of operational emissions.
- Action 1.3. Minimize mowing of County-owned properties. Maintain bi-annual schedule for mowing county road rights-of-way.

Goal 2: Reduce the impacts of the County's impervious surfaces and increase flood resilience.

- Action 2.1. Minimize use of salt on roadways following snowfall.
- Action 2.2. Increase stormwater infiltration areas to reduce the over inundation of stormwater infrastructure and help recharge groundwater. Commit funds to projects that restore wetlands, increase greenspaces, and preserve natural areas.
- Action 2.3. Add natural landscaping to reduce the amount of lawn the County must mow or maintain. Remove impervious surfaces where possible.
- Action 2.4. Design and implement shared stormwater infrastructure and conservation development designs at and near the landfill with adjacent landowners. Where feasible, emulate smaller, decentralized restored landscape features that can serve as wildlife habitat and park features.

Goal 3: Create and preserve positive ecological health and aesthetic beauty surrounding the landfill.

- Action 3.1. Continue to work with neighboring municipalities to increase vegetative screening of the landfill.
- Action 3.2. Continually promote ecological restoration of the landfill by establishing a program or event, and/or coordinating with an existing program or event, for the purpose of communicating the restoration vision for the landfill property. Implement the Landfill Master Land Use Plan and update it every 5 years based on ecological conditions.
- Action 3.3. When necessary, perform construction in a manner that creates more natural contours at the landfill, including defined drainageway that also enhance aesthetic beauty.
- Action 3.4. Restore bedrock features and dry prairies in sand overburden materials at the landfill.
- Action 3.5. Explore opportunities to establish tree nurseries to produce stock for plantings, restore tree cover for forest and savanna restoration by direct seeding rather than planting individual trees, and continue tree test plots program at County-owned properties.

Part 1

ELEMENT 3:

COMMUTING AND FLEETS

IX. Element 3: Commuting & Fleets

Fleet vehicles encompass most of La Crosse County's mobile sources of GHG emissions. Mobile sources are harder to track than stationary ones due to the often-variable intensity of their operation. However, transportation alone makes up an estimated 12.1% of total La Crosse County operational GHG emissions (Olson, 2023). Improving our ability to comprehensively track emissions from mobile sources is important to efficiently reducing our climate impact without disrupting services or diluting the huge potential for cost-savings through a transition to clean fleet vehicles.

A. Transit

Figure 14. Source: RideSMRT.org.

Approximately 20% of people working in La Crosse County do not live in La Crosse County (Forward Analytics, 2023). There are thousands of people commuting in and out of the County, primarily to the City of La Crosse, emitting harmful GHGs from their automobiles daily. Public transit systems, such as Scenic Mississippi Regional Transit (SMRT), serve as a more sustainable, alternative mode of transportation that reduces traffic congestion and the number of automobiles on the roads expelling harmful GHGs.

SMRT is a transportation option available to County employees and the labor force generally that needs to commute to La Crosse, even those living as far away as Prairie du Chien, Viroqua, or Tomah. SMRT is an intercity rural regional bus service operating in Crawford, Vernon, Monroe, and La Crosse counties. SMRT is partly funded by the County and other sponsors such as municipalities, with stops along SMRT routes, and major employers like Gundersen and Mayo that require labor force from outside of the County. 80% of SMRT's funding is derived from Wisconsin Department of Transportation (WisDOT) grants. The system is managed by La Crosse County Zoning, Planning, and Land Information staff. The County owns 7 grant-funded SMRT buses which are operated by a contracted, private third party. Currently SMRT offers deviated, fixed route service Monday through Friday on its four routes: Red (Prairie du Chien-La Crosse), Yellow (Viroqua-La Crosse), Blue (Viroqua-La Crosse), and Green (Tomah-La Crosse). All buses include bike carriers and are wheelchair accessible.

For county employees living in the La Crosse-Onalaska metro area, bus service with several frequent routes is also provided by the La Crosse Municipal Transit Service (MTU).

Onalaska-Holmen-West Salem Public Transit (Shared-Ride) currently does not have any origins or destinations within the City of La Crosse, which may be a deterrent to employees living outside of the City of La Crosse who may otherwise consider using Shared-Ride to travel to downtown County buildings.

In recent years, the elected officials of some municipalities have not approved funding for their historical share of SMRT Bus sponsorships, which range from $5,000 to $35,000 per year. To ensure the long-term viability of SMRT, securing sponsorship funds, or removing service from those who do not pay their fair share, is vital.

B. Parking

All the primary La Crosse County buildings include large, impervious parking lots to serve employees and customers travelling by automobile. Approximately 61% of La Crosse County land in downtown La Crosse is occupied by hard surface parking lots.

One La Crosse County lot located east of the Administrative Building is usually mostly empty, even during hours of operation. In the winter of 2022, La Crosse County eliminated fees for employee parking passes, potentially encouraging employees to drive alone more often. La Crosse County should consider ways to incentivize commuting by more sustainability modes of transportation, including active transportation (i.e. walking and biking), carpooling, use of electric vehicles, and transit.

C. Employee Commuting

Over the summer of 2023, La Crosse County employees were surveyed on their commuting habits and preferences. The survey was disseminated through the biweekly County Employee Newsletter and was open for a period of 3 weeks. The survey was completed by 218 individuals, representing 18.6% of all La Crosse County employees. Key takeaways from the results of this survey include:

- 52.5% of respondents drive alone to work every day; Of those not driving alone, many worked remotely.
- 61.3% of respondents are interested in telecommuting/remote work.
- 8.1% of respondents biked to work one or more days a week, with 4% biking three or more days a week.
- 32.5% of respondents responded they were open to carpooling to work and 29.4% were open to cycling to work.

- The greatest obstacles for County employees related to mode of commuting were:
    - Travel time (45.5%)
    - Lack of access to alternatives (high cost, distance, infrastructure) (42.3%)
    - Working late or irregular hours (34%)

The results of this survey provide valuable insight into how La Crosse County employees commute to work. Many employees of the County live too far from their place of work to consider low-carbon alternatives such as cycling or public transit. Most respondents reported interest in remote work as an alternative to commuting, a mode of work that would virtually eliminate emissions related to commuting. Remote work should be considered as a possible pathway to significant reductions in employee commuting emissions. However, many jobs within La Crosse County require in-person attendance at least a portion of the week. Other ways La Crosse County can support its employees' alternative commuting goals should be considered and encouraged where appropriate.

D. County Fleets

The emissions reduction potential of electrifying La Crosse County fleets is significant and should be considered a vital step towards carbon neutrality. The WCC and Sawatch Labs fleet assessments both framed emission reductions and cost savings as part of their recommendations. However, vehicles were only recommended for replacement if there was an estimated cost savings and emissions reduction during the time of the study.

55% of County vehicles analyzed are good candidates for replacement with EVs or PHEVs. Replacement would create $350,000 in cost savings and mitigate 1,167 tons of GHG emissions.

La Crosse County owns or leases approximately 147 vehicles between all its fleets. 91 of which are light-duty and medium-duty vehicles with the rest considered heavy-duty. About 33 of the light-duty gasoline vehicles are leased-to-own as the Sheriff's Office patrol vehicles and 7 are transit-buses managed by La Crosse County for SMRT Bus regional transit. Highway department has an additional 55 vehicles belonging to the 'single unit short haul' category. This category contains various vehicle types including dump trucks, sign trucks, water/brine trucks, and flatbeds.

La Crosse County provided information to WCC including make, model, fuel type, annual vehicle miles traveled, annual gallons consumed, and annual idling hours. Based on the estimates provided to WCC by the County, a report

analyzing the remaining cost of ownership on current vehicles, petroleum use, GHG emissions, and total cost of ownership between fuel types was generated. The Sawatch Labs assessment generated similar figures with a higher degree of confidence as each vehicle was able to contribute more data like real-world usage/mileage, idling times/locations, and energy consumption. However, fewer vehicles were included in this study due to the availability of tracking devices; a total of 40.

Sawatch Labs found that 22 of the 40 tested vehicles were good candidates for replacement with EVs or Plug in Hybrid Electric Vehicles (PHEVs) based on vehicle use and potential cost savings. Transitioning these vehicles would result in a reduction of 1,167 tons of GHGs emissions over the life of the 22 vehicles (2024). The analysis estimates a cost savings of $350,000, mostly on fuel and maintenance, over the lives of the vehicles if they are transitioned to EVs or PHEVs. Depending on the vehicle, savings ranged from $3,000 to $21,000 per vehicle recommended for replacement. As more of La Crosse County's existing vehicles age, fossil fuels become scarcer, and EVs continue to become more affordable, it's likely that many other La Crosse County vehicles that could be transitioned to save La Crosse County money.

Annual Vehicle Miles by type and Department										
Department	Light Commercial Truck	Light Commercial Percentage	Light duty truck	Passenger Car	Passenger Truck	Passenger Truck Percentage	single unit short haul truck	SUV	Grand Total	Total Percenage
Facilities	25,520	3%	7,062		15,846	3%		14,912	63,340	3%
Highway	350,090	48%			178,358	31%	579,140		1,107,587	56%
Sherrif's Dept		0%		62,281	352,461	61%			414,742	21%
Solid Waste		0%			27,600	5%			27,600	1%
ZPLI - SMRT	355,000	49%				0%			355,000	18%
Grand Total	730,610		7,062	62,281	574,265		579,140	14,912	1,968,269	

Figure 15. Annual Vehicle Miles by Type & Department. Source: Fleet Analysis: La Crosse County, WI (2023) NOTE: The table above is largely comprehensive but does not include ~8 vehicles that were not collected by the time of this report.

The WCC report included nearly all La Crosse County fleet vehicles allowing for an estimation of total fleet emissions. This study compared the cost of ownership and emissions of gasoline, diesel, ethanol, B20, hybrid electric, compressed natural gas (CNG), and full electric vehicles.

The highest emitting fleet based on data from 2023 is the Highway department with an estimated annual emission of 1,640.9 short tons of GHGs (Christman, 2023). Most of these vehicles are less efficient passenger and light commercial trucks that use diesel of gasoline. This figure reveals a large disparity between our highest emitting fleet and the next highest emitting fleet. The Sheriff department's fleet had an estimated annual emission of 341.1

short tons of GHGs (Christman, 2023). This disparity is explained by the size and makeup of each fleet, with the Highway department operating 81 vehicles and 55 of them being 'single unit short haul truck' vehicles. During the time of the report, there are no commercially available EV options for this class of vehicle, however there are retrofitting options for alternative fuels such as biodiesel or compressed natural gas (CNG) that would reduce mobile emissions versus diesel. Use of biodiesel could result in cost savings. Ultimately, alternative fuels like biodiesel or CNG still contribute to transportation emissions and should be considered steppingstones towards carbon neutral fuel sources like green hydrogen or electric. Natural gas is far more potent than CO2 and may account for 25% of the global warming effect the planet has been experiencing (MethaneSAT, 2018). The WCC report found that EVs in the long run have a lower cost of ownership and produce the least emissions compared to all other fuels.

Within both fleet assessments, when considering EV replacements for eligible fleet vehicles, there is an immediate cost benefit to transitioning light-duty vehicles to EV for vehicles with medium to high annual mileage. In the case of one Highway light-duty truck, the WCC assessment cited an immediate cost saving for an EV light-duty truck in addition to a savings of $60,000 over a 15-year term (Christman, 2023). Within the Sawatch Labs fleet assessment, which considers real-world operational use such as trip distance and idling times, determined similar cost savings for light-duty vehicles over a 10-year term.

Figure 16. County Fuel Usage. Source: Olson, A., (2024). 2023 La Crosse County Sustainability Indicators Report.

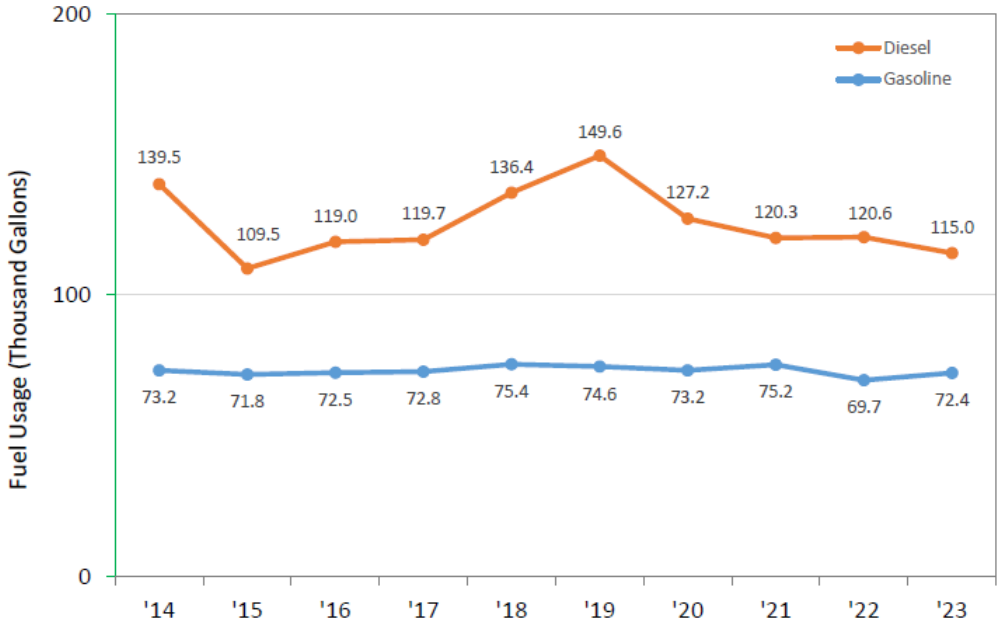


Figure 16 shows County fuel use patterns. Diesel fuel is utilized by heavy-duty vehicles such as snowplows and construction vehicles, and Highway Department used 97% of total diesel consumed by the County. The amount of diesel used is dependent on frequency of snow plowing and amount of road construction that occurred each year and can be highly variable. While it is difficult to detect a long-term trend in use diesel use in 2023 was 17.6% lower than it was in 2014 (Olson, 2024). The Highway Department also used about 1,100 gallons of CNG in 2022 and 985 gallons in 2023 (Olson, 2023).

Use of gasoline has stayed relatively constant since 2014. The Sheriff's Office and Highway Department accounted for 59% and 25% of gasoline usage in 2021, respectively (Olson, 2023). It is unlikely the County has experienced any consistent cost savings on fuel consumption over the years, even as vehicle fleets have reportedly declined in size, and fuel prices have increased.

As La Crosse County considers bringing EVs into fleets, their fuel use should be considered in GHG and cost calculations. The energy consumption of fleet EVs can be used in conjunction with Xcel's Annual Community Energy Report to calculate GHG emissions. Sawatch Labs estimates that EV alternatives expel only 30% as many GHGs from electricity consumption, in the form of indirect Scope 2 emissions, as fossil fuel combustion vehicles expel as Scope 1 emissions. As of 2022, Xcel Energy reported an energy resource mix that was 37.7% renewable with aims to reach net-zero emissions by 2050, in turn reducing La Crosse County's Scope 2 emissions (Olson, 2023).

E. EV Charging

Figure 17 is a map of nearby public EV charging stations as of January 2024. Most EV owners obtain sufficient charges during the time their vehicles are parked and plugged into level 1 or level 2 chargers at home. Multiple chargers may be present at each location. Stations are numbered 1 to 3 by charging speed. Level 3

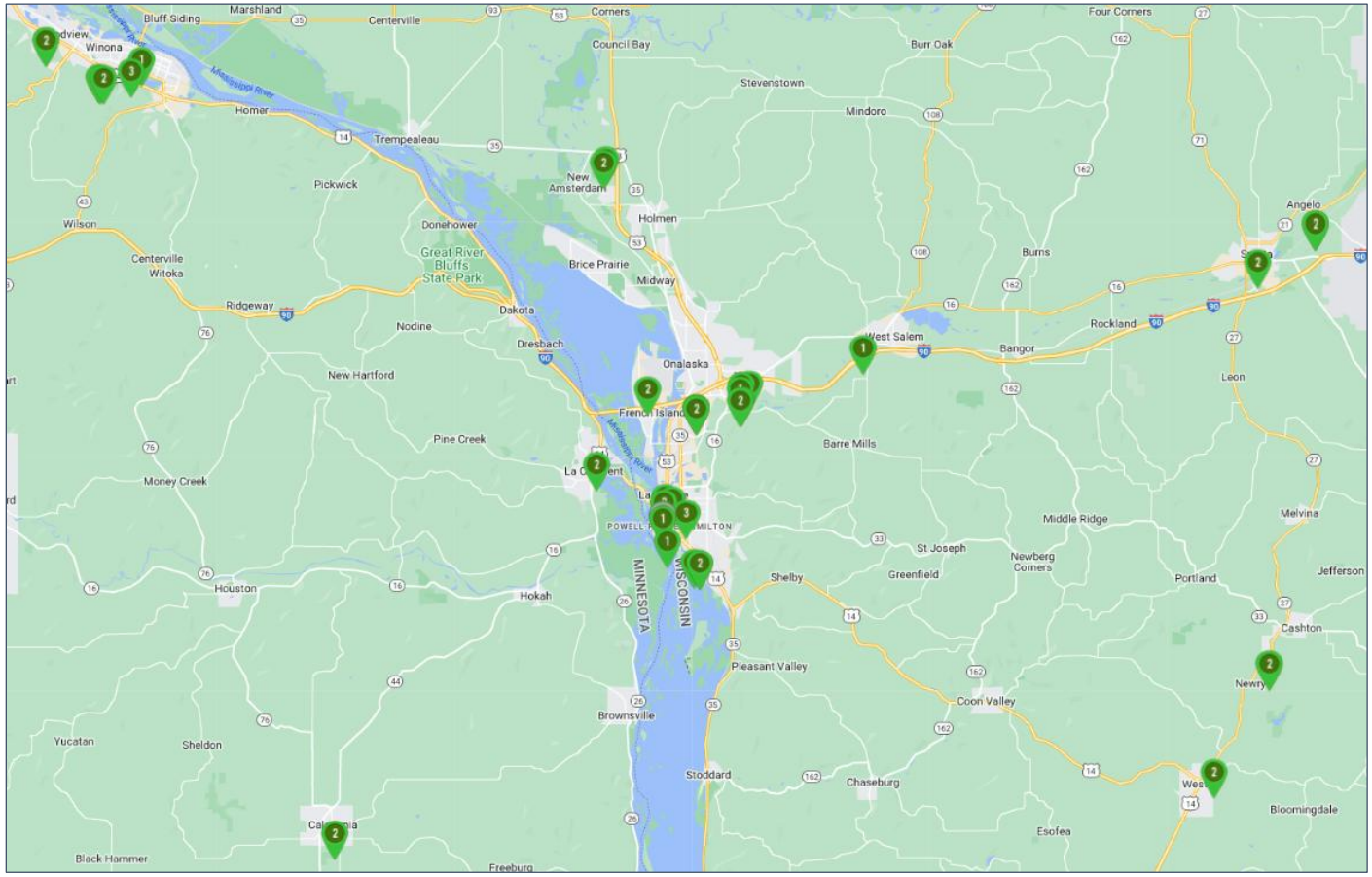


Figure 17. Local EV chargers, January 2024. Source: EVHype.com

chargers are DC fast chargers (DCFCs) that have not yet become widespread. Level 3 chargers can charge a light duty EV to 80% in 20 minutes to 1 hour (U.S DOT, 2023). In locations like County buildings, where employees and visitors will likely leave their vehicles parked for over an hour at a time, level 2 chargers should charge at sufficient speeds and be feasible to install without significant utility work.

Soon, more public stations will be added around the region, state, and country due to an increase in EV sales, federally funded level 3 chargers planned to be built near interstate exits, several state and federal EV subsidies, and state and local policies being ratified to support major expansions of EV infrastructure.

The Sawatch Labs fleet assessment included an analysis of the best locations for EV chargers to exclusively serve La Crosse County fleets based on fleet use patterns. Assuming 20 of 40 vehicles assessed were electrified, recommended Locations for level 2 charger installations are provided in Figure 18. Due to the size of La Crosse County's fleet and the current cost of DC fast chargers/"level 3" chargers, no DCFC chargers are recommended.

The addresses in the list are based on GPS location and may not be exact. Recommended locations are based on the locations which vehicles were parking for the longest durations of time during the sampling period. Some of the locations recommended include the private residences of staff that are authorized to drive La Crosse County vehicles between their private residence and work locations. These are primarily Sheriff's Office and Highway Department employees.

County staff completed site visits with Xcel Energy staff in May 2024. The visits determined that level 2 EV charger installation at the Law Enforecement Center, Administrative Center, and Health and Human Services Building is feasible (See Figure 18).

Location ID	Location	Description	Number of Vehicles Charging	Total charging hours (avg per day)	L2 Port count	Peak kW Usage	EV Recommended count	Access to facilities Existing infrastructre (Y/N)	Required New Service, Transformer, or both	Existing Facilties Voltage	NOTES
83	500 Vine St, La Crosse, Wisconsin, 54601	Health and Human Services Building, south lot	1	1.6	1	11	1	No	Yes	120/208V	Propose to set dedicated meter pedistal off existing 120/208V transformer. Power 2-3 existing stalls directly to Noth of transformer location
74	962 Garland St E, West Salem, WI 54669	Lakeview Health Center	2	1.7	2	10	2				
29	410 3rd St N, La Crosse, Wisconsin, 54601	Law Enforcement Center, north lot	4	4.9	2	7	4	No	Yes	277/480V	Physical space constraints for new transformer. May need to upgrade service and step down on secondary side
2	333 Vine St, La Crosse, Wisconsin, 54601	Law Enforcement Center, north lot	3	4.6	2	7	3	No	Yes	277/480V	Physical space constraints for new transformer. May need to upgrade service and step down on secondary side
26	W4175-W4161 Old County Road B, West Salem, Wisconsin, 54669	Highway Department	7	5.3	4	41	7				
47	3240 Berlin Dr, La Crosse, Wisconsin, 54601	Solid Waste Department	1	0.5	1	10	1				
56	CR-VP, West Salem, Wisconsin, 54669	Veterans Memorial Campground, Facilities Department	1	1.6	2	11	1				
66	846-1116 Garland St E, West Salem, Wisconsin, 54669	Lakeview? Facilities shop next to Lakeview? Other senior living?	2	1.7	3	13	2				
-	212 6th St N, La Crosse, Wisconsin, 54601	Administrative Center. Not enough data collected. EVs planned here. Facilities Dept./Survey/Land Con.	2				2	Yes	No	120/208V	Propose to pull off of existing facilities.

Figure 18. Recommended Level 2 EV Charger Locations. Source: Sawatch Labs.

F. Commuting & Fleets Goals & Recommended Actions

Goal 1: Support and incentivize reductions in emissions from staff commuting. Reduce emissions from staff commuting by 20% by 2030.

- Action 1.1. Publicize the discounted transit pass program for county employees to encourage more transit ridership and cut down emissions and downtown campus parking needs.
- Action 1.2. Conduct a downtown County parking study that analyzes emissions impacts, property value impacts, and alternative uses for parking areas.
- Action 1.3. Make County campuses more bike-friendly by providing amenities such as bike lockers, indoor storage, showers, etc.
- Action 1.4. Provide level 2 charging for staff that drive County EV fleet vehicles and domicile them at their private residences.

- Action 1.5. Explore incentive options for employees who commute to work by modes of transportation with lower environmental impact, such as carpooling or transit. For example, by allowing 15 more minutes for employees who ride the bus to get to work or provide free charging for employees driving electric vehicles.

Goal 2: Transition away from using GHG emitting fuels for County fleet vehicles. Obtain a zero-emission light and medium duty fleet by 2045.

- Action 2.1. Reduce non-heavy duty fleet emissions by 30% by 2035 (50% electrification). Increase fuel efficiency of remaining fleet vehicles and off-road equipment by 10% by 2030.
- Action 2.2. Ensure all primary county buildings are EV ready with Level 2 chargers. Establish a budget for EV charging station installation. Develop an RFP template for EV charging infrastructure installation projects. Develop a time-of-use EV charging plan.
- Action 2.3. Perform fleet assessments periodically to determine the cost effectiveness of non-fossil fuel alternatives.
- Action 2.4. Develop an EV charging infrastructure implementation plan. Update the plan following fleet assessment. Develop vehicle replacements schedules and cost-benefit analysis procedures.
- Action 2.5. Create a centralized vehicle inventory and collect vehicle mileage and usage data annually to more accurately estimate GHG emissions and asset value depreciation.
- Action 2.6. Using fleet data, create a county fleet maintenance plan and replacement standards. Require a cost benefit analysis for all new vehicle purchases, comparing gas or diesel vehicles to available plug-in hybrid and EV alternatives.
- Action 2.7. Conduct a short-term EV Sheriff patrol car pilot project.
- Action 2.8. Cover the cost for vehicle maintenance staff to obtain EV maintenance certifications and continuing education to service La Crosse County fleets.
- Action 2.9. Continue to operate and fund SMRT Bus and explore electric bus options.
- Action 2.10. Use the AFLEET tool or similar product to estimate emissions from employee-owned vehicles used for County work. Perform a cost benefit analysis comparing whether purchasing EV or PHEV Health Department & Human Services Department fleets would be more cost effective and result in fewer emissions than reimbursing employees for use of their personal vehicles.

Part 1

ELEMENT 4:

BUILDINGS AND ENERGY

X. Element 4: Buildings and Energy

Figure 19. La Crosse County buildings. Source: LaCrosseCounty.org/departments.


Administrative Center


Health & Human Services Building


Solid Waste Dept.


Law Enforcement Center


Highway Dept.


Hillview


Lakeview

Fleets and buildings comprise the bulk of La Crosse County's Scope 2 emissions. County owned facilities are responsible for 24% of total operational CO2e emissions (Olson, 2023). Energy efficiency and conservation are key to a comprehensive greenhouse gas emissions reduction. Increases in energy efficiency and renewable energy sources will move the County closer to its goal of carbon neutrality by 2050 and lead to long-term energy-cost savings.

Increasing the energy efficiency of County buildings not only reduces harmful GHG emissions, but it also saves the County and, in-turn, taxpayers money. In 2022 dollars, a 1% reduction in energy consumption may result in about $11,200 in savings on energy bills annually.

The County's primary, largest, most intensely utilized buildings are listed below:

- Administrative Center
- Health & Human Services Building
- Law Enforcement Center
- Hillview Health Care Center
- Lakeview Health Center
- Highway Department
- Solid Waste

Building energy use accounts for 24% of total La Crosse County operational CO2e emissions.

A. Building Energy Efficiency

Figure 20 represents electricity consumption by County facility in 2022. The long-term care facilities (Hillview & Lakeview) and the Law Enforcement Center are 24-hour facilities that account for 67% of La Crosse County's total electricity consumption.

The County government's electricity costs in 2023 were an estimated $296,000 less than if usage had remained at 2007 levels, and $1.78 million less from 2008 - 2023 in total.

Figure 21 shows the County's electricity consumption over time, relative to cooling degree days. Higher energy consumption is anticipated for years with more cooling degree days. Electricity usage rates are mostly a reflection of how much cooling and air-conditioning the County uses in its buildings. According to the 2023 Sustainability Indicators Report, "The County government's electricity costs in 2023 were an estimated $296,000 less than if usage had remained at 2007 levels, and $1.78 million less from 2008 - 2023 in total." (Olson, 2024).

Figure 20. Energy consumption by facility. Source: Olson A., (2024) 2023 La Crosse County Sustainability Indicators Report

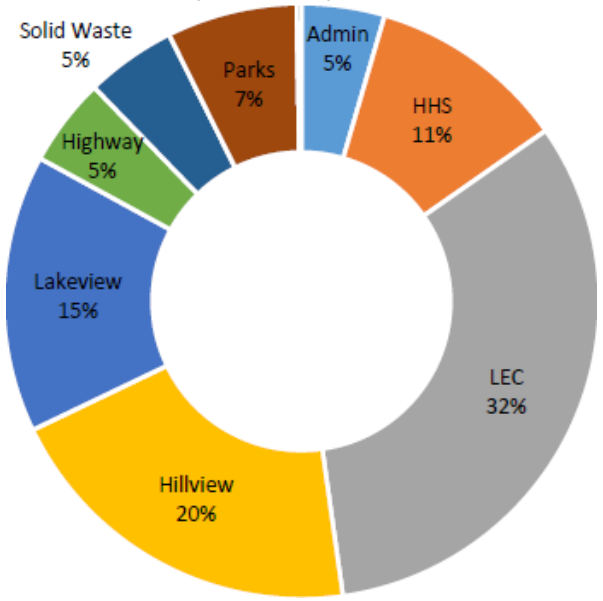
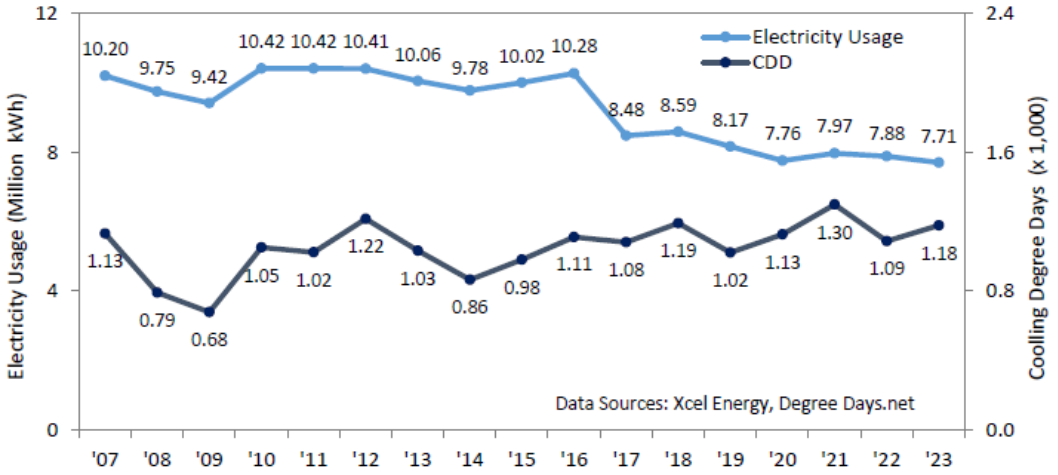


Figure 22 depicts natural gas consumption by County facility in 2022. The long-term care facilities (Hillview & Lakeview) and the Law Enforcement Center account for a massive 87% of La Crosse County's total natural gas consumption.

Figure 23 details the County's natural gas usage relative to heating degree days since 2007. The higher the heating degree day value, the more natural gas usage could be anticipated. Natural gas usage rates are mostly a reflection of how much heating the County uses in its buildings. According to the 2023

Figure 21. Natural gas usage relative to heating degree days. Source: Olson, A., (2024). 2023 La Crosse County Sustainability Indicators Report.



Sustainability Indicators Report, "The County government spent an estimated $150,000 less for natural gas in 2023 than if usage had remained at the 2007 level, and $937,000 less from 2008-2023 in total." (Olson, 2024).

While proportionately, Hillview, Lakeview, and the Law Enforcement Center use far more energy than other County buildings, it may be explained by several factors, including the age of HVAC systems, construction of the building, hours of operation, and building size. Energy Use Intensity (EUI) measurements can be used to standardize total annual energy usage (in kBtu) of a building by the size of a building (in square feet).

Since 2007, the EUI of the Health and Human Services Buildings has declined by 53.7%, largely due to a 2016 renovation that increased the airconditioned space of the building by 26.7% but replaced the building's boiler with a more efficient one. Due to upgrades since 2007, the County has saved $119,000 on energy costs (Olson, 2023).

The Law Enforcement Center has reduced its energy consumption by 12.2% since 2007 even though the building expanded its total square footage by 86.4% (Olson, 2023).

The Law Enforcement Center, Administrative Center, and Health and Human Services Center are all near each other and other institutional buildings in downtown La Crosse. Establishing a downtown microgrid would be an excellent way to increase the efficiency and hazard resilience of vital county operations. A microgrid allows buildings to derive power from the existing grid or disconnect to improve energy efficiency and continue to operate during storms and other weather disasters. La Crosse County may consider partnering with City of La Crosse or

Figure 22. Natural gas consumption by facility. Source: Olson A., (2023) 2022 La Crosse County Sustainability Indicators Report.

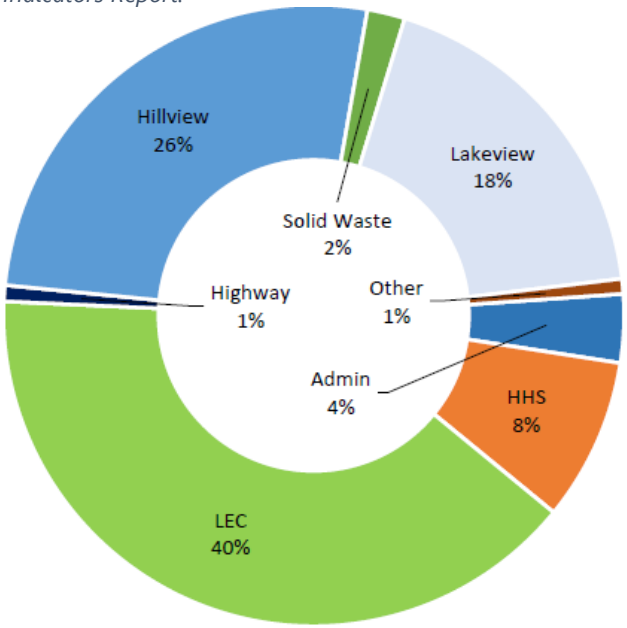
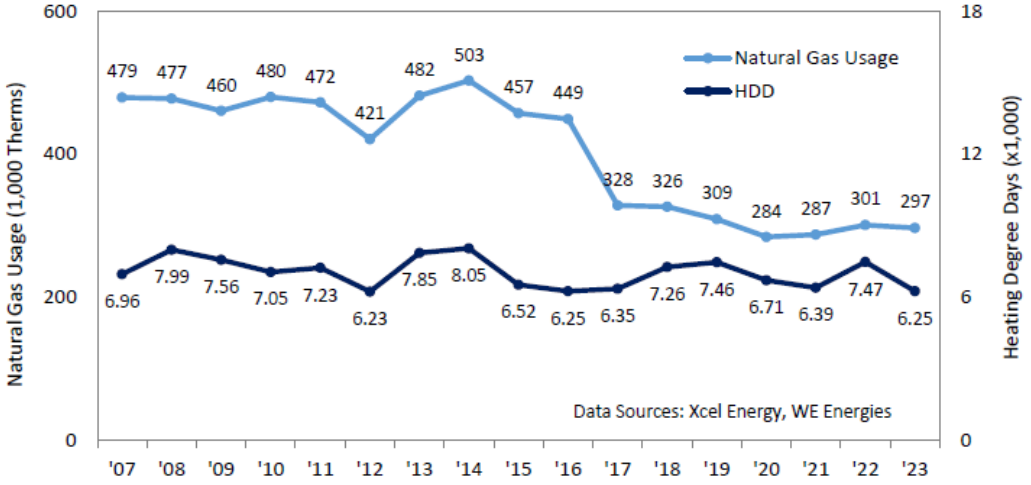


Figure 23. Natural gas usage relative to heating degree days. Source: Olson A., (2024). 2023 La Crosse County Sustainability Indicators Report.



Western Technical College, which are both nearby, to evaluate the feasibility of a municipal microgrid downtown. Additionally, other locations such as the Highway Department and Solid Waste Department may be evaluated for microgrid feasibility. Due to Gundersen Lutheran Onalaska Clinic's dependence on the landfill for energy, a partnership between Gundersen and Solid Waste to construct a microgrid will be mutually beneficial and ensure that the landfill and the hospital can continue operations in even the most extreme conditions.

EPA Energy Star Portfolio Manager also estimates total GHG emissions based on electricity use and its own formulas. Energy Star's estimates are consistent with many of the Sustainability Indicators Report's 2022 estimates, but it projects that Goose Island Park is the 6th highest source of emissions. From July 2020 to March 2024, emissions from Goose Island Park are 24.3% higher than those from Hillview. This is likely due to the presence of up to 250 RVs at a time that may be connected to electricity, primarily in the summer months. Goose Island, which is comprised of plenty of open space, would be a prime candidate for conversion to 100% solar energy. Goose Island Park uses approximately $50,000 in energy per year.

B. Solar & Renewable Energy

Figure 24. In 2023, La Crosse County Received SolSmart Silver Designation.

The generation of carbon-free solar energy replaces existing, standard methods of energy generation that produce harmful GHG emissions. Solar photovoltaic (PV) energy systems have become increasingly affordable in recent years with a 69% decrease in the cost of commercial rooftop solar PV between 2010 and 2020. (NREL, 2021) Repayment on investment in solar PV, or "solar payback period," for a 10kW system is typically 5-10 years (EnergySage, 2023). After the solar payback period, the installed panels will have saved enough money in offset energy consumption that they will have paid for themselves and will only continue to save money beyond that point. Solar panels continue to operate for 30 - 35 years after installation and some may produce power for much longer than this (US Department of Energy, 2023). Additionally, net metering agreements and the development of "smart grids" will maximize customer savings while increasing grid resilience.

Unfortunately, solar payback periods have increased in length as demand for private solar PV systems has increased and net-metering incentives from utilities for excess energy produced by panels have stagnated or been reduced. Due to this, and other state preemptions, it likely isn't in the interest of La Crosse County, to produce more energy for the grid than the maximum needed at individual sites.

La Crosse County supports the expanded use of solar energy to reduce the carbon footprint produced by the County's current energy consumption. In 2023, La Crosse County approved the construction of solar energy systems with a combined capacity of 740 kW to be installed throughout six county facilities. It's estimated that these solar panels will offset 13% of the County's total 2022 building energy consumption. We hope that the installation of these energy systems will set an example for neighboring communities and municipalities and highlight the viability of solar energy systems. Additionally, as La Crosse County electrifies its fleets, solar energy production can be used to directly offset the increased energy load. Resulting in further cost savings associated with the electrification of fleet vehicles through decreased fuel consumption.

According to Clean Wisconsin, to achieve net zero carbon emissions by 2050, 31 more gigawatts of solar and 21 more gigawatts of wind energy must be constructed in Wisconsin (Schulz, J., 2023). In 2023, over 1 gigawatt of solar was approved by PSC, which is double what was approved in 2022. As the cost of renewable energy continues to decline, the adoption of solar by residents and local businesses can be expected to increase.

It is recognized that there are significant soft costs associated with solar panel installation such as permitting fees and inspections that can act as barriers to widespread adoption of solar, especially in rural communities. La Crosse County achieved a SolSmart Silver Certification by completing steps to improve the efficiency and accessibility of solar permitting in unincorporated areas of the county. The County has continued to and plans to continue working with SolSmart to reduce the barrier of entry for private solar installations. 181 solar permits have been issued in La Crosse County since 2019.

Recent solar installations permitted by the Zoning, Planning and Land Information Department:

2019 – 9 roof-mounted, 5 ground-mounted

2020 – 14 roof-mounted, 8 ground-mounted

2021 – 40 roof-mounted, 14 ground-mounted

2022 – 45 roof-mounted, 22 ground-mounted

2023 (as of 11/1/23) – 32 roof-mounted, 10 ground-mounted

Figure 25. New solar arrays being constructed at the County Highway shop off STH 33. (November 2023).

C. Buildings and Energy Goals & Recommended Actions

Goal 1: Assess energy efficiency and analyze opportunities to increase building energy efficiency, capture cost savings, and reduce emissions.

- Action 1.1. Maintain an inventory of refrigerants used at county buildings by type, quantity, and use so we can more accurately estimate the County's carbon footprint. Reduce use of refrigerants whenever possible.
- Action 1.2. For each metered county building, complete Energy Star's Sustainable Buildings Checklist. Consider performing building audits. Use Focus on Energy Commitment to Community programs and/or other resources to conduct energy assessments on municipal facilities that are identified as high energy users. Use the results to develop an action plan to increase efficiency and reduce energy costs.
- Action 1.3. Evaluate the feasibility of geothermal energy at new and existing county buildings.
- Action 1.4. Assess the feasibility of generating geothermal energy from waste at the landfill to serve offsite users.

Goal 2: Incrementally increase building energy efficiency and reduce emissions. Improve building energy efficiency by 15% by 2030.

- Action 2.1. Install simple energy efficiency upgrades such as, auto-shut off LED lights, smart power strips, and modern automated HVAC systems in all county buildings where feasible. Consider policy to reduce unattended electrical devices.
- Action 2.2. Power County buildings with 100% renewable energy. Increase solar energy generation and use at county properties utilizing secondary sites evaluated in 2022 that were not funded by ARPA.
- Action 2.3. Perform annual tune-ups to increase energy efficiency in our boilers and to take advantage of Focus on Energy rebates when replacing components.
- Action 2.4. Apply for the US Department of Energy Clean Energy to Communities Program. Consider In-Depth Partnership, Peer-Learning Cohort, or Expert Match options to receive technical assistance for energy improvements.
- Action 2.5. Connect the Lakeview chiller system to a private well instead of municipal water to reduce long-term costs and increase efficiency.
- Action 2.6. Replace remaining T8 lighting with LED lighting at Lakeview.

Goal 3: Establish County building efficiency standards and create plans to facilitate a smooth transition to climate resilient buildings.

- Action 3.1. Upgrade County SolSmart certification from Silver to Gold.
- Action 3.2. Require new municipal buildings, and significant remodels of existing buildings, to be designed to achieve a sustainable building certification, such as an ENERGY STAR score of >75, or certification through LEED, WELL, Passive House, Net Zero Energy, Green Globes, or Living Building.
- Action 3.3. Adopt succession plans for transitioning from natural gas to cleaner fuels. Implement the plans.
- Action 3.4. Use alternative materials with lower amounts of embodied carbon when constructing new roads and buildings.

Goal 4: Improve the climate resilience of County owned and operated properties.

- Action 4.1. Complete a GIS asset inventory to assess potential losses of county property and assets due to future flood events.
- Action 4.2. Prepare or update internal emergency action plans to improve climate resilience.
- Action 4.3. Assess the feasibility of a downtown microgrid. Construct a downtown microgrid if feasible, to achieve cost savings on energy and ensure the County can function and respond to public threat and emergencies during grid outages and extreme weather events.

Part 1

ELEMENT 5:

WASTE REDUCTION AND POLLUTION MITIGATION

XI. Element 5: Waste and Pollution Mitigation

For several years, La Crosse County has led regional sustainability activities related to waste and pollution mitigation, particularly at the county landfill. While major achievements have been made related to recycling, preservation of landfill capacity, and various local partnerships, The County must continue to reduce emissions related to resource consumption and manage the waste produced by its operations.

A. Water Use

Besides outlier years in 2016 & 2017 when on-site wells at the Law Enforcement Center (LEC) were temporarily out of commission, the County's water consumption across has slowly decreased by 41.9% since 2007 (Olson, 2023). That reduction is based only on bills from the Law Enforcement Center, Carroll Heights, Administration Building, Highway Department, The Health & Human Services Building, and Hillview.

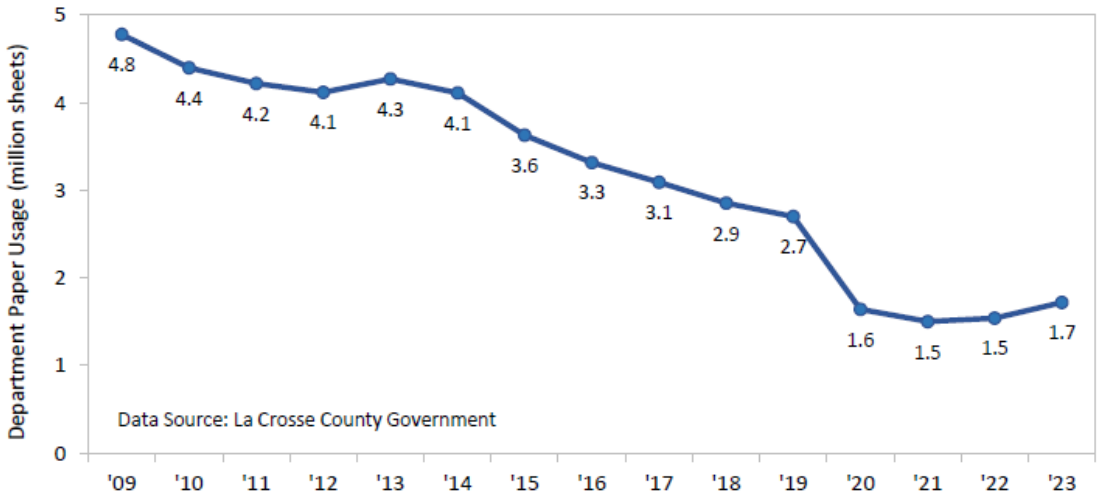
Location	Quantity (gallons)	% of Total
Law Enforcement Center	7,239,000	22.96%
Admin. & Highway	127,000	0.40%
Health and Human Services	635,000	2.01%
Hillview	3,429,000	10.88%
Lakeview	20,098,000	63.75%
TOTAL	*31,528,000*	*100%*

Figure 26. 2022 water use at various County buildings.

The Sustainability Indicators Report included Carroll Heights, but it had omitted Lakeview in its estimation of previous water consumption. Other metrics in the report do not evaluate Carroll Heights but do provide measurements for Lakeview. Once Lakeview is added and Carroll Heights is removed from calculations, the La Crosse County's total water consumption more than doubles (see Figure 26). Lakeview, which is on Village of West Salem's municpal water system, consumes the most water by a significant margin (63.75%). Lakeview's massive consumption of water may be due to an innefficient "pump and dump" chiller system used for heating and cooling. Other downtown La Crosse buildings use a similar system, but all water at Lakeview is metered and connected to the municipal system. The downtown facilities primarily use unmetered, onsite wells in addition to some municipal water. It's likely that water data we are able to track is not representative of the full amount of water used at the downtown buildings. Water use efficiency at Lakeview should be investigated further.

B. Paper Use

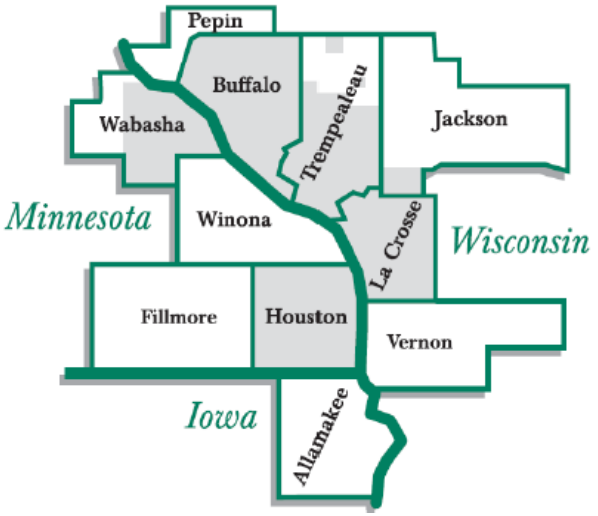
Figure 27. Source: Olson A., (2023) 2022 La Crosse County Sustainability Indicators Report.



From 2009 to 2022, the County significantly decreased paper use by 67.8% (See Figure 27). Decreasing paper, largely attributed to increased digitization, usage has saved the County approximately $1,000,000, which is almost enough to pay for the reconstruction 1 mile of county highway in 2023. In 2021, production printing for one third of paper usage. In 2022, the County outsourced all production printing and no longer tracks production printing quantities. The saved an estimated $153,000 on paper and department printing in 2023 compared to its 2009 level, level, which avoided an estimated 78 mt CO_2e of GHG emissions. Cumulative savings from 2010 to 2023 were $1.189 million and 605 mt CO_2e (Olson, 2023).

C. County Landfill

Figure 28. La Crosse County Landfill Service Area. Source: La Crosse County Solid Waste Management Plan.



The La Crosse County Landfill, opened in 1977, is managed by the Solid Waste Department. It is the primary landfill in the region, and serves 6 counties, including La Crosse County (See Figure 28). A regional policy board of the members of the service area govern some aspects of the landfill operations. The system accepts waste from all varieties of producers, including waste from residential, commercial, industrial, and institutional sources. The landfill provides reuse, resource recovery, recycling, and disposal services. Historically, Solid Waste Department has led the charge to reducing La Crosse County's environmental impact. Previous sustainability efforts have focused primarily on waste reduction-oriented actions and initiatives at the landfill. Efforts to continue to improve the sustainability of the landfill will likely reduce the bulk of La Crosse County's Scope 3 emissions.

Since 1988, the Solid Waste Department has partnered with Xcel Energy to send qualifying waste as refuse derived fuel (RDF) use to produce energy for the region. This arrangement, referred to as the waste to energy (WTE) program, is co-beneficial, as it reduces Xcel's dependence on "dirty" fuels, such as coal, and increases the life of the landfill as thousands of tons of waste have been diverted from consuming landfill capacity.

In 2013, Gundersen Health System and Solid Waste began a partnership that has converted thousands of metric tons of fugitive methane gases, produced by landfill waste, to energy for a nearby hospital and clinic. This gas to energy system is illustrated in Figure 29. Methane from the landfill comprises 55-60% of the energy used by Gundersen, which diverts approximately 104,000,000 cubic feet of methane emissions from entering the atmosphere.

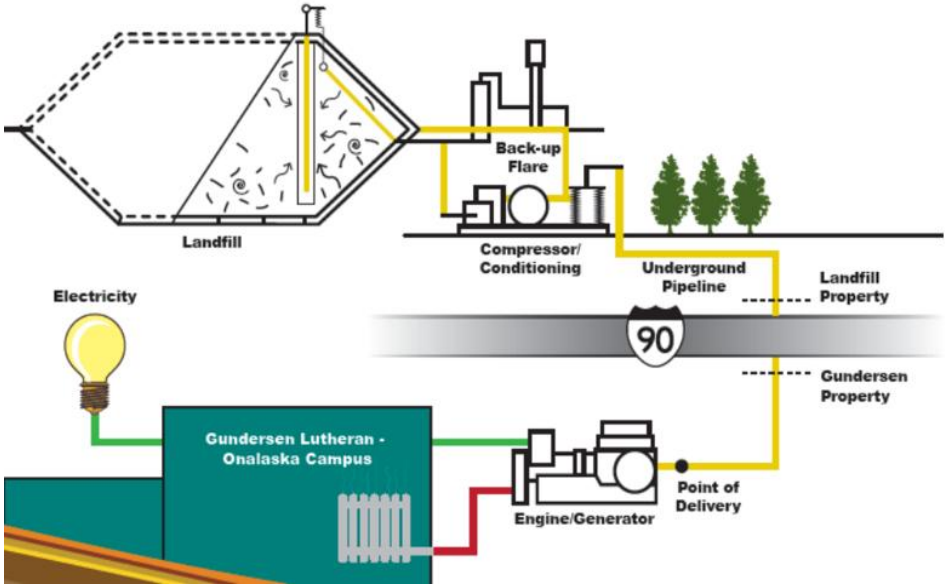


Figure 29. How Solid Waste's gas to energy system fuels Gundersen Clinic. Source: La Crosse County Solid Waste Management Plan.

Municipal single stream recycling, in conjunction with the Xcel WTE agreement has massively reduced the amount of landfilled waste in La Crosse County. WTE programs are considered renewable energy sources in Wisconsin.

Compared to 2007 values, in 2022:

- 14.7% more waste was landfilled.
- 5.4% more waste was converted to energy.
- 10.7% less landfilled waste was recycled.
- 148.8% more municipal recycling was collected (Olson, 2023).

That amounts to an estimated 451,000 more tons of waste being recycled in 2022 than was recycled in 2007. 40% of the waste in the landfill service area was recycled, and 17.9% of landfilled waste was converted to energy by Xcel in 2022. Approximately 70% of the waste provided to Xcel has typically

been suitable for conversion to energy. The remaining 30% unsuitable for conversion and the ash produced from burning the waste for energy is returned to the landfill. GHG emissions are byproducts of the WTE process, though when considering lifetime landfill emissions, WTE is favorable (Castaldi, M., et al., 2022).

The County's Solid Waste Management Plan and Master Land Use Plan is being updated 2023-2024. According to the Solid Waste Management Plan approximately 17 years (2040) of air space/capacity, which is about 3,200,000 cubic yards of waste, remains at the landfill. The Solid Waste Department consistently pursues approaches to increase the life of the landfill and divert waste. Generally, it is difficult to project future landfilled tonnages due to the significant quantities of tonnages that are landfilled following unpredictable events, such as fires, weather disasters, and train derailments. For example, 2,500,000 tons of waste were processed at the La Crosse County Landfill in 2023 following a train derailment. Historical annual waste delivered to the landfill are shown in Figure 30.

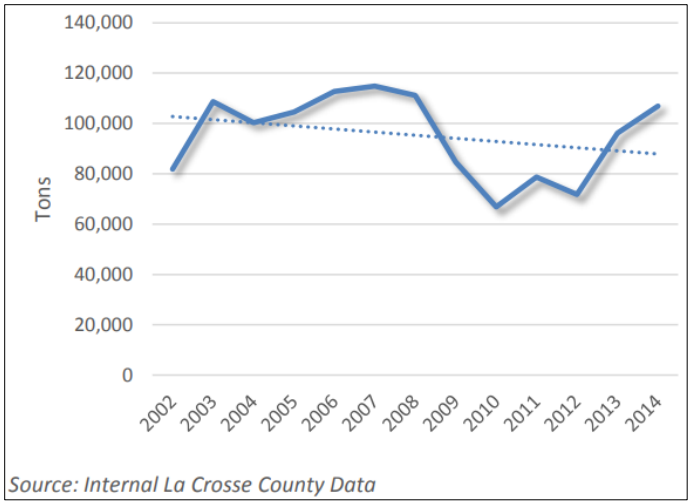


Figure 30. Total landfilled waste 2002-2014. Source: La Crosse County Solid Waste Management Plan.

When the landfill has exhausted all its capacity, the Solid Waste Department has a Solid Waste Management Plan and Master Land Use Plan that will assist the Department with monitoring and managing the site. The plans aim to mitigate damage to the environment as waste settles and decomposes and to provide adaptive reuses of the land. Plans propose adding public recreation spaces and trails, restoring trees and prairies, and reintroducing native wildlife to the area.

Figure 31. Landfill Hazardous Materials Facility. Source: La Crosse County Solid Waste Management Plan.

Since 2003, the Solid Waste Department has operated the Household Hazardous Materials (HHM) Facility where residents can safely dispose of waste that is considered toxic to the environment if disposed of improperly (Figure 31). Approximately 440,000 pounds of hazardous materials are processed at the HHM annually.

HHM has expanded the wastes that it accepts to include chemicals, electronics (e-waste), infectious waste, non-controlled medications, and refrigerant-containing appliances. Additionally, much of the waste that is collected by the HHM can be reused and is made available to the pubic via the HHM's 'Reuse

Room' free of charge. About 110,000 pounds of Reuse Room materials are used by the public annually. E-waste and batteries that are dropped off at La Crosse County's Hazardous Materials Facility are delivered to an off-site recycling plant. In the future, there will be an increased need for battery recycling services to prevent environmental contamination and economic loss associated with the increasing number of batteries reaching their end-of-life (Tankou, A., & Hall, D., 2023). In 2023, the Solid Waste Department began a Styrofoam recycling program that has diverted 36% of Styrofoam generated in the service area from the landfill. La Crosse County is one of only two counties in Wisconsin that offer Styrofoam recycling.

D. County Greenhouse Gas Emissions

Row Labels	Sum of mt CO2e	Share of total
⊞Electricity	2,195	14%
⊞Fugitive Refrigerants	16	0%
⊞Mobile Combustion	4,522	30%
⊞Stationary Combustion	1,623	11%
⊞Fugitive Methane	6,900	45%
Grand Total	15,255	100%

Figure 33. La Crosse County GHG Categories. Source: Olson A., (2023) 2022 La Crosse County Sustainability Indicators Report.

In addition to solid waste pollutants, greenhouse gases are a significant category of pollutants produced by La Crosse County operations. The 2022 Sustainability Indicators Report utilized the International Panel on Climate Change (IPCC) data conversion factors, in accordance with ICLEI Local Government Operations Protocols for emissions estimations, to estimate Scope 1, Scope 2, and some Scope 3 emissions. Scope types are described on page 9 of this plan and in further depth in the Sustainability Indicators Report.

Figure 32 represents GHG Types by Global Warming Potential (GWP). GWPs quantify a heat trapping potency value based on IPCC protocols. The higher the GWP value, the higher the potency. The Indicators Report provide the following example of how GWP values are used; "…. the GWP value of CH4 is 28, meaning that a gram of CH4 in earth's atmosphere traps 28 times as much heat as a gram of CO2 over the course of a century" (Olson, 2023).

GHG Type	GWP Value (AR5)
Carbon Dioxide (CO_2)	1
Methane (CH_4)	28
Nitrous Oxide (N_2O)	265
Tetrafluoroethane (R-134A)	1,300

Figure 32. GHG Types by Global Warming Potential (GWP). Source: Olson A., (2023) 2022 La Crosse County Sustainability Indicators Report.

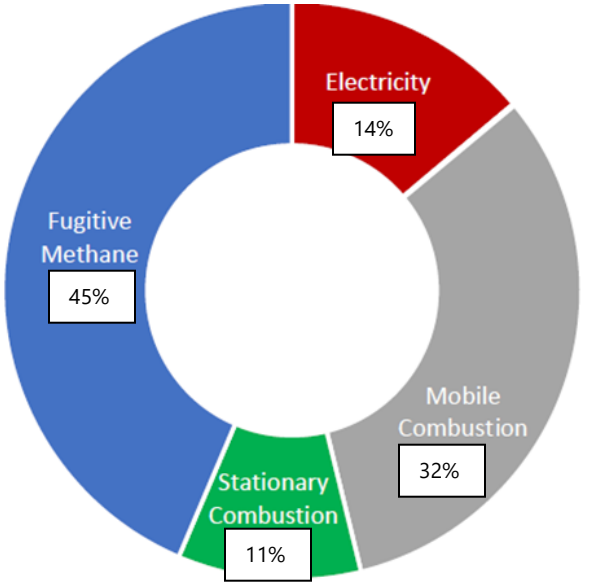
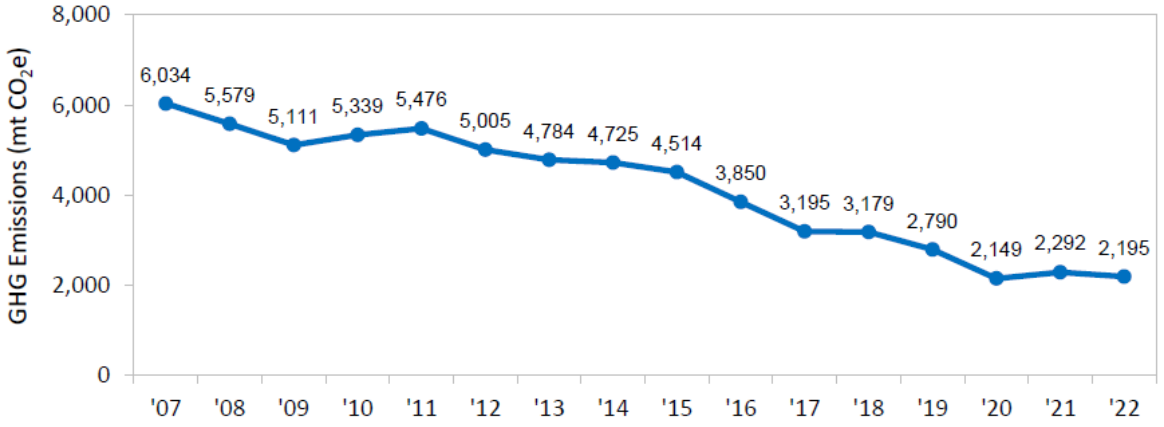


Figure 34. La Crosse County GHG Categories. Source: Olson A., (2023) 2022 La Crosse County Sustainability Indicators Report.

The GHG assessment found that La Crosse County's carbon footprint is 15,255 metric tons CO2e. Emissions associated with La Crosse County's operations are broken into the five categories shown in Figure 33 and Figure 34. The 5 categories are defined as follows:

1. **Electricity:** GHG emissions resulting from the production of purchased electricity delivered to County facilities;
2. **Stationary Combustion:** GHG emissions produced by natural gas/propane combustion at County facilities;
3. **Mobile Combustion:** GHG emissions produced by from vehicle fuel combustion (diesel, gasoline, and CNG);
4. **Fugitive Refrigerants:** fluids inadvertently leaked refrigerants from refrigeration equipment;
5. **Fugitive Methane:** methane generated in landfill and then escaped to the atmosphere.

Figure 35. GHG emissions from electricity. Source: Olson A., (2023) 2022 La Crosse County Sustainability Indicators Report.



1. Emissions from Electricity

La Crosse County's emissions from electricity are produced from energy generated by combustion of fossil fuels, such as coal, oil, or natural gas. According to the 2022 Sustainability Indicators Report, "Electricity usage by the La Crosse County government in 2022 resulted in 2,195 metric tons CO2e of GHG emissions – down from 2,292 metric tons CO2e in 2021 (-4.2%) and down from 6,034 metric tons

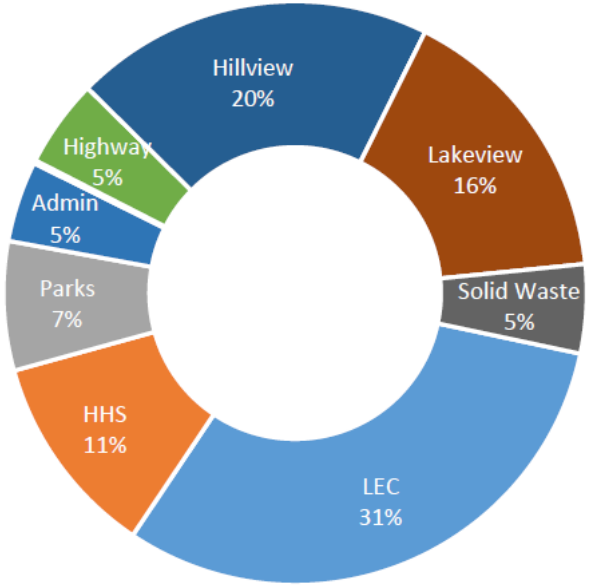


Figure 36. La Crosse County 2022 GHG Emissions from Electricity Consumption by Department. Source: Olson A., (2023) 2022 La Crosse County Sustainability Indicators Report.

CO2e in 2007 (-63.6%...)" (Olson, 2022) (Figure 35). The Law Enforcement Center alone generates 31% of La Crosse County's emissions from electricity use (Figure 36). The long-term care facilities consume relatively large amounts of electricity as well.

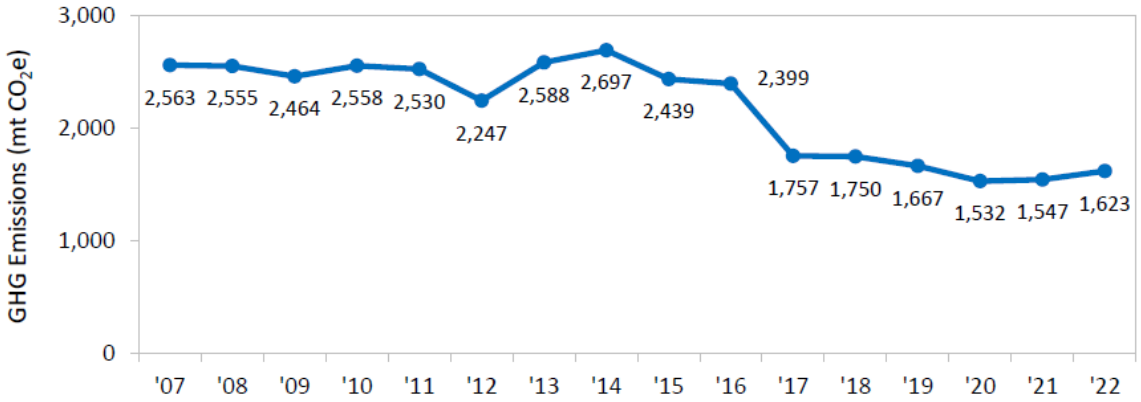


Figure 37. La Crosse County GHG Emissions from Stationary Sources in CO2e. Source: Olson A., (2023) 2022 La Crosse County Sustainability Indicators Report.

La Crosse County's electricity emissions result from two primary factors: the quantity of energy consumed by the County, and the emissions produced by Xcel Energy's generation of electricity. Since 2007, La Crosse County has significantly reduced the quantity of energy it consumed (-22.8%). This could be a result of energy efficiency improvements that have occurred or a reduction in the quantity of energy demanded by La Crosse County operations.

Xcel Energy Upper Midwest has also decreased its emission rate by 52.7% since 2007. Xcel aims to achieve an 80% electricity emission reduction (below 2005 levels) by 2030 (Xcel Energy, 2023). By 2050, Xcel intends to provide carbon free electricity, which in turn significantly decreases La Crosse County's scope 2 emissions from electricity. While aiming to be carbon free by 2050, La Crosse County can achieve cost savings as well as decrease its environmental impact well ahead of 2050 by completing building energy efficiency improvements in the near term.

2. Emissions from Stationary Combustion

Natural gas for space and water heating is the primary source of La Crosse County's stationary emissions. A relatively small amount of propane is also used to heat remote maintenance facilities. La Crosse County stationary emissions are directly proportionate to the amount of fuel consume. In 2022 1,623 mt CO2e were emitted from stationary sources, down 36.7% from 2007 emissions (2,563 mt CO2e) (Figure 37).

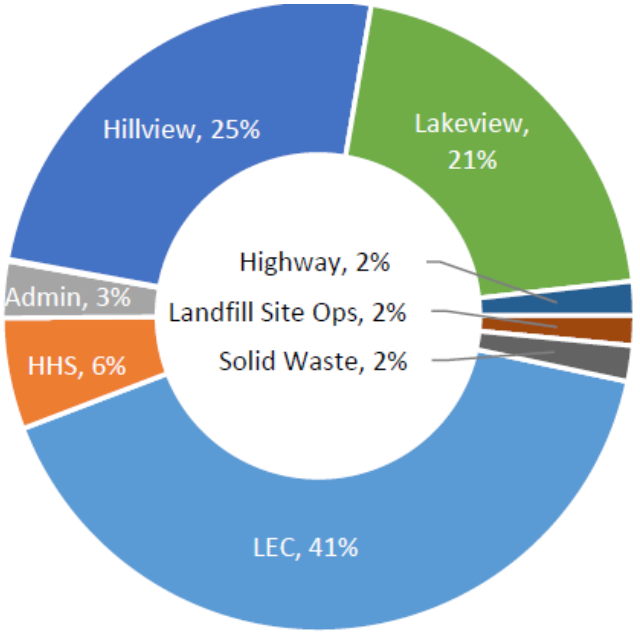


Figure 38. La Crosse County 2022 GHG Emissions from Stationary Sources by Department. Source: Olson A., (2023) 2022 La Crosse County Sustainability Indicators Report.

2022 saw the Law Enforcement Center occupy 41% of La Crosse County stationary emissions, followed by Hillview and Lakeview care facilities (Figure 38). All three of these facilities operate 24/7 which explains much of the discrepancy in emissions. These facilities should be considered first for energy efficiency audits/inventories to identify possible gains in efficiency as these facilities would likely see the greatest emission reductions.

3. Emissions from Mobile Combustion

Mobile emissions are GHGs emitted from La Crosse County fleet vehicles and employee commutes which consume various fuels like gasoline, diesel, and compressed natural gas. In 2022 La Crosse County fleets emitted 2,395 mt CO2e which is 14.2% higher than 2007 emissions (Figure 39). GHG emissions from fleet vehicles are directly proportional to the amount of fuel consumed and is variable year over year due to variations in seasonality and precipitation.

38% of mobile combustion emissions are derived from employee commute trips (Figure 40). Highway Department contributed the highest share of operational emissions in 2022.

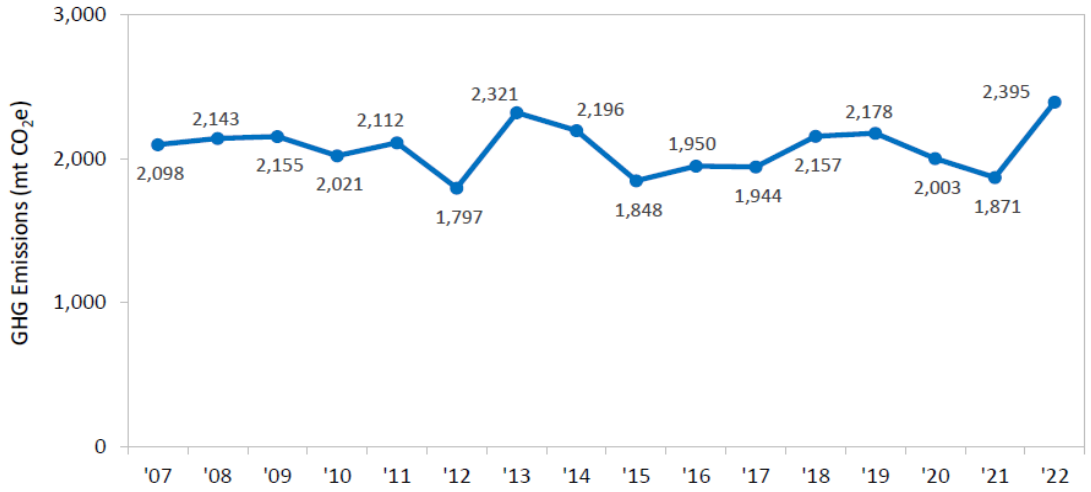
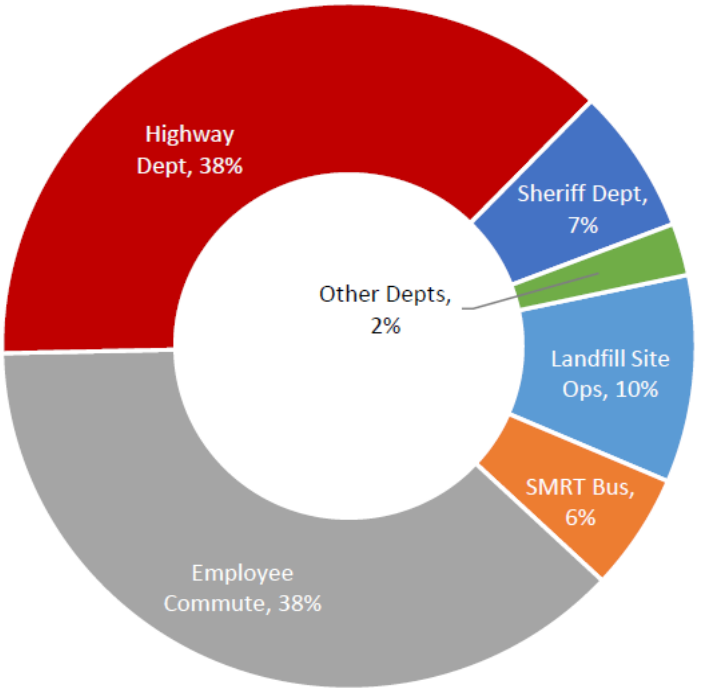


Figure 39. La Crosse County GHG Emissions from County Fleet Vehicles. Source: Olson A., (2023) 2022 La Crosse County Sustainability Indicators Report.



Source	2022 GHG Emissions (mt CO_2e)	% of Total
County-owned Vehicles	2,395	47%
Employee Commuting	1,922	38%
Landfill Site Ops Equipment	498	10%
SMRT Bus System	282	6%
Total	**5,097**	**100%**

Figure 40. La Crosse County 2022 GHG Emissions from Mobile Sources by Department/Source. Source: Olson A., (2023) 2022 La Crosse County Sustainability Indicators Report.

This can be almost entirely attributed to their majority share of fleet vehicles belonging to the heavy-duty category in addition to their majority share of total La Crosse County fleet vehicles. Employee commuting is estimated to emit as much CO2e as the Highway Dept. and efforts to encourage alternative—lower carbon—methods of commuting will be an ongoing process.

4. Fugitive Refrigerant Emissions

Refrigeration, HVAC, and vehicles contain refrigerant fluids necessary for heat transfer in refrigerant and air conditioning. Refrigerants are hydrochlorofluorocarbons (HCFCs) meant to remain sealed within the equipment, however, leaks often occur and can aerosolize into GHGs when emitted into the atmosphere. According to service records provided by the Highway Department, a total of 26.4 lbs. of R-134A leaked from La Crosse County vehicles (Figure 41). While this amount of GHG emissions may seem relatively small compared with other sources, the global warming potential (GWP) of refrigerants like R-134A is 1,300 times higher than CO2. Some refrigerants have a global warming potential (GWP) 10,000 times higher than CO2. Adjusting for the potency of refrigerants, the CO2e emissions from fugitive refrigerants in 2022 was 16 metric tons.

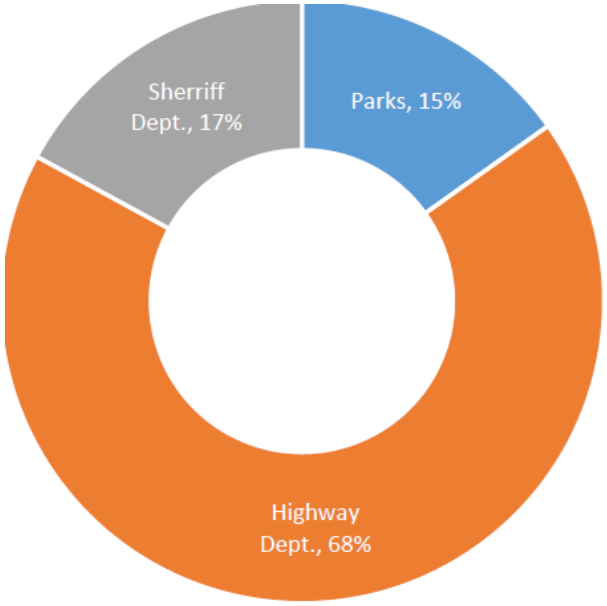


Figure 41. La Crosse County 2022 Fugitive Refrigerant Emissions by Department. Source: Olson A., (2023) 2022 La Crosse County Sustainability Indicators Report.

5. Fugitive Methane Emissions

Even though most of the waste landfilled in La Crosse County is not created by La Crosse County operations, the land is La Crosse County owned. In accordance with ICLEI GHG assessment protocols, methane emissions from the landfill have been included in the estimation of La Crosse County's GHG footprint. Decomposing material at the La Crosse County Landfill expels fugitive methane (CH4), which is more potent than carbon dioxide (CO2). This comprises ~44% of La Crosse County's GHG footprint. While the Landfill's collection system and waste to energy system capture most of it, some "fugitive" methane still escapes into the atmosphere.

The County's fugitive methane emissions from the landfill have decreased by 17% since 2021.

While the amount of fugitive methane was estimated correctly in accordance with ICLEI protocols, La Crosse County and the Solid Waste Department refute the amount due to some inaccurate assumptions in the general formulas used by the EPA and ICLEI protocols for GHG Assessments. La Crosse County posits that these formula-based estimations do not account for the unique operations of the La Crosse County Landfill, which converts much of the methane at the landfill for energy conversion. As new technologies emerge, Solid Waste intends to collect more accurate measures of methane emissions at the landfill.

Figure 42 indicates fugitive methane have decreased by 78.4% since 2010. The annual amount of fugitive methane is a function of the amount of waste landfilled that year. Increased landfill cover could reduce fugitive methane.

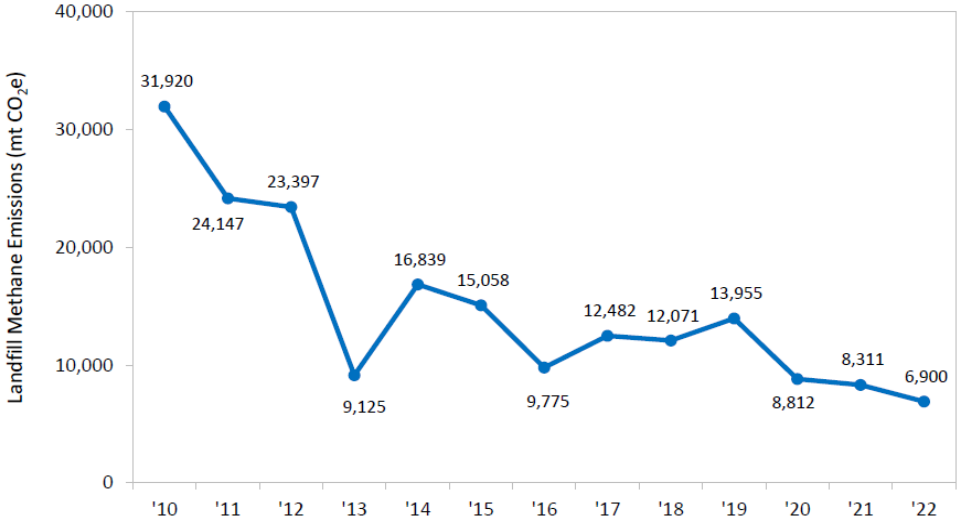


Figure 42. Fugitive Methane Emissions from the County Landfill. Source: Olson A., (2023) 2022 La Crosse County Sustainability Indicators Report.

E. Waste and Pollution Mitigation Goals & Recommended Actions

Goal 1: Promote and enable waste reduction and diversion.

- Action 1.1. Promote electronic transfers, receipting, and invoicing over paper whenever possible.
- Action 1.2. Upload County water use and natural gas use to Energy Star Portfolio annually.
- Action 1.3. Monitor developing technologies to minimize waste transport out of the county.
- Action 1.4. Continuously identify new ways to maximize landfill air space (alternative waste processing, improve waste compaction, waste diversion/re-use opportunities, etc.).
- Action 1.5. Conduct a waste audit to track waste generated by County operations and their sources.
- Action 1.6. Increase pre-processing of waste through utilization of a materials recovery facility to maximize waste diversion to Xcel and minimize landfill airspace consumption. Increase landfill diversion rate from 30% to 50%.

- Action 1.7. Review and update Solid Waste Management Plan every 5 years. Concurrently update the recommendations in this chapter to reflect Management Plan updates.

Goal 2: Establish policies and programs that reduce consumption, encourage circular practices, and discourage generation of waste and pollutants.

- Action 2.1. Review the County procurement policy and incorporate sustainable purchasing preferences for the following: (a) cradle to cradle/circular practices, (b) lower life cycle costs, (c) quadruple bottom line, and (d) product stewardship. Develop template request for proposal language.
- Action 2.2. Utilize 100% post-consumer content recycled paper, and other materials, whenever possible.
- Action 2.3. Electrify landscaping implements/tools.
- Action 2.4. Cease the use of pesticides/herbicides in lawn care/landscaping activities.
- Action 2.5. Proactively establish solar PV panel and EV battery recycling facilities and protocols at the landfill in anticipation of increased use.

Goal 3: Establish and maintain mutually beneficial public-private partnerships and ensure partnerships do not result in increased emissions.

- Action 3.1. Continue and extend Solid Waste Department's partnerships with Xcel Energy and Gundersen Health to divert landfill emissions and extend the life of the landfill's airspace.
- Action 3.2. Create County a committee specifically focused on sustainability, resource conservation, environmental health, and environmental justice concerns, etc. Consider hiring full-time sustainability staff.
- Action 3.3. Utilize emerging technologies to accurately analyze fugitive emissions produced by the County Landfill.
- Action 3.4. Following feasibility assessments of a landfill-Gundersen microgrid, assist with providing necessary infrastructure.

Part 1

IMPLEMENTATION AND EVALUATION

XII. Implementation & Evaluation

A. Implementation

The sustainability staff, Administration, the Facilities Director, and the Solid Waste Director will be the primary Operations Plan implementation leads, in coordination with other department directors or their staff designee(s). Broad Climate Action Operations Plan implementation target outcomes including the following:

1. Carbon neutrality of County facilities by 2050.
2. Cost savings from reduced consumption and waste reduction and increased energy efficiency.

Quarterly staff advisory team (SAT) meetings to facilitate Operations Plan implementation are encouraged. Implementation will follow the attached Part 1 Implementation Guide (Appendix B). County staff will lead the implementation of this plan. Sustainability staff will coordinate with partners to manage projects and implementation progress. Implementation details are included in the Implementation Guide in Appendix B. The Guide also includes estimated project timelines:

- Ongoing = Ongoing action
- Short-term = Anticipated priority in next 1 - 5 years
- Mid-term = Anticipated priority in next 5 -10 years
- Long-term = Anticipated priority in next 10 - 25 years

Estimated GHG reduction impact is also estimated on a scale of 1 to 5 for each recommended action. For example, actions with “short-term” timelines and 5/5 direct GHG reduction impact may be considered the highest priorities following this plan’s adoption.

Recommended actions for implementation are considered “a-la-carte”, meaning actions may be prioritized based on what may most realistically be achieved over time. With so many possible actions that could realistically be conducted to improve sustainability in La Crosse County, it will be challenging to complete them all. The list of a variety of recommended actions in the Implementation Guide in Appendix B allows those implementing this plan to be agile as priorities and available funding related to particular actions may shift.

B. Evaluation

Annual operations plan evaluations should be completed to track implementation progress. Continued annual Sustainability Indicators Reports and additional periodic assessments of the County's energy consumption and waste production will enable staff to identify measurable progress towards its sustainability and climate action goals. Projections of anticipated emissions resulting from plan implementation and analysis of individual County buildings and vehicles would also inform implementation priorities and strategy. Additionally, GHG projections are a requirement of many grant and funding opportunities related to sustainability projects. Updates to the plan may occur as needed but would preferably occur every 5 years to reflect potential changes in County priorities.

As the primary objective of this plan is to achieve La Crosse County's goal of carbon neutrality by 2050, progress implementing this plan will primarily be evaluated based on measures of La Crosse County GHG reductions. Other metrics such as tonnages of landfilled waste and water consumption will serve as metrics of operational sustainability. The 2022 Sustainability Indicator Report provides a baseline value of GHG emissions from County operations. Annual indicators reports will continue to assist La Crosse County in tracking its progress towards carbon naturality.

Cost savings from fleet and building improvements and waste reduction is intended to be a secondary priority. In some instances, actions required to achieve the County's sustainability goals will not be immediately cost effective, but they may result in long-term cost savings. Data from future building energy audits, fleet usage, and EPA Energy Star Portfolio can be compared against the baseline data collected as part of the climate action planning process.

La Crosse County policy and programming should result in cost savings but may be difficult to quantify in some cases. GHG reductions from policy and programming recommendations should be quantifiable, but they may be difficult to attribute to a particular policy or program.

Staff may consider methods of projecting future La Crosse County GHGs to identify future climate action milestone dates more clearly and evaluate the impact of the implementation of specific actions.

Part 1

APPENDICES

Appendix A:

References

References

Previous County Sustainability Efforts

La Crosse County. (2022). *Envision 2050: La Crosse County Comprehensive Plan*. La Crosse County.

Sustainability Assessments (Fleet)

Christman, M. (2023, December 11). *Fleet Analysis: La Crosse County, WI* Wisconsin Clean Cities.

Olson, A. (2023, October 18) La Crosse County *Sustainability Indicators 2022 Report.* Sustainability Analytics.

U.S. Department of Transportation. (2023, June 29). *Electric Vehicle Charger Levels and Speeds*. Transportation.gov. https://www.transportation.gov/urban-e-mobility-toolkit/e-mobility-basics/charging-speeds

Sawatch Labs. ezEV Suitability Assessment – La Crosse County. (2024, March 1). Sawatch Labs.

Natural Resources and Conservation

Gregory, J., & Azarijafari, H. (2021, April 16). *Urban Heat Islands*. Climate Portal. https://climate.mit.edu/explainers/urban-heat-islands

United States Environmental Protection Agency. (2005). Using Smart Growth Techniques as Stormwater Best Management Practices. https://www.epa.gov/sites/default/files/2014-04/documents/stormwater-best-management-practices.pdf

Commuting & Fleets

Forward Analytics. (2023). *The Green Book, A Book of County Facts, 6^{h} Edition. https://www.forward-analytics.net/the-green-book/*

MethaneSAT. (2024). *Let's launch a satellite to track a threatening greenhouse gas – Fred Krupp*. Environmental Defense Fund.

Olson, A. (2023, October 18). *Sustainability Indicators 2022 Report.* Sustainability Analytics.

Sawatch Labs. (2024).

Buildings & Energy

Aggarwal, V. (2023, December 6). What is the payback period for solar panels? EnergySage. https://www.energysage.com/solar/understanding-your-solar-panel-payback-period/

National Renewable Energy Laboratory (2021, February 10). *Documenting a Decade of Cost Declines for PV Systems*. NREL. https://www.nrel.gov/news/program/2021/documenting-a-decade-of-cost-declines-for-pv-systems.html

Olson, A. (2023, October 18) *Sustainability Indicators 2022 Report.* Sustainability Analytics.

Schulz, J. (2023, December 18). *Wisconsin made progress toward clean energy transition in 2023, but more work is needed*. Wisconsin Public Radio. https://www.wpr.org/energy/wisconsin-made-progress-toward-clean-energy-transition-2023-more-work-needed

Solar Energy Technologies Office (n.d.). *End-of-Life Management for Solar Photovoltaics*. Energy.gov. https://www.energy.gov/eere/solar/end-life-management-solar-photovoltaics

Waste and Pollution Mitigation

SEH, Inc. (2016). *La Crosse County Solid Waste Management Plan, 2016-2020 and Beyond*. SEH, Inc.

Castaldi, M. J., LeBlanc, J., & Licata, A. (2022, June 6). *Engineers Make the Case for Waste to Energy*. The America Society of Mechanical Engineers. https://www.asme.org/topics-resources/content/engineers-make-the-case-for-waste-to-energy

Olson, A. (2023, October 18) *Sustainability Indicators 2022 Report.* Sustainability Analytics.

Tankou, A., & Hall, D. (2023, September 29). *Will the U.S. EV Battery Recycling Industry be Ready for Millions of End-of-Life Batteries?* Theicct.org. https://theicct.org/us-ev-battery-recycling-end-of-life-batteries-sept23/

Xcel Energy. (2023) *Carbon Reduction Plan*. Xcel Energy, Inc. https://wi.my.xcelenergy.com/s/our-commitment/carbon-reduction-plan

Appendix B:

Implementation Guide

Climate Action Plan Implementation Guide (Part 1 - La Crosse County Government Operations)

Goal		Recommended Actions	Lead(s)	Direct GHG Reduction Impact (5 = Highest impact)	Timeline
Element 1: Organization Administration & Policy					
Goal 1: Engage employees on climate action and ensure they are climate-competent in their personal and professional lives.	1.1.	Create online employee training modules related to waste reduction, energy savings, and natural resources conservation.	IT, Facilities	1	Mid-term
	1.2.	Establish an employee sustainability policy and make sustainability part of new employee and new supervisor orientation.	HR, Planner	1	Mid-term
	1.3.	Include sustainability data and climate research in La Crosse County employee newsletters.	Planner, Marketing	1	Ongoing
Goal 2: Utilize new and existing partnerships to further sustainability in the region and foster new opportunities for collaboration.	2.1.	Advocate for state and federal policy improvements related to building codes, renewable energy, transit, and more (WLGCC).	Planner	5	Ongoing
	2.2.	Collaborate with the Climate Action Plan Staff Advisory Team to implement this plan. Plan implementation relies on multiple leads.	Planner, Staff Advisory Team	3	Ongoing
	2.3.	Establish a climate action work group with other local and regional governments to collaborate on shared ventures and share guidance.	Planner, Health	3	Short-term
	2.4.	Increase staff capacity to complete sustainability and climate-related projects. Consider partnering with WisCorps to hire LTEs.	Planner, Solid Waste, Facilities, &/or Land Conservation	4	Short-term
Goal 3: Allocate the funding necessary to achieve Climate Action Plan implementation.	3.1.	Make recommendations on funding related to sustainability initiatives during the annual budget process.	Planner, Solid Waste, Facilities, Land Conservation	1	Ongoing
	3.2.	Create savings reports that illustrate saved resources due to the sustainability efforts of the County.	Planner, Facilities, Finance	1	Ongoing
	3.3.	Establish a climate action and sustainability fund to support implementation of the climate action plan.	Planner, Administration	5	Short-term
	3.4.	Support staff with trainings and certifications related to sustainability and building efficiency principles that can be implemented to reduce County energy expenses.	Planner, Facilities	2	Short-term
Goal 4: Collect data that will help the County understand the impacts of its operations and progress towards sustainability goals.	4.1.	Continue to complete annual Sustainability Indicators Reports/GHG assessments to track reductions in the County's carbon footprint due to implementing climate action strategies.	Consultant, Sustainability Lead	2	Ongoing
	4.2.	Continue annual WDNR Green Tier Legacy Community Scoring to evaluate the sustainability of the County's operations relative to other member communities.	Planner, Intern	1	Annually
	4.3.	Perform a cost benefit analysis to determine which plan recommendations result in the greatest GHG reductions per dollar spent on climate mitigation and adaptation.	Consultant	1	Short-term
	4.4.	Assess emissions impacts and cost savings resulting from a variety of work options, including telecommuting, flex time, 4 day work week, etc. Amend policies to allow for work options that are proven to reduce energy bills and commuting emissions.	HR, Finance, Facilities, Consultant	3	Short-term
	4.5.	Complete a GHG inventory of Scope 3 emissions to quantify the indirect emissions from La Crosse County operations.	Consultant	1	MId-term
	4.6.	Complete emissions projections to estimate the County's timeline for achieving carbon neutrality and set realistic progress milestones.	Consultant, Sustainability Lead	1	Short-term
Element 2: Natural Resources					
Goal 1: Protect natural, undeveloped areas in the county to support climate resilience and offset carbon emissions.	1.1.	Plant native species of vegetation in County rights-of-way along county highways and town roads.	Land Conservation, Highway	2	Mid-term
	1.2.	Assess forestry and agricultural program carbon credits for their potential offsets with scope 1 and scope 3 of operational emissions.	Land Conservation	4	Long-term
	1.3.	Minimize mowing of County-owned properties and county road rights of way. Maintain bi-annual schedule for mowing county road rights-of-way.	Facilities, Highway	2	Ongoing
Goal 2: Reduce the impacts of the County's impervious surfaces and increase flood resilience.	2.1.	Reduce use of salt on roadways following snowfall, particularly to avoid soil, surface water, and groundwater contamination.	Highway, Facilities	1	Ongoing
	2.2.	Increase stormwater infiltration areas to reduce the over inundation of stormwater infrastructure and help recharge groundwater. Commit funds to projects that restore wetlands, increase greenspaces, and preserve natural areas.	Land Conservation, Facilities	1	Mid-term
	2.3.	Add natural landscaping to reduce the amount of lawn the County must mow or maintain. Remove impervious surfaces where possible.	Facilities	2	Mid-term
	2.4.	Design and implement shared stormwater infrastructure and conservation development designs at and near the landfill with adjacent landowners. Where feasible, emulate smaller, decentralized restored landscape features that can serve as wildlife habitat and park features.	Solid Waste, Land Conservation	2	Long-term
Goal 3: Create and preserve positive ecological health and aesthetic beauty surrounding the landfill.	3.1.	Continue to work with neighboring municipalities to increase vegetative screening of the landfill.	Solid Waste	2	Ongoing
	3.2.	Continually promote ecological restoration of the landfill by establishing a program or event, and/or coordinating with an existing program or event, for the purpose of communicating the restoration vision for the landfill property. Implement the Landfill Master Land Use Plan and update it every 5 years based on ecological conditions.	Solid Waste	1	Updating 2024-25
	3.3.	When necessary, perform construction in a manner that creates more natural contours at the landfill, including defined drainageways that also enhance aesthetic beauty.	Solid Waste, Land Conservation	1	Ongoing
	3.4.	Restore bedrock features and dry prairies in sand overburden materials at the landfill.	Solid Waste, Land Conservation	2	Long-term
	3.5.	Explore opportunities to establish tree nurseries to produce stock for plantings, restore tree cover for forest and savanna restoration by direct seeding rather than planting individual trees, and continue tree test plots program at County-owned properties.	Solid Waste, Land Conservation, Facilities	4	Ongoing
Element 3: Commuting & Fleets					
Goal 1: Support and incentivize reductions in emissions from staff commuting. Reduce emissions from staff commuting by 20% by 2030.	1.1.	Publicize the discounted transit pass program for county employees to encourage more transit ridership and cut down emissions and downtown campus parking needs.	HR, Marketing, Community Development Manager	2	Ongoing
	1.2.	Conduct a downtown County parking study that analyzes emissions impacts, property value impacts, and alternative uses for parking areas.	Facilities, Consultant	1	Mid-term
	1.3.	Make County campuses more bike-friendly by providing amenities such as bike lockers, indoor storage, showers, etc.	Facilities	2	Short-term
	1.4.	Provide level 2 charging for staff that drive County EV fleet vehicles and domicile them at their private residences.	Sheriff, Highway	5	Mid-term

	1.5.	Explore incentive options for employees who commute to work by modes of transportation with lower environmental impact, such as carpooling or transit. For example, by allowing 15 more minutes for employees who ride the bus to get to work or provide free charging for employees driving electric vehicles.	HR, Administration, Facilities	3	Mid-term
Goal 2: Transition away from using GHG emitting fuels for County fleet vehicles. Obtain a zero-emission light and medium duty fleet by 2045.	2.1.	Reduce non-heavy duty fleet emissions by 30% by 2035 (50% electrification). Increase fuel efficiency of remaining fleet vehicles and off-road equipment by 10% by 2030.	Fleet Managers	5	Ongoing
	2.2.	Ensure all primary county buildings are EV ready with Level 2 chargers. Establish a budget for EV charging station installation. Develop an RFP template for EV charging infrastructure installation projects. Develop a time-of-use EV charging plan.	Facilities, Xcel	5	Short-term
	2.3.	Perform fleet assessments periodically to determine the cost effectiveness of non-fossil fuel alternatives.	Planner, Finance	1	
	2.4.	Develop an EV charging infrastructure implementation plan. Update the plan following fleet assessment. Develop vehicle replacements schedules and cost-benefit analysis procedures.	Planner, Facilities	1	Short-term
	2.5.	Create a centralized vehicle inventory and collect vehicle mileage and usage data annually to more accurately estimate GHG emissions and asset value depreciation.	Fleet Managers, Finance	2	Short-term
	2.6.	Using fleet data, create a county fleet maintenance plan and replacement standards. Consider acquisition of plug-in hybrid vehicle replacements for fleet vehicles there are not all EV alternatives for.	Fleet Managers, Finance	3	Mid-term
	2.7.	Conduct a short-term EV Sheriff patrol car pilot project.	Sheriff	1	Mid-term
	2.8.	Cover cost for vehicle maintenance staff to obtain EV maintenance certifications and continuing education to service La Crosse County fleets.	Highway, Administration	3	Mid-term
	2.9.	Continue to operate and fund SMRT Bus and explore electric bus options.	Community Development Manager	2	Ongoing
	2.10.	Use the AFLEET tool or similar product to estimate emissions from employee-owned vehicles used for County work. Perform a cost benefit analysis comparing whether purchasing EV or PHEV Health Department & Human Services Department fleets would be more cost effective and result in fewer emissions than reimbursing employees for use of their personal vehicles.	Health & Human Services	1	Mid-term
Element 4: Buildings & Energy					
Goal 1: Assess energy efficiency and analyze opportunities to increase building energy efficiency, capture cost savings, and reduce emissions.	1.1.	Maintain an inventory of refrigerants used at county buildings by type, quantity, and use so we can more accurately estimate the County's carbon footprint. Reduce use of refrigerants whenever possible.	Facilities	2	Short-term
	1.2.	For each metered county building, complete Energy Star's Sustainable Buildings Checklist. Consider performing building audits. Use Focus on Energy Commitment to Community programs and/or other resources to conduct energy assessments on municipal facilities that are identified as high energy users. Use the results to develop an action plan to increase efficiency and reduce energy costs.	Facilities	1	Short-term
	1.3.	Evaluate the feasibility of geothermal energy at new and existing county buildings.	Facilities	1	Ongoing
	1.4.	Assess the feasibility of generating geothermal energy from waste at the landfill to serve offsite users.	Consultant, Solid Waste, Sustainability Lead	1	Annually
Goal 2: Incrementally increase building energy efficiency and reduce emissions. Improve building energy efficiency by 15% by 2030.	2.1.	Install simple energy efficiency upgrades such as, auto-shut off LED lights, smart power strips, and modern automated HVAC systems in all county buildings where feasible. Consider policy to reduce unattended electrical devices.	Facilities	4	Ongoing
	2.2.	Power County buildings with 100% renewable energy. Increase solar energy generation and use at county properties utilizing secondary sites evaluated in 2022 that were not funded by ARPA.	Facilities	5	Mid-term
	2.3.	Perform annual tune-ups to increase energy efficiency in our boilers and to take advantage of Focus on Energy rebates when replacing components.	Facilities	2	Annually
	2.4.	Apply for the US Department of Energy Clean Energy to Communities Program. Consider In-Depth Partnership, Peer-Learning Cohort, or Expert Match options to receive technical assistance for energy improvements.	Sustainability Lead	2	Applied 2024. Ongoing
	2.5.	Connect the Lakeview chiller system to a private well instead of municipal water to reduce long-term costs and increase efficiency.	Lakeview	3	Mid-term
	2.6.	Replace remaining T8 lighting with LED lighting at Lakeview.	Lakeview	3	Mid-term
Goal 3: Establish County building efficiency standards and create plans to facilitate a smooth transition to climate resilient buildings.	3.1.	Upgrade County SolSmart certification from Silver to Gold.	Planner, Intern	1	Short-term
	3.2.	Require new municipal buildings, and significant remodels of existing buildings, to be designed to achieve a sustainable building certification, such as an ENERGY STAR score of >75, or certification through LEED, WELL, Passive House, Net Zero Energy, Green Globes, or Living Building.	Facilities, Administration	5	Mid-term
	3.3.	Adopt succession plans for transitioning from natural gas to cleaner fuels. Implement the plans.	Facilities	5	Mid-term
	3.4.	Use alternative materials with lower amounts of embodied carbon when constructing new roads and buildings. Draft RFP language.	Facitliies, Highway	4	Mid-term
Goal 4: Improve the climate resilience of County owned and operated properties.	4.1.	Complete a GIS asset inventory to assess potential losses of county property and assets due to future flood events.	Land Information, Planner	1	Mid-term
	4.2.	Prepare or update internal emergency action plans to improve climate resilience.	Emegency Management, Sherriff	1	Short-term
	4.3.	Assess the feasibility of a downtown microgrid. Construct a downtown microgrid if feasible, to achieve cost savings on energy and ensure the County can function and respond to public threat and emergencies during grid outages and extreme weather events.	Planner	1	Short-term
Element 5: Waste and Pollution Mitigation					
Goal 1: Promote and enable waste reduction and diversion.	1.1.	Promote electronic transfers, receipting, and invoicing over paper whenever possible.	Administration, HR	2	Ongoing
	1.2.	Upload County water use and natural gas use to Energy Star Portfolio annually.	Facilities, Intern	1	Annually
	1.3.	Monitor developing technologies to minimize waste transport out of the county.	Solid Waste	1	Ongoing
	1.4.	Explore additional reuse programs for ash trees affected by the emerald ash borer.	Solid Waste, Land Conservation	1	Short-term
	1.5.	Continuously identify new ways to maximize landfill air space (alternative waste processing, improve waste compaction, waste diversion/re-use opportunities, etc.).	Solid Waste	5	Ongoing
	1.6.	Increase pre-processing of waste through utilization of a materials recovery facility to maximize waste diversion to Xcel and minimize landfill airspace consumption. Increase landfill diversion rate from 30% to 50%	Solid Waste	5	Long-term
	1.7.	Review and update Solid Waste Management Plan every 5 years. Concurrently update the recommendations in this chapter to reflect Management Plan updates.	Solid Waste, Land Conservation	3	Every 5 Years
Goal 2: Establish policies and programs that reduce consumption, encourage circular practices, and discourage generation of waste and pollutants.	2.1.	Review and update the County procurement policy and incorporate sustainable purchasing preferences for the following: (a) cradle to cradle/circular practices, (b) lower life cycle costs, (c) quadruple bottom line, and (d) product stewardship. Develop template request for proposal language.	Finance	3	Short-term
	2.2.	Utilize 100% post-consumer content recycled paper, and other materials, whenever possible.	Finance	2	Ongoing
	2.3.	Electrify landscaping implements/tools.	Facilities, Highway	3	Mid-term
	2.4.	Cease the use of pesticides/herbicides in lawn care/landscaping activities.	Facilities	1	Short-term
	2.5.	Proactively establish solar PV panel and EV battery recycling facilities and protocols at the landfill in anticipation of increased use.	Solid Waste	3	Mid-term

Goal 3: Establish and maintain mutually beneficial public-private partnerships and ensure partnerships do not result in increased emissions.	3.1.	Continue and extend Solid Waste Department's partnerships with Xcel Energy and Gundersen Health to divert landfill emissions and extend the life of the landfill's airspace.	Solid Waste	5	Ongoing
	3.2.	Create a County committee specifically focused on sustainability, resource conservation, environmental health, and environmental justice concerns, etc. Consider hiring full-time sustainability staff.	Administration, Sustainability Lead	2	Mid-term
	3.3.	Utilize emerging technologies to accurately analyze fugitive emissions produced by the County Landfill.	Solid Waste, Consultant	4	Short-term
	3.4.	Following feasibility assessments of a landfill-Gundersen microgrid, assist with providing necessary infrastructure.	Solid Waste	3	Short-term

Appendix C:

Carbon Neutrality Resolution

	ITEM # 8-7 **BOARD ACTION** Adopted: ✓ For: 29 Against: — Abstain: — Abs/Excd: — Vote Req: — Other Action: —	**PLANNING RESOURCES AND DEVELOPMENT COMMITTEE ACTION** Adopted: ✓ For: 6 Against: 0 Abstain: 0 Abs/Excd: 1	**EXECUTIVE COMMITTEE ACTION** Adopted: ✓ For: 9 Against: 0 Abstain: 0 Abs/Excd: 0

RESOLUTION # 21-8/20

TO: HONORABLE MEMBERS OF THE LA CROSSE COUNTY BOARD OF SUPERVISORS
AS AMENDED

RE: ADOPTING SUSTAINABILITY GOALS OF IMPROVED EFFICIENCY TO REDUCE ENERGY CONSUMPTION, ACHIEVING CARBON NEUTRALITY AND TRANSITIONING TO 100% RENEWABLE ENERGY BY 2050.

WHEREAS, the Intergovernmental Panel Climate Change (IPCC) is an international treaty that seeks to stabilize the global climate system by pursuing efforts to limit the global average temperature increase to 1.5°C (2.7°F) above pre-industrial levels, which requires improved efficiency to reduce energy consumption, while pursuing carbon neutrality and 100% of energy coming from renewable sources by 2050; and

WHEREAS, the French Island waste-to-energy plant operated by Xcel Energy burns refuse derived fuel provided by the regional solid waste system, producing less carbon emissions than landfilling of waste, which has saved over 300,000 metric tons of carbon dioxide equivalent emissions over the past 32 years and provided electrical power to more than 10,000 homes, while extending the life of the landfill as part of a comprehensive waste disposal system seeking to encourage reduction, reuse or recycling to minimize landfilling to the extent possible.

WHEREAS, the County has a demonstrated history of action on sustainability and innovative energy conservation projects including but not limited to roof top solar, the gas-to-energy project with Gundersen Health systems producing electricity and heat recovery and implementation and conversion to light emitting diode (LED) technology; and

WHEREAS, according to the 2019 Sustainability Indicators Report, the County, in conjunction with Xcel Energy initiatives, has achieved a 39% reduction in CO2 emissions associated with energy consumption since 2007, including fuel use by County vehicles, natural gas and electricity use at county facilities, while saving more than $2 million dollars within County operating budgets by implementing sustainable practices; and

WHEREAS, Wisconsin pays an estimated $14 billion dollars to states with fossil fuel resources and is last in per capita workforce in the clean energy economy in midwestern states, and pursuing these goals will reduce cash flows out of state, spur local economic development and create jobs; and,

WHEREAS, without achievement of these goals, local climate change impacts will continue to include extreme weather events that threaten infrastructure, excessive flooding, worsening heat waves, increasingly severe and more frequent droughts, diebacks of native tree species, increased presence of algal blooms on area lakes and ponds, and loss of suitable trout stream habitat in Wisconsin; and

WHEREAS, the February 4, 2019 Center on Wisconsin Strategies report, Wisconsin Opportunity in Domestic Energy Production: The Economic and Health Benefits of 100% In-State Energy Production by renewable resources would result in a statewide economic benefit of more than $28 billion, plus the addition of more than 160,000 jobs and social and health benefits of decreased pollution and carbon emissions; and

RE: ADOPTING SUSTAINABILITY GOALS OF IMPROVED EFFICIENCY TO REDUCE ENERGY CONSUMPTION, ACHIEVING CARBON NEUTRALITY AND TRANSITIONING TO 100% RENEWABLE ENERGY BY 2050.

NOW, THEREFORE, BE IT RESOLVED that the La Crosse County Board adopts the goals of improved energy efficiency to reduce energy consumption, achieving carbon neutrality and transitioning to 100% clean, renewable energy by 2050 for County operations, and leads the pursuit of these goals community-wide when considering land use planning, public transit, job creation, energy conservation, housing, economic development decisions and facilitation of public private partnerships.

BE IT FURTHER RESOLVED that the County will seek to collaborate across local governments, area institutions and community organizations in pursuit of these goals, including prioritizing equity, affordability and access, particularly for low-income and marginalized communities, while encouraging the engagement of local businesses, residents and environmental advocacy groups, to exchange ideas and implement action steps to address the challenges of reducing energy use, addressing climate change and pursuing sustainable development.

BE IT FURTHER RESOLVED that the County will undertake planning and action initiatives to assist in achieving these sustainability goals for County operations, and County staff will provide a status report to the County Board as part of the annual update of the Sustainability Indicators report.

BE IT FURTHER RESOLVED that La Crosse County will continue to educate, evaluate and incorporate emerging sustainable technologies and practices into future management decisions, purchases and construction projects.

BE IT FURTHER RESOLVED that the County must evaluate and show positive effects on key sustainability measures as it evaluates future potential consequences of decisions in its adoption of carbon reducing energy methods or projects. Those key measures must include economical (financial), environmental (ecological) and social sustainability (people, social capital).

FISCAL NOTE: The direct fiscal impact is unknown without analysis of individual actions, however, the history of initiatives to date demonstrates significant budget savings over time.

Date: August 3, 2020
Peggy A. Bola
COMMITTEE CHAIR

RECORDING CLERK

Date: August 12, 2020
Monica Kruse
COMMITTEE CHAIR

Terri J. Parlin
RECORDING CLERK

	Reviewed Only	Recommended	Not Recommended	
Co. Admin.		SO		Requested By: Monica Kruse
Fin. Director	SBD			Date Requested: July 29, 2020
Corp. Counsel	MD			Drafted By: County Administrator
Board Chair				

Adopted by the La Crosse County Board this 20 Day of August, 2020

STATE OF WISCONSIN
COUNTY OF LA CROSSE
I, Ginny Dankmeyer, County Clerk of La Crosse County do hereby certify that this document is a true and correct copy of the original resolution required by law to be in my custody and which the County Board of Supervisors of La Crosse County adopted at a meeting held on the 20th day of August 2020.

Ginny Dankmeyer, La Crosse County Clerk

Appendix D:

2022 Sustainability Indicators Report & GHG Assessment

LA CROSSE COUNTY

Exceptional services. Extraordinary place.

Sustainability Indicators

2022 Report

October 18, 2023

Prepared by

SUSTAINABILITY ANALYTICS

Contents

Acknowledgements **3**
Introduction **4**
County Government Operations Indicators **5**
Facility Energy Usage 5
Electricity 5
Natural Gas 7
Energy Use Intensity 9
Vehicle Fuels 11
Diesel 11
Gasoline 11
Water Usage 12
Paper Usage 13
Community-Wide Indicators **14**
Electricity Usage 14
Natural Gas Usage 14
Carbon Dioxide Emissions from Energy Usage 15
Solid Waste Generation & Diversion 16
Municipal Recycling Collection 17
Transportation 18
Bicycle Accommodations 18
Alternative Commuting Rates 19
Land Use 20
Socio-Economic Indicators 21
Education Attainment 21
Household Income 22
Poverty Rate 22
Unemployment Rate 23

Appendix: La Crosse County Government GHG Inventory 24
Introduction 24
Inventory Methodology 24
Organizational Boundary 24
Scope 25
Greenhouse Gases 25
Emissions Overview 26
Electricity 27
Stationary Combustion 29
Mobile Combustion 30
Fugitive Refrigerants 32
Fugitive Methane 33

Acknowledgements

Thank you to the many La Crosse County staff persons and others who provided information for this report, and to all people and organizations engaged in the important work of preserving and improving the livability of our County.

Introduction

In 2009 the La Crosse County Board adopted a *Strategic Plan for Sustainability*. The plan identified multiple sustainability indicators to be monitored on an ongoing basis. Some indicators apply to government operations only, while others apply to the County as a whole. For most indicators, 2007 was the earliest year for which reliable data could be gathered. It was therefore designated as the "base year" against which future values would be compared. According to the *Strategic Plan for Sustainability*, a report was to be generated on an annual basis to monitor and highlight improvements or setbacks in the pursuit toward sustainability. This report summarizes the status of the following indicators through the end of 2022:

County Government Operations Indicators

Electricity Usage
Natural Gas Usage
Facility Energy Use Intensity
Vehicle Fuel Usage
Water Usage
Paper Usage
GHG Emissions (Appendix)

County-Wide Indicators

Electricity Usage
Natural Gas Usage
Carbon Dioxide Emissions from Energy Usage
Solid Waste Generation & Diversion
Municipal Recycling Collection
Bicycle Accommodations
Alternative Commuting Rates
Land Use
Education Attainment
Median Household Income
Poverty Rate
Unemployment Rate

County Government Operations Indicators

Facility Energy Usage

The La Crosse County government utilizes electricity and natural gas energy sources to operate facilities; each is examined separately below. The County government implemented several facilities changes in 2016 and 2017 that significantly impacted subsequent energy usage levels:

- A new Lakeview Health facility opened late in 2016, replacing the old facility.
- The Administration Center was relocated to another existing facility – smaller in area – in La Crosse. After renovations were completed, the new facility opened early in 2017.
- A boiler replacement and major expansion at the Health & Human Services facility were completed in late 2016

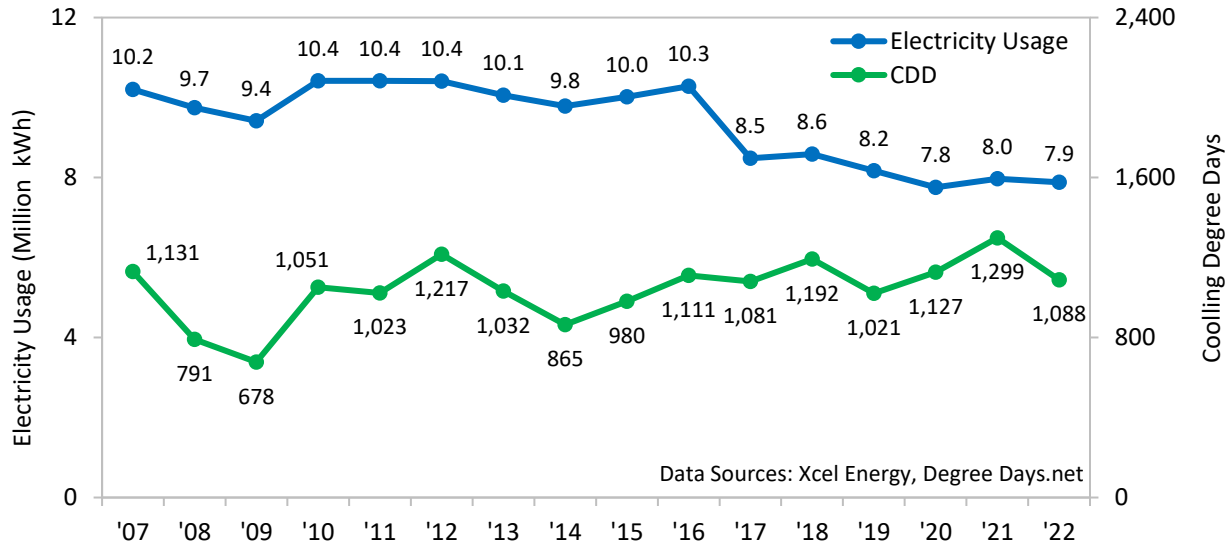
Electricity

La Crosse County government operations consumed 7.88 million kWh of electricity during 2022 – down from 10.20 million kWh in 2007 (-22.8%), and down from 7.97 million kWh in 2021 (-1.1%; see Figure 1).[1] Lower electricity usage in 2022 compared with 2021 may have resulted from smaller air conditioning loads (due to cooler summer temperatures; see CDD discussion below). The County government's electricity costs in 2022 were an estimated $254,000 less than if usage had remained at 2007 levels, and $1.47 million less from 2008 - 2022 in total. Savings estimates are based on annual statewide average commercial electricity prices, published by the US Energy Information Administration. Please see Appendix for related GHG emissions information.

As of the writing of this report, the County government plans to install photovoltaic solar arrays at seven facilities. Together, they are expected to produce just over 1 million kWh in their first year of operation – an amount equivalent to approximately 13% of the County government's total electricity consumption in 2022.

[1] Electricity usage values from 2017-2021 have been revised upward from previous report, because additional information was discovered and incorporated (solid waste scale building)

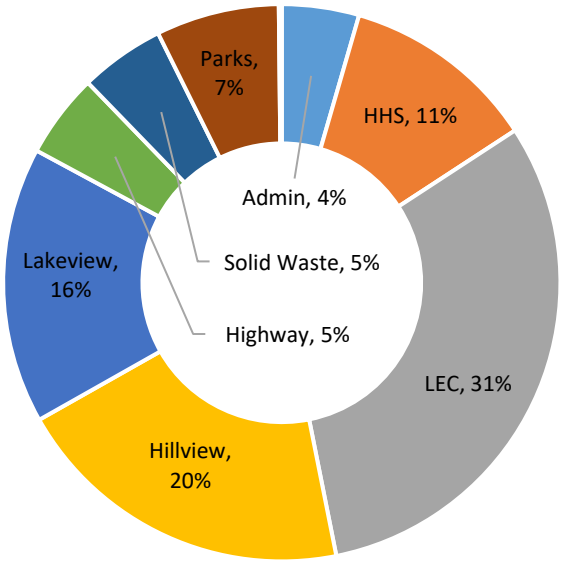
Figure 1: La Crosse County Government Annual Electricity Usage with Cooling Degree Days



Cooling degree days (CDD) measure the difference between outdoor temperature and the base indoor temperature of air-conditioned facilities. The annual CDD values shown in Figure 1 represent an index of overall summer heat levels. Higher electricity consumption for air conditioning is expected in years with higher annual CDD values. In La Crosse, cooling degree days were 16.2% lower in 2022 than in 2021.

Among County facilities/departments, the Law Enforcement Center used the largest amount of electricity in 2022 (31% of the County government total; see Figure 2). Hillview Health Care Center, Lakeview Health Center, and Health and Human Services facilities also used relatively large quantities.

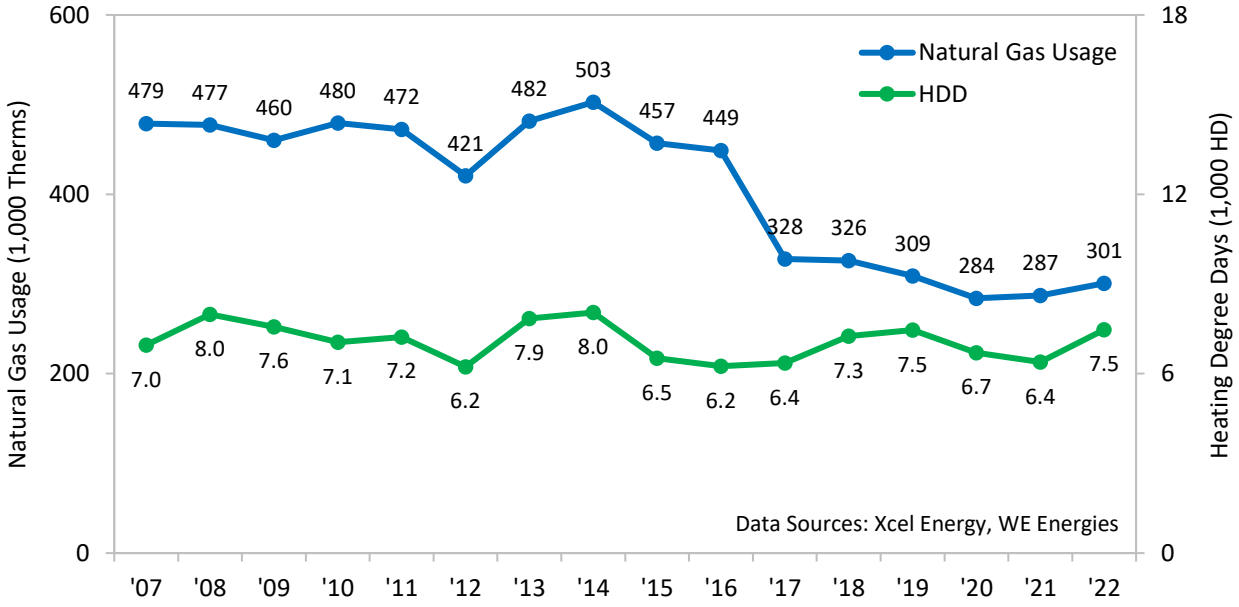
Figure 2: La Crosse County Government 2022 Electricity Usage by Facility/Department



Natural Gas

La Crosse County government operations consumed 300,836 therms of natural gas during 2022 – down from 478,918 therms in 2007 (-37.2%), but up from 286,751 therms in 2021 (+4.7%; see Figure 3).[2] Higher natural gas usage in 2022 compared with 2021 may have resulted from increased heating loads (due to colder winter temperatures; see HDD discussion below), and from increased facility occupancy/usage as the COVID pandemic progressed. The County government spent an estimated $166,000 less for natural gas in 2022 than if usage had remained at the 2007 level, and $787,000 less from 2008-2022 in total. Savings estimates are based on annual statewide average commercial natural gas prices, published by the US Energy Information Administration. Please see Appendix for related GHG emission information.

Figure 3: La Crosse County Government Annual Natural Gas Usage with Heating Degree Days

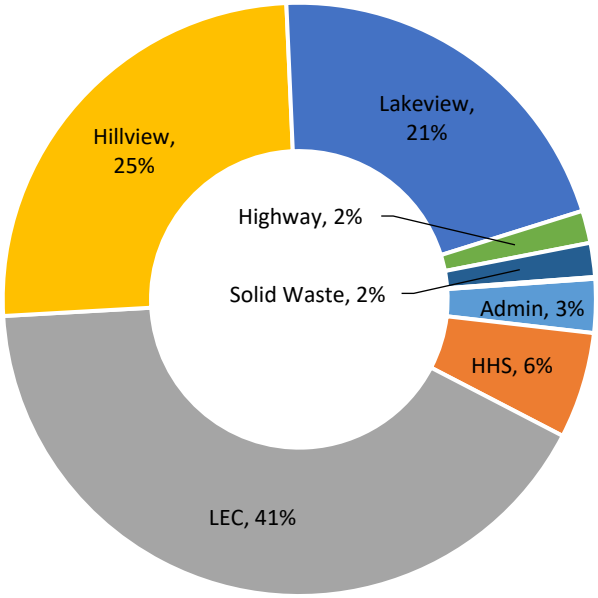


Heating degree days (HDD) measure the difference between outdoor and indoor temperatures. The annual HDD values shown in Figure 3 represent an index of overall winter coldness. Higher natural gas use is expected in years with higher HDD values. In La Crosse, heating degree days were 16.8% higher in 2022 than in 2021.

[2] Electricity usage values from 2017-2021 have been revised upward from previous report, because additional information was discovered and incorporated (solid waste scale building)

Among County facilities, the Law Enforcement Center used the largest amount of natural gas in 2022 (41% of the County government total; see Figure 4). Hillview Health Care Center and Lakeview Health Center facilities also used relatively large quantities.

Figure 4: La Crosse County Government 2022 Natural Gas Usage by Facility/Dept



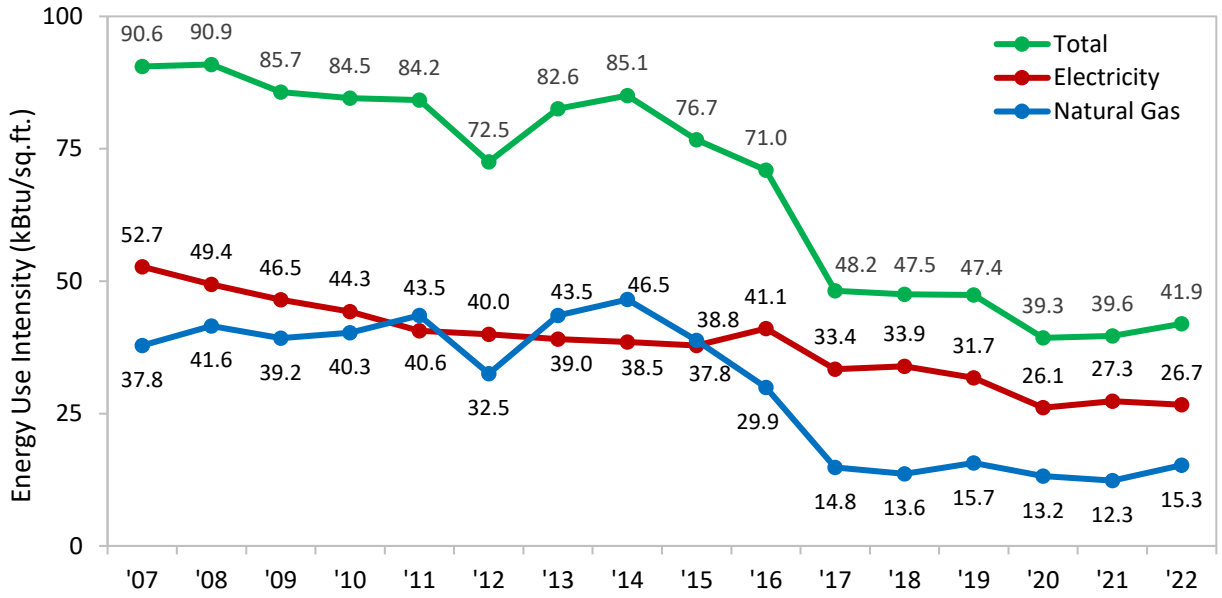
Energy Use Intensity

A facility's annual energy usage per square foot, or *energy use intensity (EUI)*, is a measure of its total annual energy usage (in units of kBtu), standardized by its size (in units of ft^2). EUI is useful for comparing energy use among facilities of different sizes. This analysis examines EUI of two La Crosse County government facilities -- Health and Human Services and the Law Enforcement Center.

Health and Human Services Facility

The Health and Human Services facility's EUI in 2022 was 41.9 kBtu/ft^2 – down from 90.6 kBtu/ft^2 in 2007 (-53.7%), but up from 39.6 kBtu/ ft^2 in 2021 (+5.8%; see Figure 5). For comparison, U.S. EPA's Energy Star Portfolio Manager publishes median EUI values by facility type. As of March 2016, the median site-level EUI value for offices was 67.3 kBtu/ft^2. Note that La Crosse County replaced the boiler and completed an expansion in its Health and Human Services facility in 2016, increasing the total area of conditioned space from 90,000 ft^2 to 114,000 ft^2 and leading to the significant drop in EUI between 2016 and 2017. The drop in energy use intensity in between 2019 and 2020 likely resulted from changes in facility usage patterns during the COVID pandemic.

Figure 4: Health & Human Services Facility Annual Energy Use Intensity

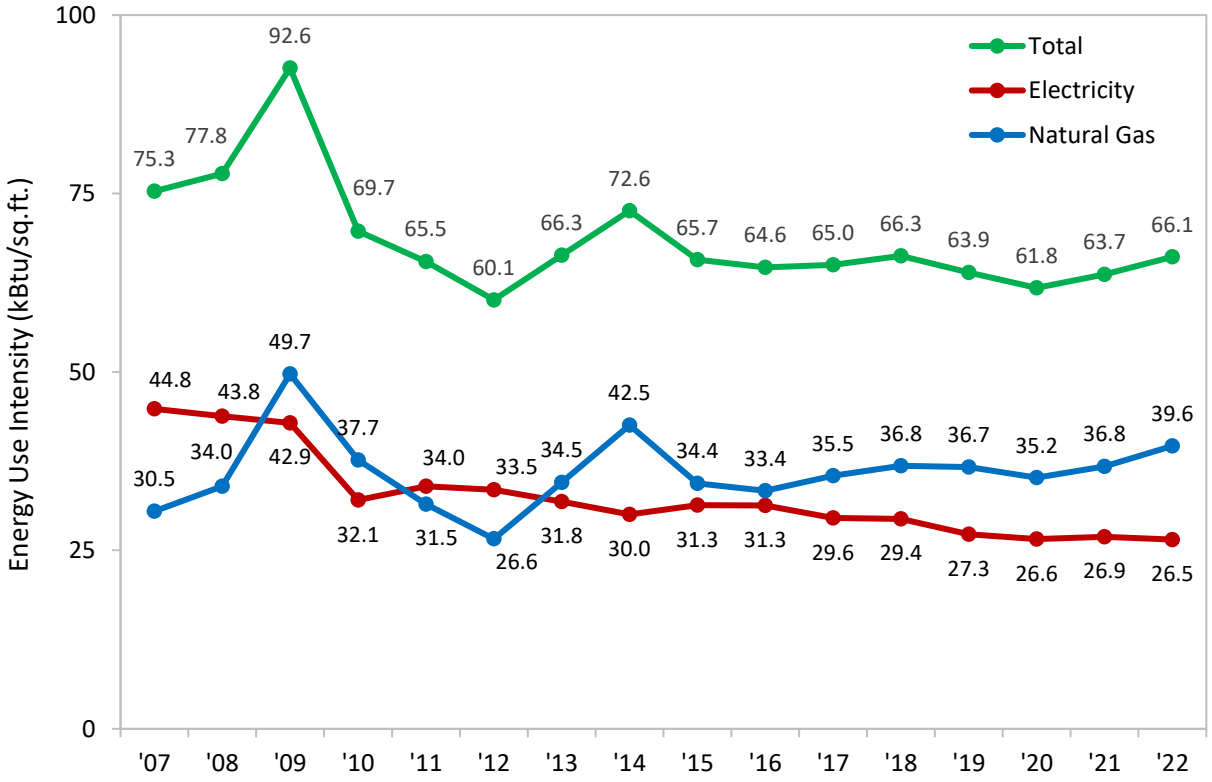


Change in EUI can have significant financial implications. The energy cost to operate the Health and Human Services facility in 2022 was ~$119,000 less than if the EUI had remained at 2007 levels, based on statewide average commercial energy prices.

Law Enforcement Center

The Law Enforcement Center's EUI in 2022 was 66.1 kBtu/ft^2— down from 75.3 kBtu/ft^2 in 2007 (-12.2%), but up from 63.7 kBtu/ft^2 in 2021 (+3.9%; see Figure 6). For comparison, the Portfolio Manager's median EUI value for incarceration facilities in March 2016 was 93.2 kBtu/ft^2. Please note that the La Crosse County Law Enforcement Center underwent a major expansion in 2010, increasing its total area from 169,000 ft^2 to 315,000 ft^2.

Figure 5: Law Enforcement Center Annual Energy Use Intensity

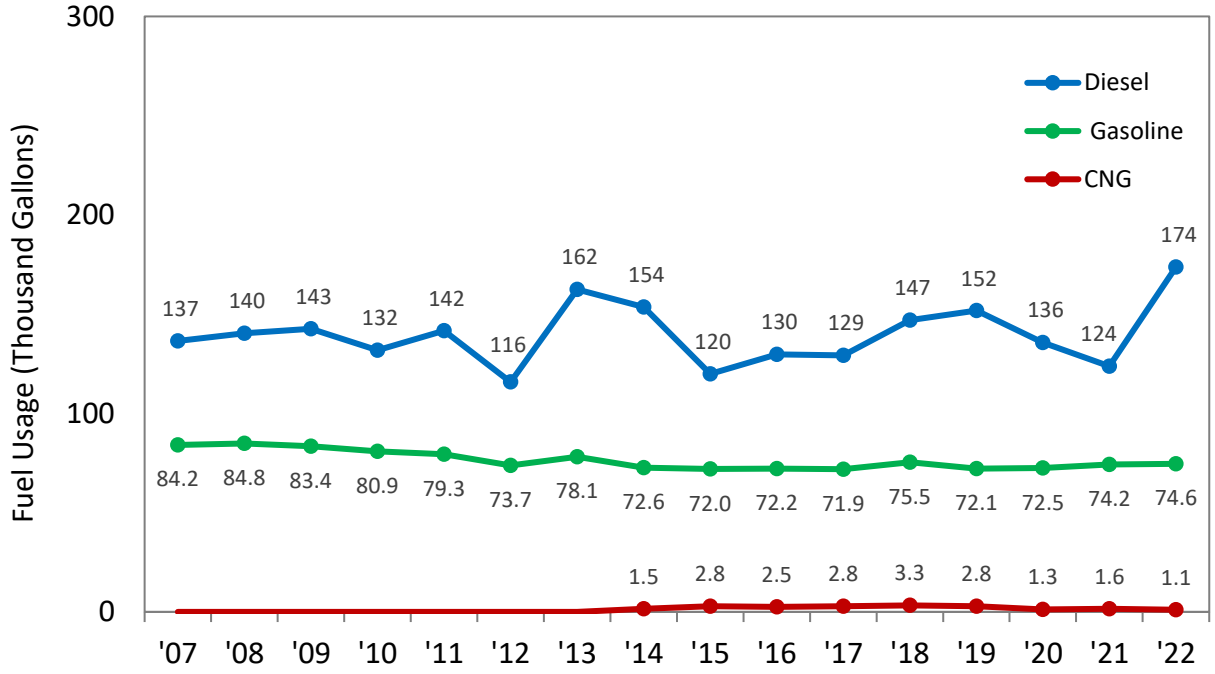


Change in EUI can have significant financial implications. The energy cost to operate the Law Enforcement Center in 2022 was ~$158,000 less than if the EUI had remained at 2007 levels, based on statewide average energy prices.

Vehicle Fuels

The County government's vehicle fleet uses three fuel types: diesel fuel, gasoline and compressed natural gas (CNG). Diesel and gasoline usage trends are examined separately below. Overall, the County government's total vehicle fuel usage in 2022 was 13.0% higher than in 2007, and 25.0% higher than in 2021. Please note that some fuel consumption (which had been overlooked in previous reports) was discovered and incorporated into this report. Please see Appendix for related GHG emission information.

Figure 6: La Crosse County Government Annual Vehicle Fuel Usage



Diesel

Diesel fuel is utilized by heavy-duty vehicles such as snowplows and construction vehicles. Therefore, diesel fuel usage is influenced by winter snowfall amounts and summer construction activity. County government operations used 173,724 gallons of diesel fuel in 2022 – up from 136,537 gallons in 2007 (+27.2%) and up from 123,737 gallons in 2021 (+40.4%; see Figure 7). The Highway Department accounted for 98% of diesel usage in 2022; increased diesel usage is attributed to increased road clearing demand during winter and longer hauling projects during other parts of the year.

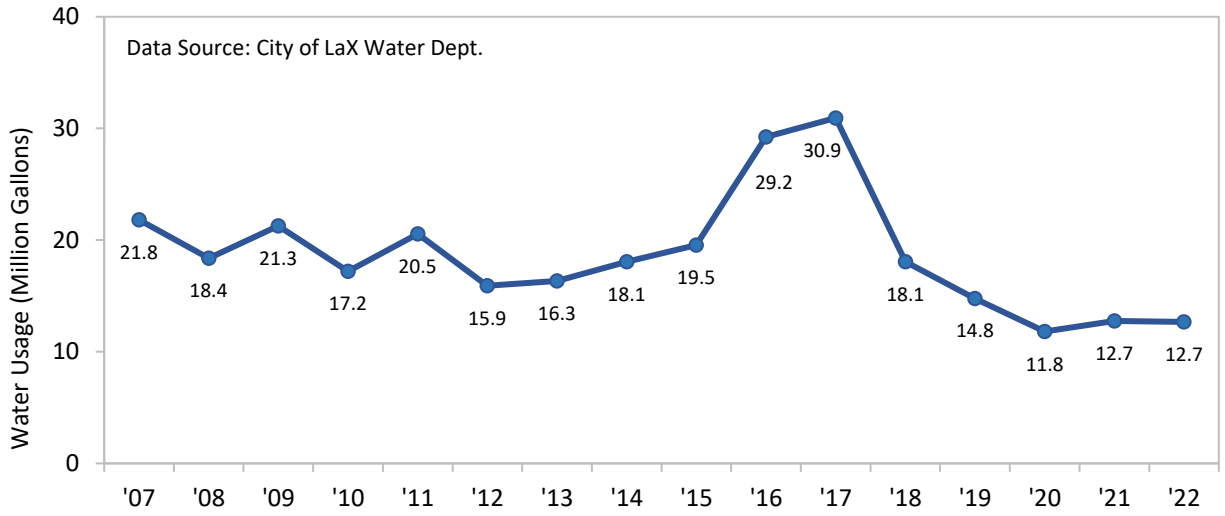
Gasoline

Gasoline is utilized by lighter-duty vehicles such as passenger cars and sheriff squad vehicles. County government operations used 74,584 gallons of gasoline in 2022 – down from 84,161 gallons in 2007 (-11.4%), but up from 74,243 gallons in 2021 (+0.5%; see Figure 7). The Sheriff's Department accounted for 59% of gasoline usage in 2021, the Highway Department for 25%, and Facilities for 8%.

Water Usage

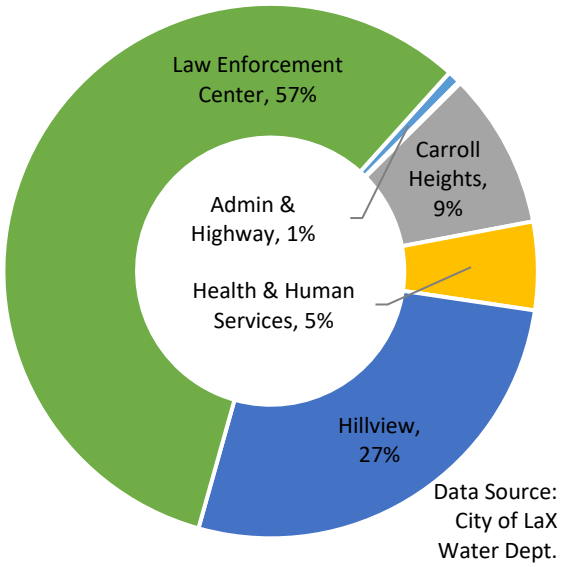
This indicator tracks water usage at County government facilities that are located within the City of La Crosse and served by the City Water Utility: Administration Center, Health & Human Services, Law Enforcement Center, Hillview Health Care Center, Carroll Heights, and the Highway Department facility on Park Lane Dr. Several facilities located in other municipalities are excluded, e.g., Lakeview Health Center, Highway Department Headquarters. Also excluded is water sourced from on-site wells at the Administrative Center, Health and Human Services, and Law Enforcement Center facilities.

Figure 7: La Crosse County Government Annual Water Usage



The County government's water usage in 2022 was 12.68 million gallons – down from 21.82 million gallons in 2007 (-41.9%), and down slightly from 12.75 million gallons in 2021 (-0.5%; see Figure 10). Among included County facilities, the Law Enforcement Center and Hillview facilities used the largest quantities (see Figure 11). High water usage quantities in 2016 and 2017 resulted from temporary stoppages of on-site wells at the Law Enforcement Center (2016) and the Health and Human Services facility (2017). The facilities used City-sourced water while on-site wells were not operating.

Figure 8: La Crosse County Government Water Usage by Facility 2022



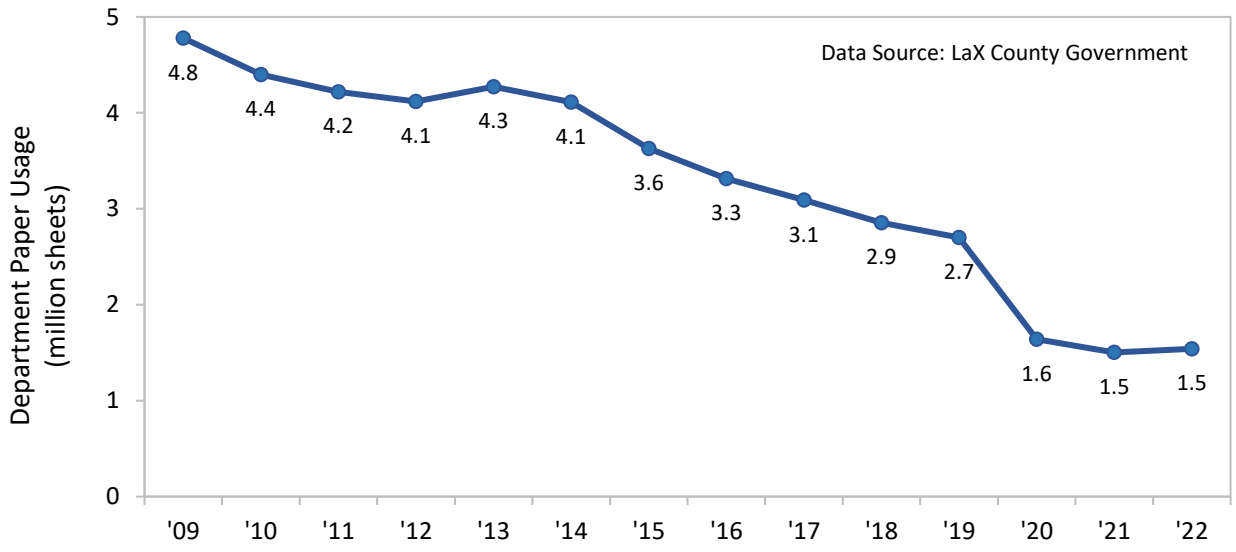
Paper Usage

County government operations consumes paper for production and department purposes. In previous years of this report, combined total paper usage (production + department) was presented. In 2021 department printing was responsible for approximately two thirds of total paper usage, and production printing for one third. As of 2022 the County outsources all production printing and no longer tracks quantities in this category. Therefore, this report presents information on department printing only.

County government operations used includes 1.54 million sheets of paper for department purposes in 2022 – down from 4.78 million sheets in 2009 (-67.8%), but up from 1.50 million sheets in 2021 (+2.5%; see Figure 12). Paper usage information is not available for 2007 or 2008. Exceptionally low paper consumption beginning in 2020 likely resulted from changes to County employee work patterns caused by the COVID pandemic.

Reducing paper usage has financial and environmental benefits. At $0.05 per printed sheet of paper, the County government spent an estimated $162,000 less on paper/printing for department purposes in 2022 than if usage had remained at the 2009 level, and also avoided an estimated 82 mt CO_2e of GHG emissions. Cumulative savings from 2010 – 2022 were $1.0 million and 527 mt CO_2e.[3]

Figure 9: La Crosse County Government Annual 'Department' Paper Usage



[3] Avoided GHG emissions estimated using EPA Waste Reduction Model (WARM) v15, with recycling as baseline management scenario. Paper weight assumed to be 10 lbs. per 1,000 sheets.

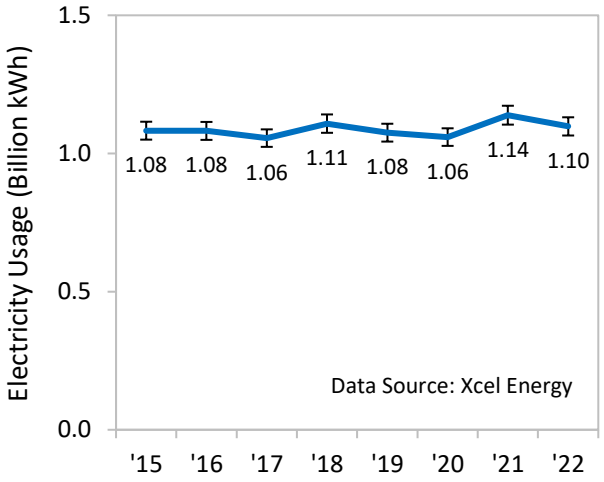
Community-Wide Indicators

The following three indicators – electricity usage, natural gas usage, and associated carbon dioxide emissions – track community-wide energy use (and associated emissions) in La Crosse County. Only electricity and natural gas provided by Xcel Energy is included, however; electricity and natural gas provided by several other utilities that also operate within the County are not included.

Electricity Usage

Xcel customers within La Crosse County used 1.10 billion kWh of electricity during 2022 – down from 1.14 billion kWh in 2021 (-3.6%), but up from 1.08 billion kWh in 2015 (+1.4%; see Figure 13). 2015 is the first year for which information is available. Note that year-to-year differences may fall within the margin of error (+/-3%) specified by Xcel Energy. Of the total electricity used by Xcel Energy customers within La Crosse County during 2022, 69% was used by businesses and 31% by residences.

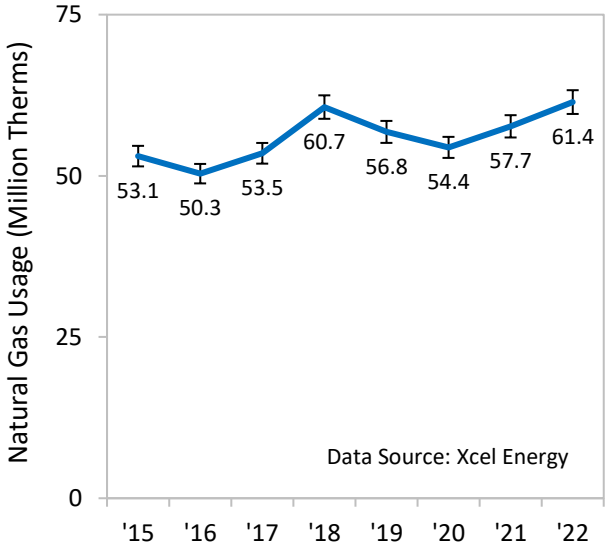
Figure 10: Community-Wide Annual Electricity Usage by Xcel Energy Customers in La Crosse County



Natural Gas Usage

Xcel customers within La Crosse County used 61.4 million therms of natural gas during 2022 – up from 57.7 million therms in 2021 (+6.5%), and up from 53.1 million therms in 2015 (+15.8%; see Figure 14). 2015 is the first year for which information is available. Note that year-to-year differences may fall within the margin of error (+/- 3%) specified by Xcel Energy. Of the total natural gas used by Xcel Energy customers within La Crosse County during 2022, 64% was used by businesses and 36% by residences.

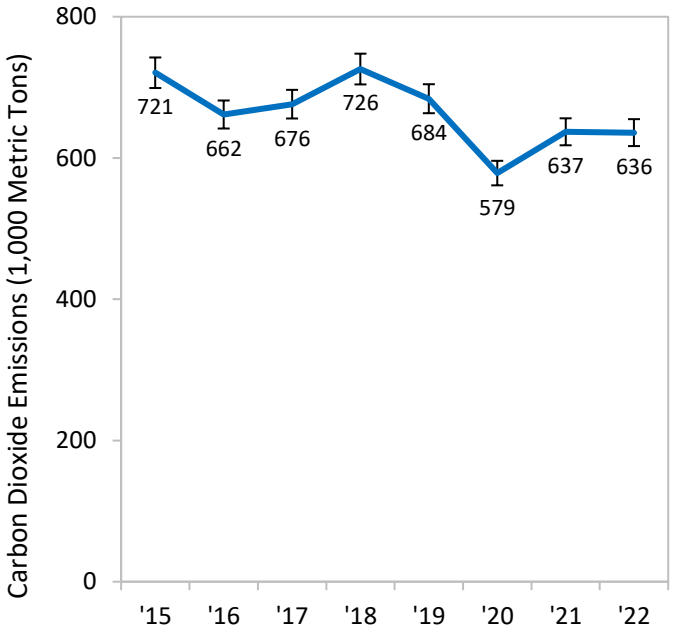
Figure 11: La Crosse County Community-Wide Annual Natural Gas Usage



Carbon Dioxide Emissions from Energy Usage

Electricity and natural gas usage by Xcel Energy customers in La Crosse County during 2022 was responsible for 635,890 metric tons of carbon dioxide emissions – down slightly from 637,074 metric tons in 2021 (-0.2%), and down from 720,676 metric tons in 2015 (-11.8%; see Figure 15). 2015 is the earliest year for which information is available. Note that year-to-year differences may fall within the margin of error (+/- 3%) specified by Xcel Energy. Of the County's total carbon dioxide emissions from electricity and natural gas usage in 2022, businesses were responsible for 66% and residences for 34%.

Figure 12: La Crosse County Community-Wide Annual Carbon Dioxide Emissions from Energy Usage



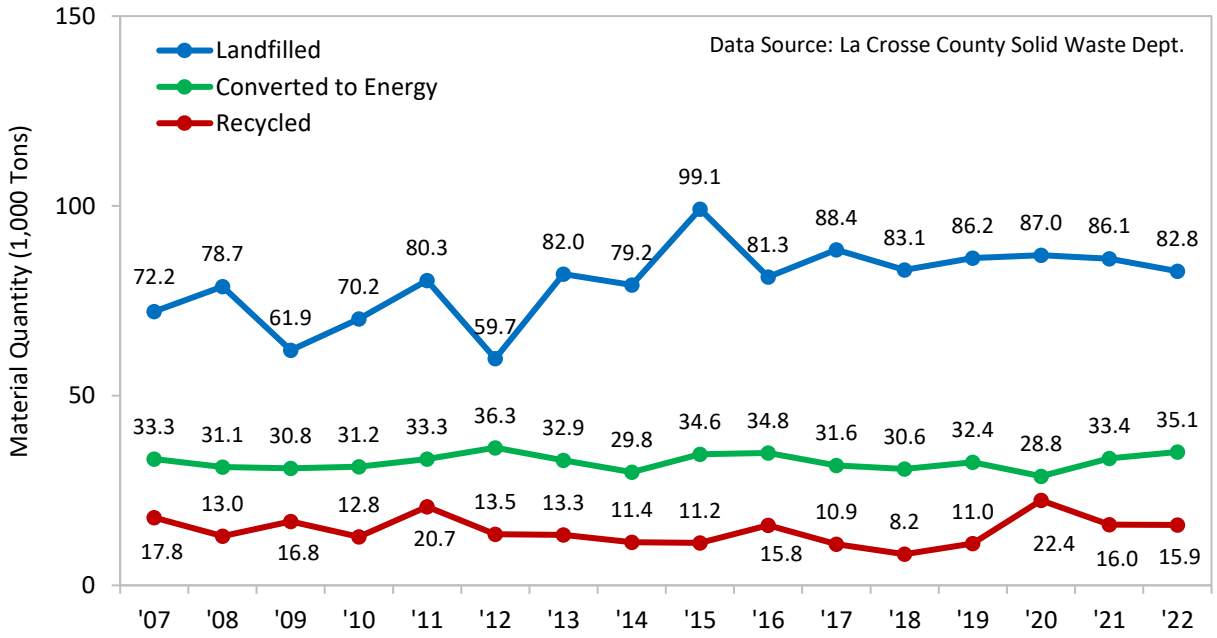
Data Source: Xcel Energy

Solid Waste Generation & Diversion

Solid waste managed by La Crosse County enters one of three waste streams: deposition in the La Crosse County Landfill, incineration at Xcel Energy's Waste-to-Energy facility on French Island, or recycling. Recycled quantities include materials diverted for recycling at the landfill -- shingles, concrete, tires, scrap metal, yard waste and wood waste.

In total, La Crosse County handled 133,854 tons of solid waste in 2022 – up from 123,274 tons in 2007 (+8.6%), but down from 135,518 tons in 2021 (-1.2%; see Figure 16). Economic recession may explain the relatively low quantity of solid waste generated in 2009 and the subsequent increasing trend.

Figure 13: La Crosse County Annual Solid Waste Quantities



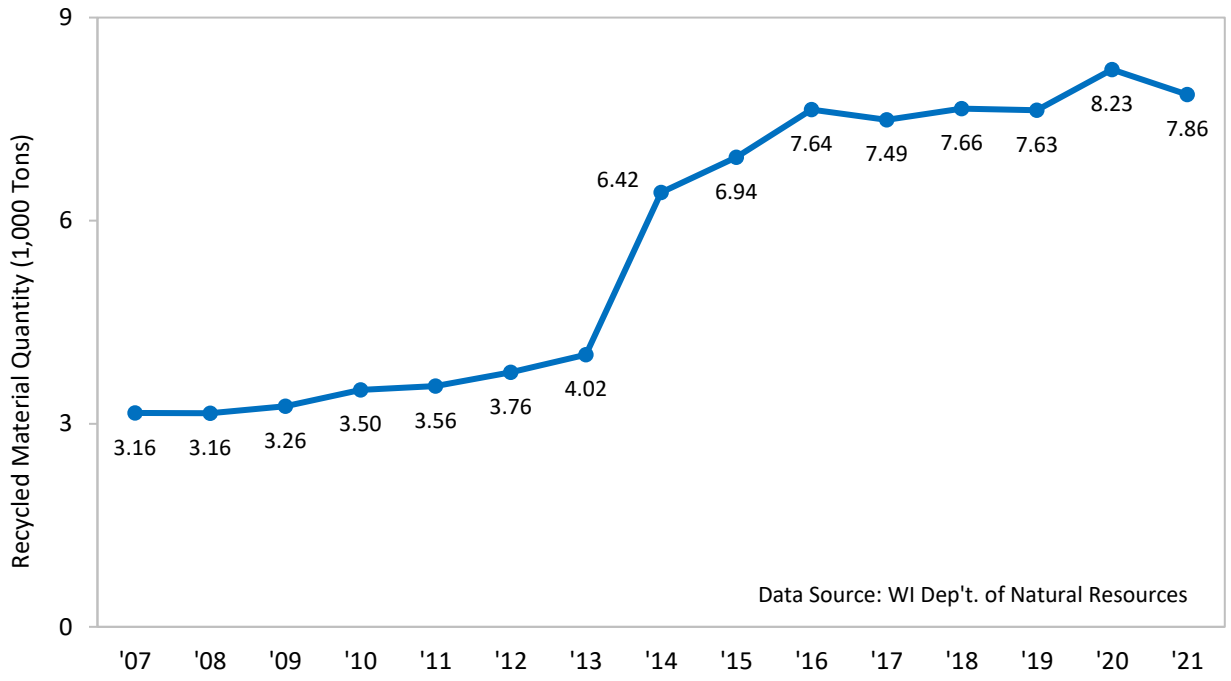
Of the total solid waste handled in 2022, 61.8% was deposited into the landfill, 26.2% was incinerated to produce electricity, and 11.9% was recycled. Roof damage caused by storms resulted in large quantities of shingles being received by the County solid waste system in 2020, which explains the increased quantity of recycled material during that year. The 2022 total diversion rate (i.e., the sum of the percent incinerated, and the percent recycled) was 38.2% - down from 41.4% in 2007, but up from 36.5% in 2021. Waste from La Crosse County incinerated at French Island was used to produce an estimated 22.1 million kWh of electricity in 2022, enough to supply approximately 2,428 households.

Municipal Recycling Collection

This indicator tracks quantities of recyclable materials collected through curbside and drop off collection methods by all municipalities within La Crosse County. Materials include paper products (newspaper, corrugated, magazines), containers (aluminum, steel, bi–metal, plastic, glass) and polystyrene foam packaging.

Recycling collection quantities have increased significantly since 2007. Together, the County's municipalities collected 7,861 tons of materials for recycling in 2021 – up from 3,160 tons in 2007 (+148.8%), but down from 8,233 tons in 2020 (-4.5%; see Figure 17). Information for 2022 was not available in time for this report. The increase in recycled quantities between 2013 and 2014 coincide with the initiation of "single stream" collection processes and distribution of larger storage containers to residents in the Cities of La Crosse and Onalaska.

Figure 14: La Crosse County Annual Municipal Recycling Quantities



Transportation

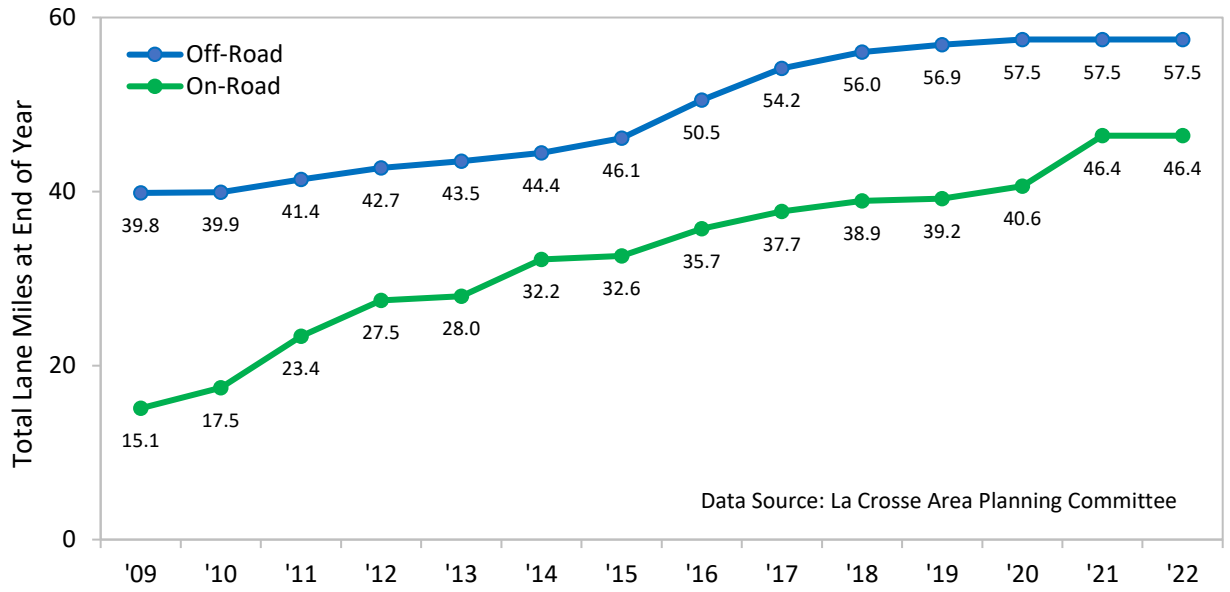
This report tracks two indicators related to alternative forms of transportation: the total length of area bicycle accommodations (i.e., routes and trails), and residents' usage of alternative methods for commuting to work.

Bicycle Accommodations

This indicator quantifies on-road and off-road accommodations for bicycle transportation within the La Crosse Area Planning Committee (LAPC) Planning Area -- which includes the city of La Crescent, MN as well as most of La Crosse County except for the towns of Farmington, Washington, Rockland, Burns, and Bangor.[4] On-road accommodations include designated bicycle lanes and designated shoulders. Please note that streets marked with "sharrow" symbols had been included in previous reports, but as of this report are excluded from the analysis – because visibility has deteriorated. Off-road accommodations include paved trails that are at least eight feet wide, and state trails – which generally have crushed stone surfaces. Trails with grass or earth surfaces are not included. Information for 2007 and 2008 are unavailable for this indicator.

The LAPC Planning Area contained 57.5 lane-miles of off-road bicycle accommodations at the end of 2022 – up from 39.8 lane-miles in 2009 (+44.3%), and unchanged from 2021 (see Figure 19). The Area contained 46.4 lane-miles of on-road bicycle accommodations at the end of 2022 – up from 15.1 lane-miles in 2009 (+207.5%), and unchanged from 2022 (see Figure 18).[5]

Figure 15: LAPC Planning Area Bicycle Accommodations



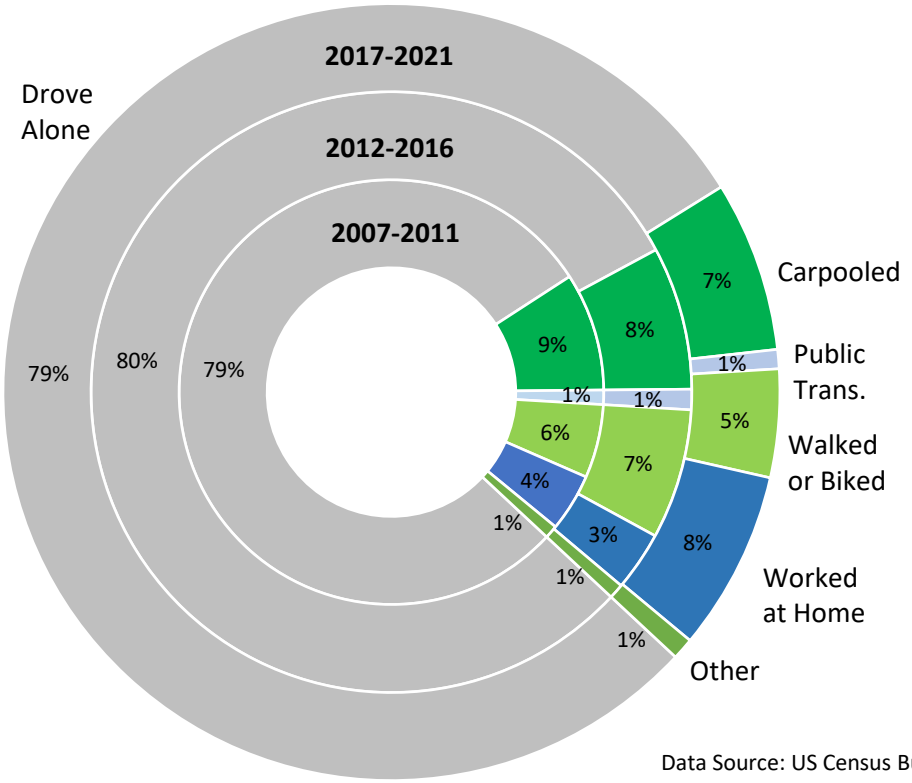
[4] See LAPC Planning Area map at www.lapc.org/content/about/map.htm
[5] On-road and off-road values revised from previous reports to reflect corrections made to LAPC's GIS.

Alternative Commuting Rates

This indicator examines percentages of workers who travel to work in ways other than driving alone in an automobile: bicycling or walking, public transportation, or carpooling. Data are collected as part of the US Census Bureau's American Community Survey (ACS). ACS results are published as 5-year averages; this analysis examines alternative commute rates in three periods: 2007-2011, 2012-2016 and 2017-2021. Information for 2022 was not available in time for this report.

During all three periods 79-80% of County residents drove alone to work, while the remainder utilized alternative methods including carpooling (7-9%), walking/bicycling (5-7%), public transportation (1%), or worked at home (3-8%; see Figure 19). The City of La Crosse's relatively compact spatial arrangement with short travel distances between residential areas and workplaces make walking/bicycling practical, so this percentage is higher for the City of La Crosse than the state average. Although many students also walk or bike to school in the City, students are not included in the analysis. The higher percentage of persons working from home during the 2017-2021 period was likely caused by the COVID-19 pandemic.

Figure 16: La Crosse County Resident Commuting Methods

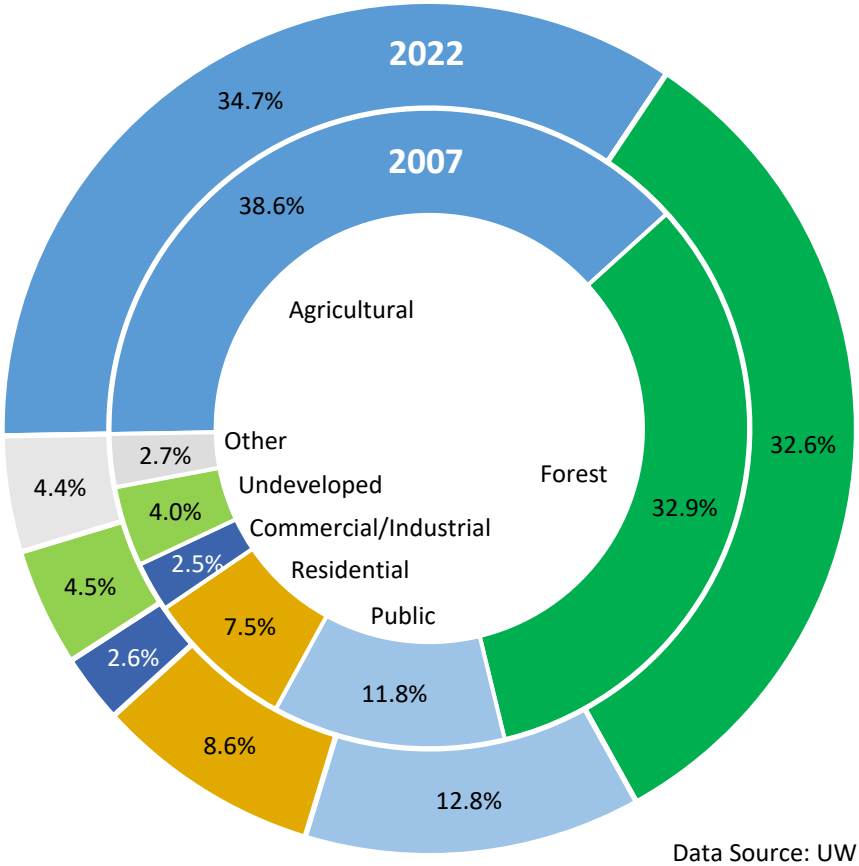


Data Source: US Census Bureau

Land Use

This indicator tracks land use changes across La Crosse County. Land classification categories include residential, agricultural, forest, commercial/manufacturing, public (i.e., local/state/federally owned), undeveloped, and other. Most of the County's land area is classified as agriculture or forest (see Figure 20). Public and residential uses make up most of the remainder.

Figure 17: La Crosse County Land Use Classifications



Data Source: UW Extension

Public, residential, commercial, undeveloped, and 'other' land use types gained area between 2007 and 2022, while forest and agricultural land was lost. Transition of agricultural land into "undeveloped" land may occur with Conservation Reserve Program enrollment, or loss of access for a season because of high water. The increase in public land may result from WI DNR stewardship grants in within the County, or from any road building or expansion projects that increase right of way. Of perhaps greater concern is conversion of forest and agricultural land into residential or commercial/industrial areas.

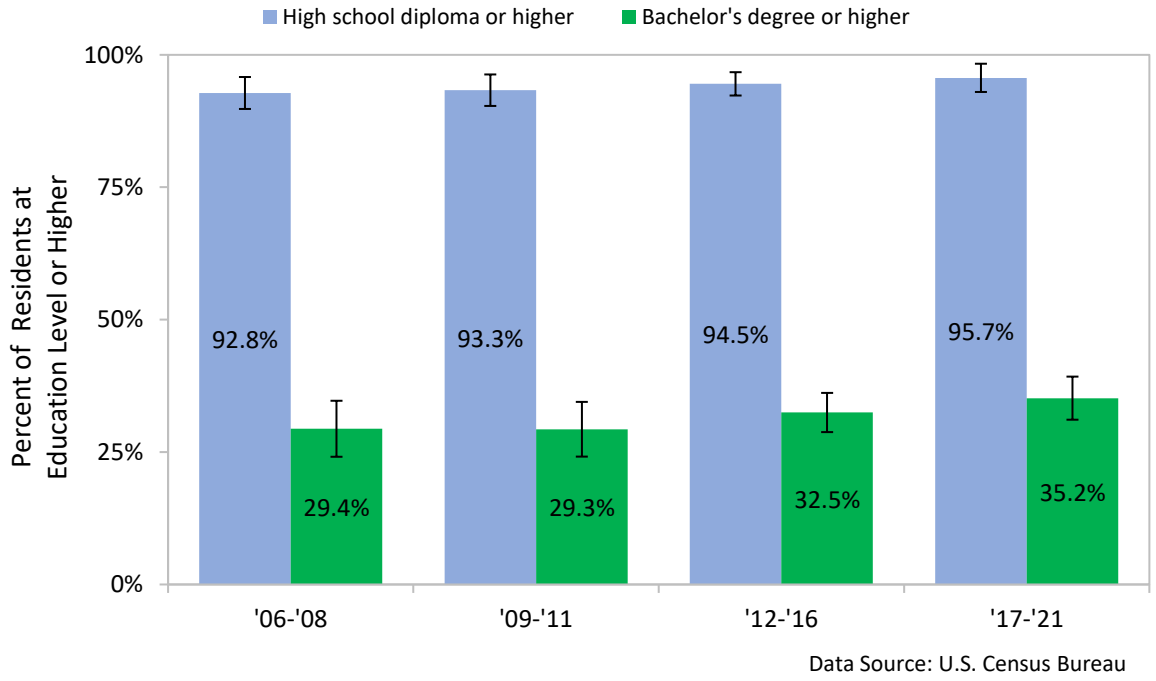
Socio-Economic Indicators

Socio-economic indicators specified by the *Strategic Plan for Sustainability* include educational attainment, household income, poverty rate and unemployment rate. For all socioeconomic indicators but the unemployment rate, the source of these data is the US Census Bureau's American Community Survey (ACS).

Education Attainment

This indicator tracks percentages of residents who held (1) high school diplomas and (2) bachelor's degrees during four periods: 2006-2008, 2009-2011, 2012-2016, and 2017-2021. Information for 2022 was not available in time for this report. An estimated 95.7% of County residents held high school diplomas in the 2017-2021 period, up from 94.5% in 2012-2016 and up from 92.8% in 2006-2008 (see Figure 21). An estimated 35.2% of County residents held bachelor's degrees in the 2017-2021 period, up from 32.5% in 2012-2016 and up from 29.4% in 2006-2008. Both high school diploma and bachelor's degree indicators suggest trends toward higher education levels among County residents over the time periods examined, but please note that period-to-period differences are not statistically significant when margins of error are considered.

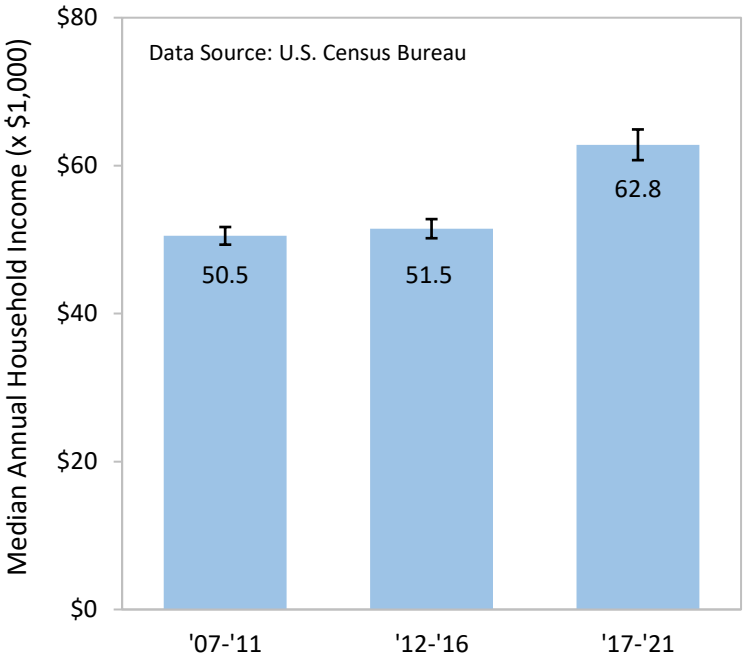
Figure 18: Percent of La Crosse County Residents with High School Diploma / Bachelor's Degree



Household Income

This indicator examines median annual household income (MAHI) during three periods: 2007-2011, 2012-2016 and 2017-2021. Information for 2022 was not available in time for this report. La Crosse County's estimated MAHI during the 2017-2021 period was $62,817, up from $51,477 during the 2012-2016 period (+22.0%) and up from $50,510 during the 2007-2011 period (+24.4%; see Figure 22). This increasing trend is consistent with economic recovery from the "great recession."

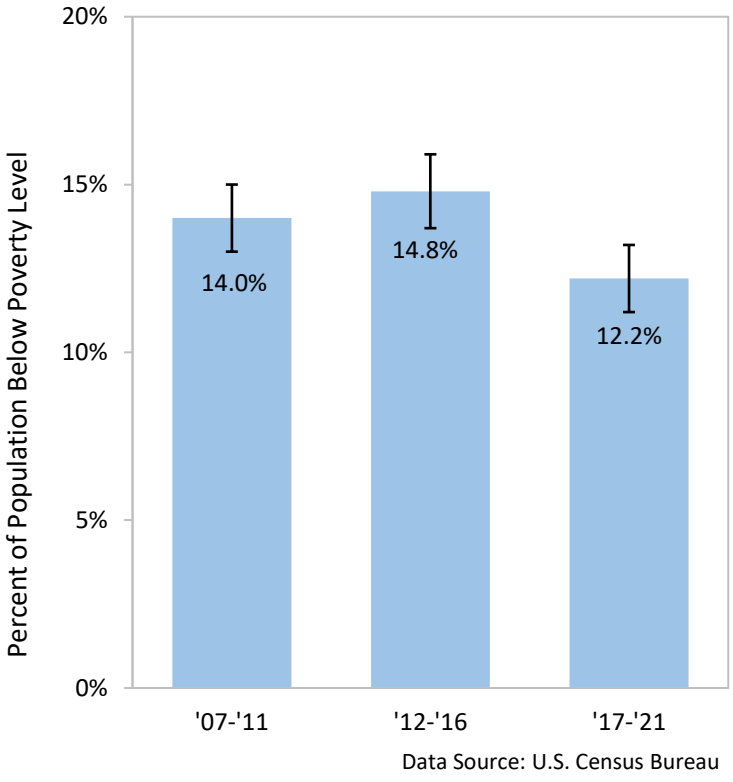
Figure 19: La Crosse County Median Annual Household Income



Poverty Rate

This indicator examines the percentage of residents whose income in the past twelve months was below poverty level during three periods: 2007-2011, 2012-2016 and 2017-2021. Information for 2022 was not available in time for this report. La Crosse County's estimated poverty rate for the 2017-2021 period was 12.2%, down from 14.8% during the 2012-2016 period and down from 14.0% during the 2007-2011 period (see Figure 23). Please note that when margins of error are considered, the poverty rate in the 2016-2020 period differs statistically from the 2011-2015 period, but not the 2006-2010 period.

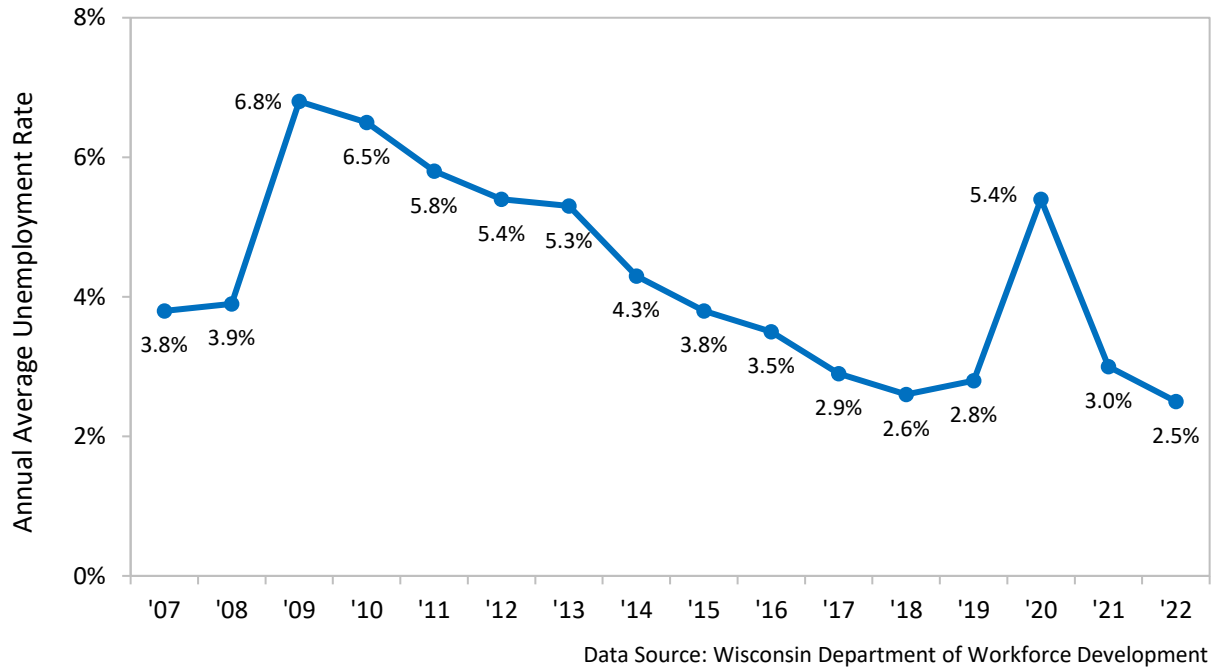
Figure 20: La Crosse County Resident Poverty Rates



Unemployment Rate

This indicator tracks trends in La Crosse County's annual average unemployment rate, as measured by the Wisconsin Department of Workforce Development. In 2022 La Crosse County's average unemployment rate was 2.5% in 2022 - down from 3.0% in 2021, and down from 3.8% in 2007. After unemployment rates below 4% in 2007 and 2008, the rate increased sharply to 6.8% in 2009 because of the "great recession" (see Figure 24).[6] Rates then slowly declined as the economy gradually recovered, and by 2015 rates had returned to 2007-08 levels. Unemployment rates were under 3% from 2017-2019, increased sharply again in 2020 because of the economic disruption caused by the COVID pandemic, and then returned to 3% and below in 2021 and 2022.

Figure 21: La Crosse County Annual Average Unemployment Rates



Data Source: Wisconsin Department of Workforce Development

[6] Values for 2022 are considered preliminary as of publication of this report; final values may vary slightly

Appendix: La Crosse County Government GHG Inventory

Introduction

This Appendix reports on GHG emissions associated with La Crosse County government operations in 2022. This is the first time the organization's operational GHG emissions have been comprehensively quantified, so it is anticipated that this will serve as a 'base year' against which future emissions can be compared, for purposes of examining year-to-year trends. The La Crosse County government partnered with Sustainability Analytics LLC to complete the inventory.

Inventory Methodology

Sustainability Analytics LLC developed this inventory according to ICLEI's Local Government Operations (LGO) Protocol (v1.1) for the quantification and reporting of greenhouse gases. It utilizes emission factor data from the sources listed in Table 2.

Table A1: GHG Emission Factor Data Sources

Emission Source	Emission Factor Data Source
Electricity	Supplier specific emission rates, published annually in Xcel Energy's *Carbon Dioxide Emission Intensities Information Sheet*; US EPA's *Emissions & Generation Resource Integrated Database (eGRID)*
Stationary Combustion	US EPA Center for Corporate Climate Leadership (CCCL) *Emission Factors for Greenhouse Gas Inventories*, last modified April 2023
Mobile Combustion	US EPA Center for Corporate Climate Leadership (CCCL) *Emission Factors for Greenhouse Gas Inventories*, last modified April 2023
Fugitive refrigerants	International Panel on Climate Change (IPCC) *Fifth Assessment Report, p*ublished 2014
Fugitive Methane	International Panel on Climate Change (IPCC) *Fifth Assessment Report,* published 2014

Organizational Boundary

This inventory defines the La Crosse County government's organizational boundary according to an 'operational control approach' as described by the LGO Protocol. The inventory generally includes GHG emissions from all property for which La Crosse County government has the full authority to introduce and implement its operating policies; i.e., facilities, vehicles, and equipment owned/leased by the County government. The County Library System and County Housing Authority are two 'autonomous departments' entities that the LGO Protocol indicates should perhaps be included in the inventory. However, it was decided not to include them

because they are not under direct County government control and are not anticipated to have central involvement in the County government's future emission reduction efforts.

Scope

This inventory includes all Scope 1 and Scope 2 GHG emissions and selected Scope 3 GHG emissions associated with La Crosse County government operations. Scope 1 consists of *direct* emissions, i.e., GHGs emitted directly from sources that are owned or controlled by the organization, which includes combustion exhaust and fugitive refrigerants from the County government's facilities and vehicles. Scope 2 emissions are *indirect* emissions resulting from the generation of electricity which is purchased and used by the County government. Scope 3 emissions in this inventory include mobile combustion emissions associated with (1) County employee commuting to/from work; (2) the Scenic Mississippi Regional Transit (SMRT) bus system; and (3) landfill site operations equipment (operated by contractors). Employee commuting is required under the LGO Protocol; the others are optional.

Greenhouse Gases

The La Crosse County government emits four of these as part of its operations: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and hydrofluorocarbons (HFCs). CO_2, CH_4 and N_2O are products of fuel combustion, and HFCs are a class of compounds used in refrigeration systems as heat transfer fluids (i.e., refrigerants). For example, R-134A is typically used in vehicle air conditioning systems. Refrigerants are intended remain sealed within equipment, but when leaks develop, they can escape into the atmosphere where they become GHGs.

Greenhouse gases vary by orders of magnitude in their "global warming potentials (GWPs)," which quantify their heat-trapping potency. The International Panel on Climate Change (IPCC) has published science-based GWP values for each GHG compound relative to CO_2 (whose GWP value is defined as 1) over a 100-year time horizon. For example, the GWP value of CH_4 is 28, meaning that a gram of CH_4 in earth's atmosphere traps 28 times as much heat as a gram of CO_2 over the course of a century. GWP values may be used to convert emission quantities (i.e., metric tons) of GHG compounds into standardized units of 'metric tons CO_2 equivalent' (mt CO_2e). This inventory utilizes the latest revised GWP values, from the IPCC's Fifth Assessment Report (AR5). Table A2 gives GWP values for all relevant GHGs.

Table A2: Global Warming Potential (GWP) Values

GHG Type	GWP Value (AR5)
Carbon Dioxide (CO_2)	1
Methane (CH_4)	28
Nitrous Oxide (N_2O)	265
Tetrafluoroethane (R-134A)	1,300

Emissions Overview

Overall, 15,830 mt CO_2e of GHG emissions were associated with La Crosse County government operations in 2022. This total amount can be divided into five categories:

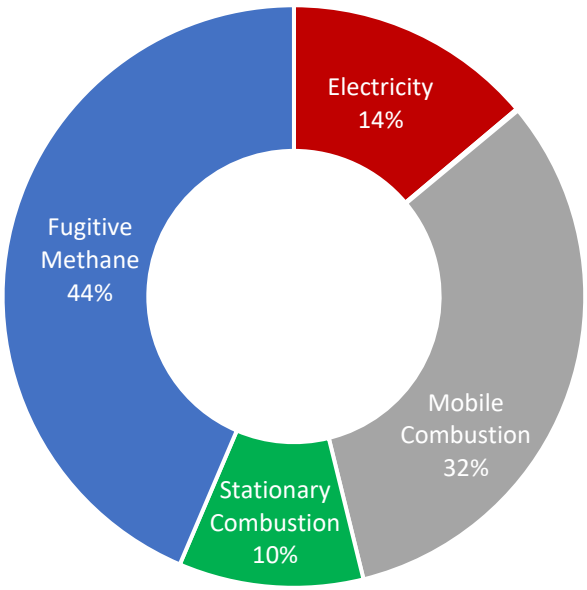
- Electricity: GHG emissions resulting from the production of purchased electricity delivered to County facilities;
- Stationary combustion: GHG emissions produced by natural gas/propane combustion at County facilities;
- Mobile combustion: GHG emissions produced by from vehicle fuel combustion (diesel, gasoline, and CNG);
- Fugitive refrigerants: fluids inadvertently leaked refrigerants from refrigeration equipment;
- Fugitive methane: methane generated in landfill and then escaped to the atmosphere.

GHG emission quantities by emission source are summarized in Table A3 and Figure A1. Each source is examined individually in the sections that follow.

Table A3: 2022 GHG Emissions by Category

Source	2022 Emissions (mt CO_2e)	% of Total
Electricity	2,195	14%
Stationary Combustion	1,623	10%
Mobile Combustion	5,097	32%
Fugitive Refrigerants	16	0%
Fugitive Methane	6,900	44%
Total	**15,830**	**100%**

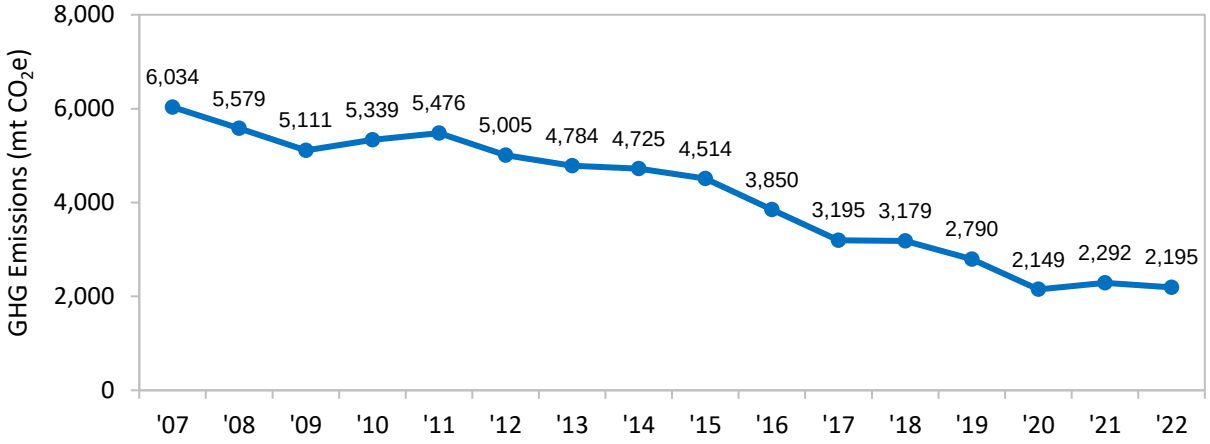
Figure A1: 2022 GHG Emissions by Category



Electricity

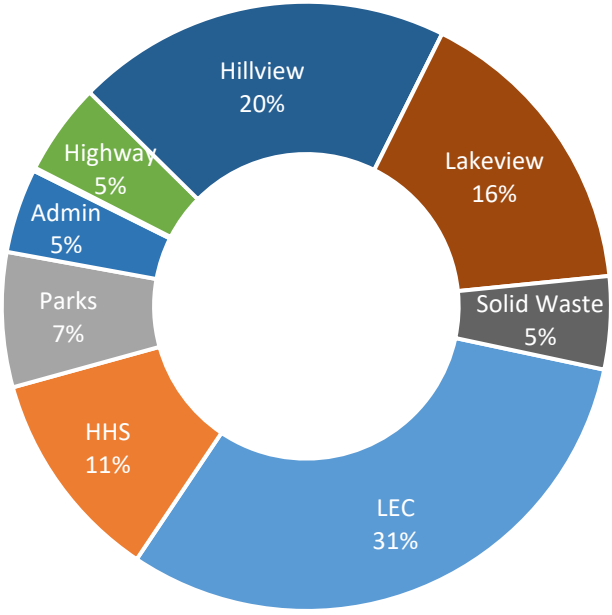
La Crosse County facilities consume electricity for a variety of end uses, including space conditioning, lighting, electronics, and other equipment. Electricity consumption by County facilities causes GHG emissions to occur indirectly when the electricity is generated. Power plants that generate electricity by combusting fossil fuels (such as coal, oil, or natural gas) generate carbon dioxide (CO_2) in relatively large amounts, and also methane (CH_4) and nitrous oxide (N_2O) in much smaller amounts – all of which are greenhouse gases. Power plants using renewable (such as wind or solar) sources or nuclear sources do not emit greenhouse gases in the electricity generation process. Electricity usage by the La Crosse County government in 2022 resulted in 2,195 mt CO_2e of GHG emissions – down from 2,292 mt CO_2e in 2021 (-4.2%) and down from 6,034 mt CO_2e in 2007 (-63.6%; see Figure A2).

Figure A2: Annual GHG Emissions from Electricity Consumption



Among County facilities/departments, the Law Enforcement Center contributed the largest amount to the County's GHG emissions from electricity consumption in 2022 (31% of the County government total; see Figure A3). Hillview Health Care Center, Lakeview Health Center, and Health and Human Services facilities also used relatively large quantities.

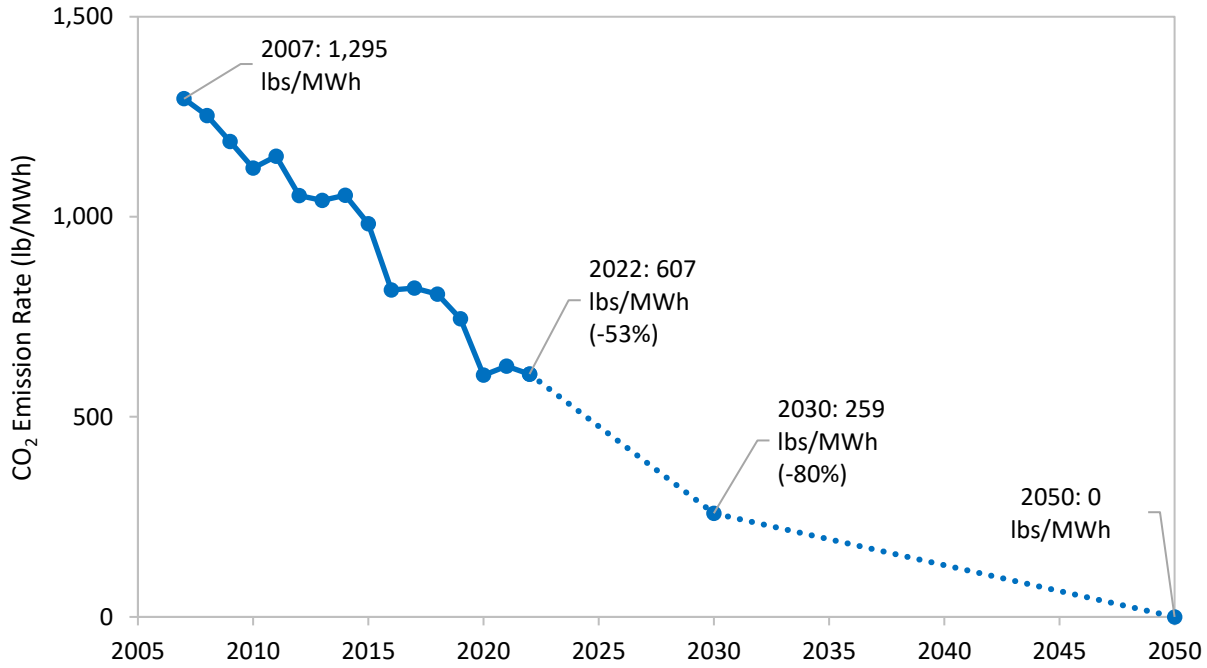
Figure A3: 2022 GHG Emissions from Electricity Consumption by Facility / Department



The County government's GHG emissions from electricity are influenced by two factors: quantities of electricity consumed and Xcel Energy's electricity emission rates – i.e., emission quantities per unit of electricity produced. Both factors decreased between 2007 and 2022. The County government consumed 22.8% less electricity in 2022 than in 2007; please refer to 'Electricity' section of this report for more information about consumption quantities.

Xcel Energy's Upper Midwest CO_2 emission rate in 2022 was 52.7% lower than in 2007 (see Figure A4). The emission rate decreased because Xcel Energy produced less electricity with coal and more with natural gas, wind, and solar energy sources. Natural gas is a fossil fuel source like coal, but electricity generated from natural gas produces approximately only half as much carbon dioxide as electricity generated using coal. Xcel Energy aims to achieve an 80% reduction (below 2005 level) of its electricity emission rate by 2030, and to provide carbon-free electricity by 2050 (see Figure A4).[7]

Figure A4: Xcel Energy Upper Midwest Electricity CO_2 Emission Rates



[7] See https://wi.my.xcelenergy.com/s/our-commitment/carbon-reduction-plan

Stationary Combustion

Natural gas is consumed at County facilities primarily for space heating during cold seasons, but also for heating water and other uses. In addition, a relatively small amount of propane is consumed to heat maintenance facilities (operated by contractors) for site operations at the County landfill. Carbon dioxide (CO_2) is the primary GHG produced during combustion of these fuels, but much smaller amounts of methane (CH_4) and nitrous oxide (N_2O) are emitted as well. Stationary combustion associated with La Crosse County government operations in 2022 resulted in 1,623 mt CO_2e of GHG emissions – up from 1,547 mt CO_2e in 2021 (+4.9%) but down from 2,563 mt CO_2e in 2007 (-36.7%; see Figure A5). Stationary combustion GHG emissions are directly proportional to the amount of fuel consumed; please refer to 'Natural Gas' section of this report for more information about consumption quantities.

Figure A5: Annual GHG Emissions from Stationary Combustion

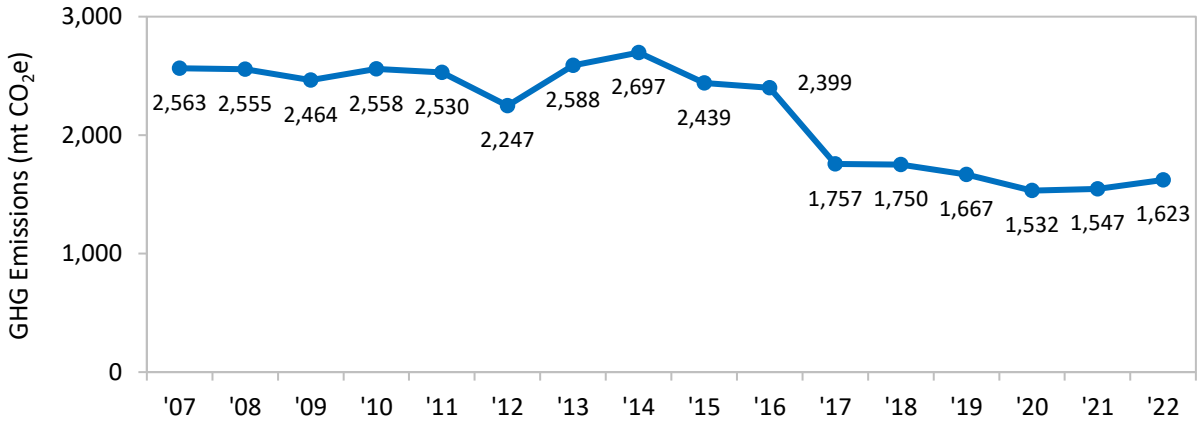
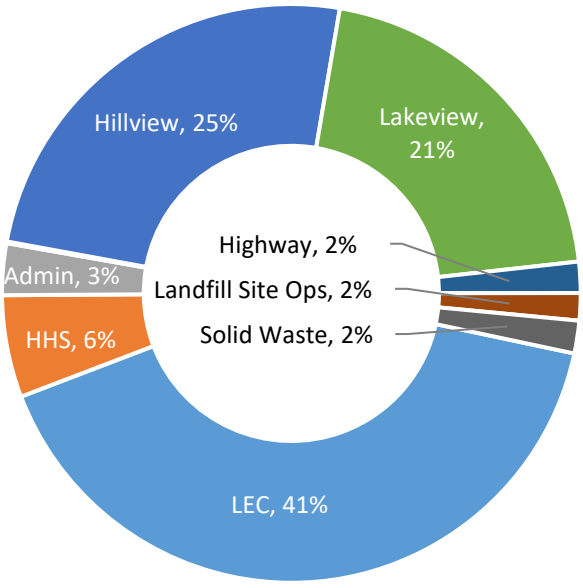


Figure A6: 2022 GHG Emissions from Stationary Combustion by Department/Facility

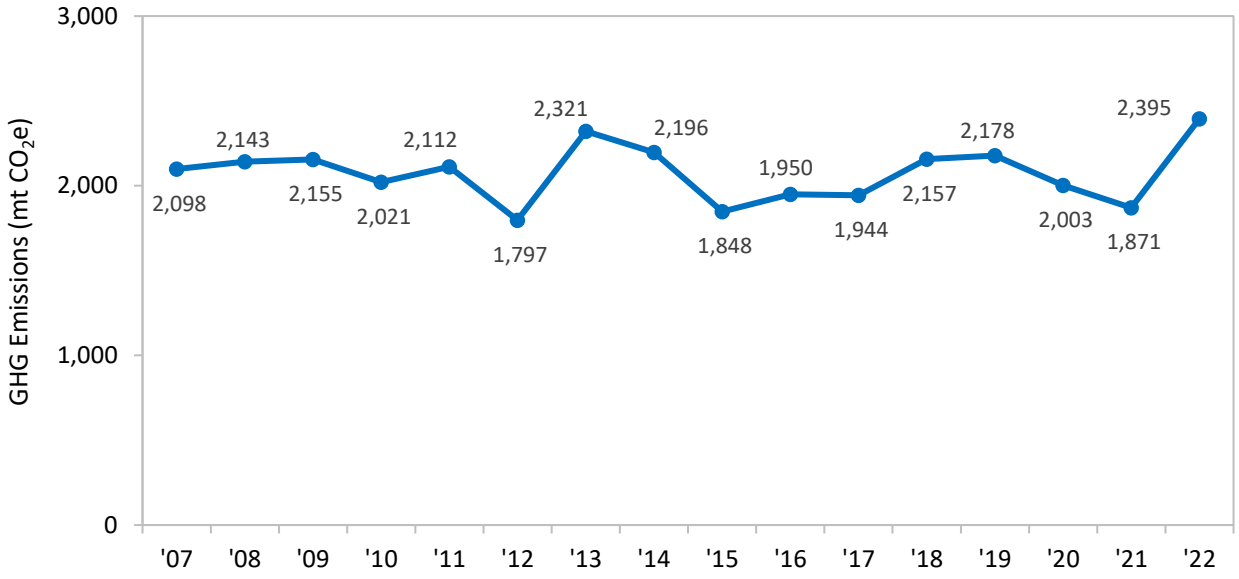
Among County facilities/ departments, the Law Enforcement Center contributed the largest amount to the County's GHG emissions from electricity consumption in 2022 (see Figure A6). Hillview Health Care Center and Lakeview Health Center facilities also were also responsible for relatively large quantities.



Mobile Combustion

County government fleet vehicles consume diesel fuel, gasoline, and compressed natural gas (CNG). Carbon dioxide (CO_2) is the primary GHG produced during combustion of these fuels, but relatively small amounts of methane (CH_4) and nitrous oxide (N_2O) are emitted as well. County-owned/leased vehicles emitted 2,395 mt CO_2e in 2022, up from 1,871 mt CO_2e in 2021 (+28.0%) and up from 2,098 mt CO_2e in 2007 (+14.2%; see Figure A7). These emissions are directly proportional to fuel consumption amounts; please refer to the 'Vehicle Fuels' section of this report for more information about consumption amounts.

Figure A7: Annual GHG Emissions from Mobile Combustion [by County-owned Vehicles Only]



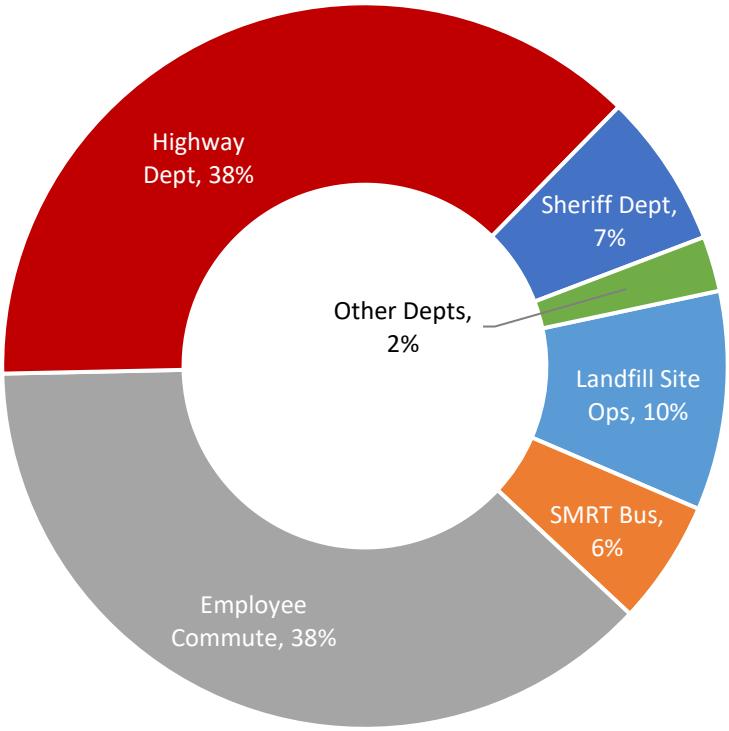
Diesel and gasoline vehicle fuel products are mostly composed of fossil-sourced substances, but many also contain a percentage that is biogenically sourced. Specifically, gasoline fuel products typically contain ethanol and diesel fuel products may contain biodiesel. Because these biofuels are produced from renewable sources rather than fossil sources, the CO_2 emissions resulting from their combustion are not included in GHG inventory totals. Emissions of CH_4 and N_2O from biofuel combustion are included, however – per LGO Protocol.

In addition to County-owned vehicles, this inventory also incorporated GHG emissions from County employee commuting activity, the Scenic Mississippi Regional Transit (SMRT) bus system, and landfill site operations equipment (operated by contractors) – but prior-year input data was unavailable for these sources. In total, mobile combustion GHG emissions associated with County government operations in 2022 were 5,097 mt CO_2e (see Table A4).

Table A4: 2022 GHG Emissions from Mobile Combustion

Source	2022 GHG Emissions (mt CO_2e)	% of Total
County-owned Vehicles	2,395	47%
Employee Commuting	1,922	38%
Landfill Site Ops Equipment	498	10%
SMRT Bus System	282	6%
Total	**5,097**	**100%**

Figure A8: 2022 GHG Emissions from Mobile Combustion by Source/Department



County-owned vehicles contributed 47% of total mobile combustion emissions in 2022, with Highway Department vehicles contributing the largest share. Among other sources, employee commuting contributed the largest share - 38% of total mobile combustion emissions in 2022 (see Figure A8).

Fugitive Refrigerants

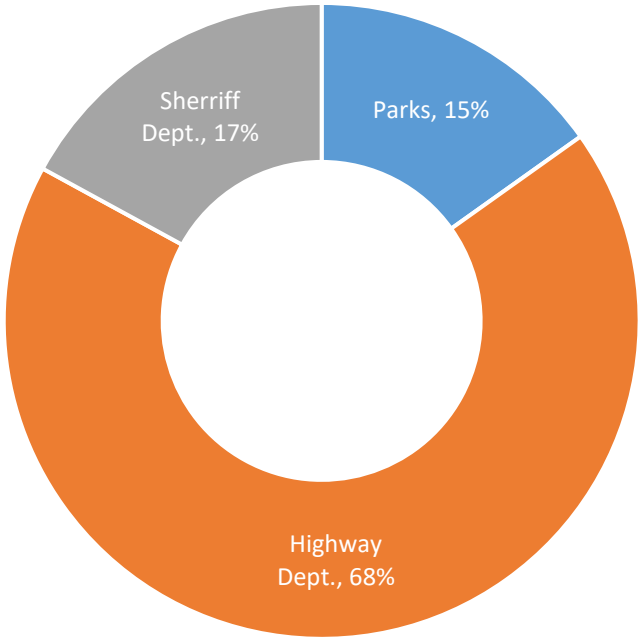
Refrigeration and HVAC equipment installed at the County's facilities and in its vehicles contain refrigerant fluids for heat transfer purposes. Refrigerants are intended remain sealed within refrigeration equipment, but leaks can occur, which allows refrigerants to escape the atmosphere – and these fugitive refrigerants then become GHGs. In addition to leakage that occurs during equipment operation, refrigerant emissions may also occur when equipment is initially installed or decommissioned at the end of its service life.

In 2022, a total of 26.4 lbs. of R-134A leaked from County vehicles into the atmosphere, based on service records provided by the Highway Department's maintenance shop. Most of this occurred from Highway Department vehicles (68%), while the remainder occurred from Sherriff and Parks vehicles (see Figure A9).

Although fugitive refrigerant quantities are very small in comparison with carbon dioxide emission quantities in other parts of this inventory, their impact is magnified because refrigerants are typically very potent greenhouse gases. The global warming potential (GWP) of R-134A is 1,300 – meaning that pound of R-134A traps the same amount of heat as 1,300 lbs. of carbon dioxide. After taking this into account, the County's total fugitive refrigerant emissions in 2022 was 16 mt CO_2e.

This inventory includes hydrofluorocarbons (HFCs) such as R-134A, but it does not include other types of refrigerant compounds such as chlorofluorocarbon (CFC) and hydrochlorofluorocarbon (HCFC) compounds. Per the LGO Protocol, CFCs and HCFCs are excluded because (1) they are destructive to stratospheric ozone (which is itself a GHG) so their net global warming impact is uncertain, and (2) they are already regulated and being phased out under the Montreal Protocol. Therefore, although a small amount (1/4 lb.) of R-22 leakage occurred from equipment at Hillview in 2022, since R-22 is an HCFC it was not included in the inventory.

Figure A9: 2022 Fugitive Refrigerant Emissions by Department

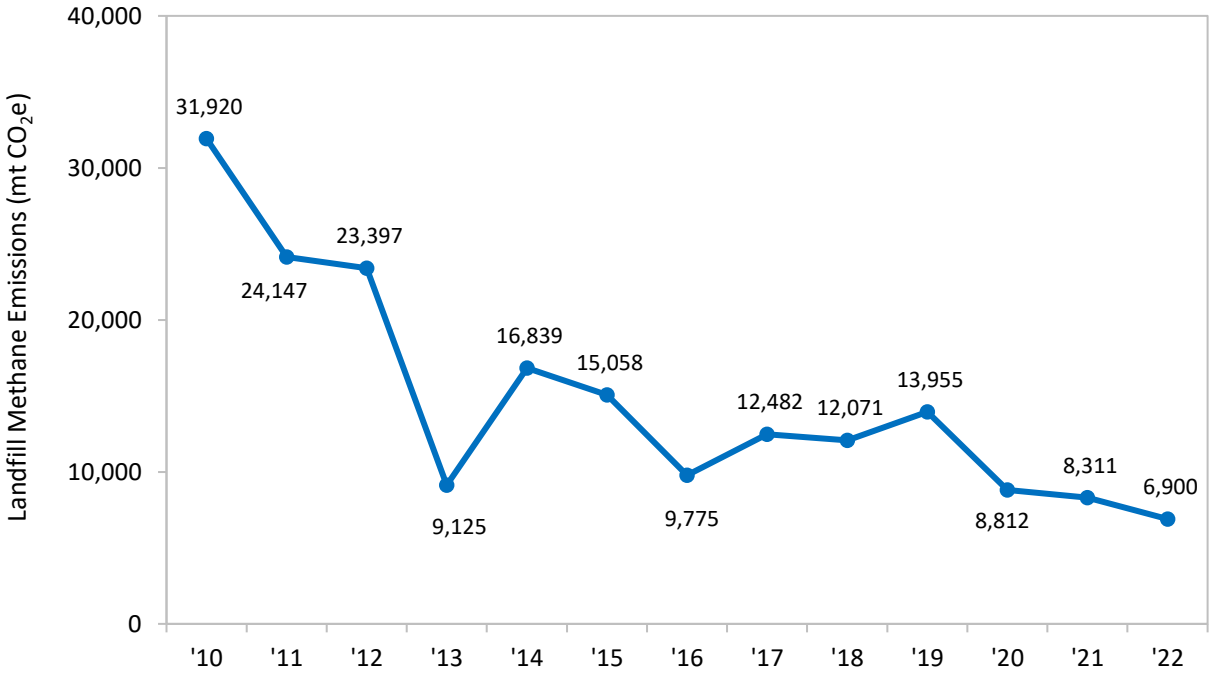


Fugitive Methane

Methane gas (CH_4) is produced at landfills, where organic materials such as food waste decompose under anaerobic (i.e., low oxygen) conditions below the surface. At the La Crosse County landfill, methane is collected and used for power generation by Gundersen Health Systems or flared off (i.e., combusted), both of which convert the methane into carbon dioxide – a much less potent greenhouse gas. However, while the landfill's comprehensive collection system captures most methane produced by the landfill, some is 'fugitive' and escapes to the atmosphere.

Fugitive methane amounts are calculated annually for the County Landfill and reported to the US EPA's Greenhouse Gas Reporting Program (GHGRP). The calculation is based on the amount of methane captured by the collection system, the system's downtime, and the estimated efficiency of the collection system, among other factors. According to the County's GHGRP submission, 246.4 tons of fugitive methane escaped from the County landfill in 2022, which translates to 6,900 mt CO_2e after taking methane's global warming potential (28) into account. This is down from 8,311 mt CO_2e in 2021 (-17.0%), and down from 31,920 mt CO_2e in 2010 (-78.4%; see Figure A10). 2010 is the earliest year for which information is available. Years with the lower fugitive methane emissions coincide with higher amounts of cover over the landfill surface; cover increases methane collection efficiency and reduces fugitive emissions.

Figure A10: Annual Fugitive Methane Emissions from County Landfill



Appendix E:

2023 Wisconsin Clean Cities- La Crosse County Vehicle Fleet Assessment

Fleet Analysis:

La Crosse County, WI

Prepared by:

Matthew Christman
Program Specialist
Wisconsin Clean Cities
12/11/2023

Introduction

Wisconsin Clean Cities (WCC) conducted a fleet analysis for La Crosse County focused on the feasibility and implementation of alternative fuel vehicles. The goals of this study are designed to align with La Crosse County's wider sustainability vision and goals. The following report covers the analysis of La Crosse County's fleet.

After being provided with fleet data, WCC performed an analysis to create a baseline of current vehicle and fleet performance indicators, chart out available options, and create a cost/benefit performance profile showing the operational cost comparison, total cost of ownership, and total investment/return on investment needed for La Crosse County in each vehicle case. We also provided recommendations related to electric vehicle supply equipment (EVSE) site planning at county facilities based on priority vehicle replacements identified.

Based on current planning priorities a industry default of 15 to 20 year vehicle life and maximum mileage of 125,000 was utilized to identify vehicles which could potentially be replaced within the next 5 years. Emphasis will be placed on opportunities to adopt electric vehicles.

La Crosse County Fleet Analysis

La Crosse County provided information for 141 vehicles representing 5 county divisions, departments, and operational areas. For analysis purposes gasoline and diesel prices are based on AAA reported retail values. Alternative fuel prices are sourced from the Midwest region values in the AFDC Alternative Fuel Pricing report. A summary of values used is available below.

Table 1: Fuel Cost Comparison

Fuel Type	Unit Price
Unleaded Gasoline	$2.92 / gallon
Diesel	$3.88 / gallon
Electricity	$0.0903 / kWh
Propane (LPG)	$3.35 / gallon
Compressed Natural Gas (CNG)	$2.70 / GGE
Ethanol (E85)	$2.89 / gallon

Fleet Overview

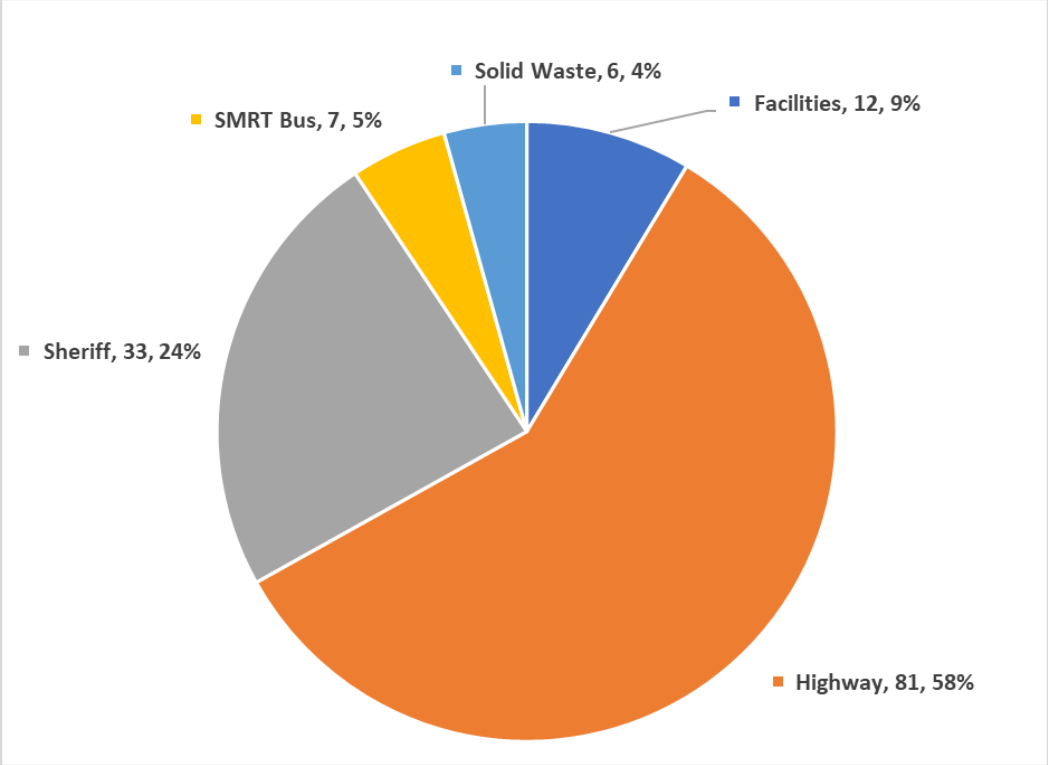
Using data provided by La Crosse County, annual vehicle miles travelled, fuel economy, and AFLEET category designations were determined for analysis purposes. The following tables provide a summary of departments and vehicle mix. Note values are based on initial provided data and the removal of 2 SMRT Bus units listed as disposed of.

NOTE: This report does not include 1 Survey Dept. and 3 Land Conservations Dept. vehicles owned at the time of the study. These vehicles were missed during initial inventory, but all 4 are likely prime candidates for electrification as they age.

Table 2: Department Summary						
Department	Average Model Year	Average Age	Number of Vehicles	Average Odometer	Average Annual Fuel Consumption	Average Annual VMT
Facilities	2013	10	12	53,408	331	5,278
Highway	2012	11	81	115,854	1,290	13,845
Sheriff	2021	2	33	36,137	1,483	19,750
Solid Waste	2018	5	6	41,790	316	5,520
SMRT Bus	2019	4	7	114,925		50,714

Table 3 Vehicle Summary							
Vehicle	Average Model Year	Average Age	Number	Average Odometer	Average Annual Gallons	Average Calculated Fuel Economy	Average Calculated VMT
Light Commercial Truck	2016	7	3	80,660	617	12	24,132
Light duty truck	1998	25	1	176,559	353	20	7,062
Passenger Car	2019	4	1	64,039	2,480	22	15,570
Passenger Truck	2015	8	3	73,613	809	22	16,103
single unit short haul truck	2012	11	1	119,586	1,462		11,196
SUV	2017	6	1	89,472	710	21	14,912
Grand Total	2014	9	10	91,247	963	20	16,945

Table 4: Department Vehicle Summary								
Department	Light Commercial Truck	Light Duty Truck	Passenger Car	Passenger Truck	Single Unit Short Haul Truck	SUV	Tractor	Grand Total
Facilities	7	1		3		1		12
Highway	18			8	55			81
Sheriff			4	29				33
SMRT Bus	7							7
Solid Waste				5			1	6
Total	32	1	4	45	55	1	1	*139



* = 143 including Land Conservation and Surveyor vehicles not included in this study

Figure 1: Fleet Composition by Department

Table 5: Annual Vehicle Miles by type and Department										
Department	Light Commercial Truck	Light Commercial Percentage	Light duty truck	Passenger Car	Passenger Truck	Passenger Truck Percentage	single unit short haul truck	SUV	Grand Total	Total Percenage
Facilities	25,520	3%	7,062		15,846	3%		14,912	63,340	3%
Highway	350,090	48%			178,358	31%	579,140		1,107,587	56%
Sherrif's Dept		0%		62,281	352,461	61%			414,742	21%
Solid Waste		0%			27,600	5%			27,600	1%
ZPLI - SMRT	355,000	49%				0%			355,000	18%
Grand Total	730,610		7,062	62,281	574,265		579,140	14,912	1,968,269	

In review of individual vehicle data some anomalies were detected. These anomalies were corrected to generate estimated current year and remaining lifetime emissions and petroleum use impact reports. Explanation and sourcing of estimations used will be provided in the individual fleet report sections. Overall fleet composition, mileage, and age indicates that few replacement vehicles will be needed in the near future. Based on this, emphasis is placed on those with nearest term replacement opportunities and estimation of impacts during operation.

Facilities Fleet

The La Crosse County Facilities Fleet consists of 12 vehicles ranging from an SUV to light commercial trucks and accounts for 3% of the vehicle miles traveled by county vehicles. Overall Facilities vehicles have an average age of 10 years, however this is 4 vehicles that are over 17 years old, the other vehicles in the fleet average 5 years old. Two of the oldest vehicles in the fleet, a 2006 Ford Super Duty with 43,813 miles and a 2003 Chevrolet Silverado with 36,276 miles are already noted as being replaced – either on order or planned in 2024. A 1998 Ford F150 supports campground and vehicle fueling operations with a bed mounted fuel tank and travels minimal miles annually compared to calculated averages based on odometer reading. Best estimates for fleet footprint are provided below.

Table 6. Facilities Fleet									
UNIT	Vehicle Model Year	Make	Model	Calculated Annual Miles	Annual Gallons	Odometer	Fuel Economy MPG	Earliest Replacement Year	Latest Replacement Year
1FDUF5HN1PDA01590	2023	Ford	F550	2000	133	253	15	2038	2043
1FDXF46Y06EB72974	2006	Ford	F450 Super Duty	2577	258	43,813	10	2021	2026
1FDUF4GY5GEB42937	2016	Ford	F450 Super Duty	2337	234	16,359	10	2031	2036
1FDTF4GY6JEC46372	2018	Ford	F450 Super Duty	1899	190	9,496	10	2033	2038
1FTBF2B6XFEB95749	2015	Ford	F250 4x4	8668	619	69,345	14	2030	2035
1FDRF3H69HEE49283	2017	Ford	F350 Super Duty 1 ton	1880	145	11,279	13	2032	2037
3C6MR5AJ9NG237866	2022	Dodge	Ram 2500	6159	411	6,159	15	2037	2042
1FTZF1822WNB78618	1998	Ford	F150	7062	353	176,559	20	2013	2018
1GCHK24U84E218251	2004	Chevrolet	Silverado	6330	452	120,269	14	2019	2024
1GCHK24U53E338359	2003	Chevrolet	Silverado	1814	130	36,276	14	2018	2023
3GCUKREC5FG336928	2015	Chevrolet	Silverado 1500	7702	335	61,618	23	2030	2035
1FM5K8B8XHGC47512	2017	Ford	Explorer 4WD	14912	710	89,472	21	2032	2037

Table 7: Facilities Footprint		
	Current Year	**Remaining Lifetime**
Petroleum Use (barrels)	82.3	536.5
GHGs (short tons)	46.9	305.9
CO (lb)	672.1	2,439.9
NOx (lb)	65.3	71.3
PM10 (lb)	5.2	32.6
PM2.5 (lb)	1.5	8.6
VOC (lb)	41.5	116.2
SOx (lb)	0.4	2.9

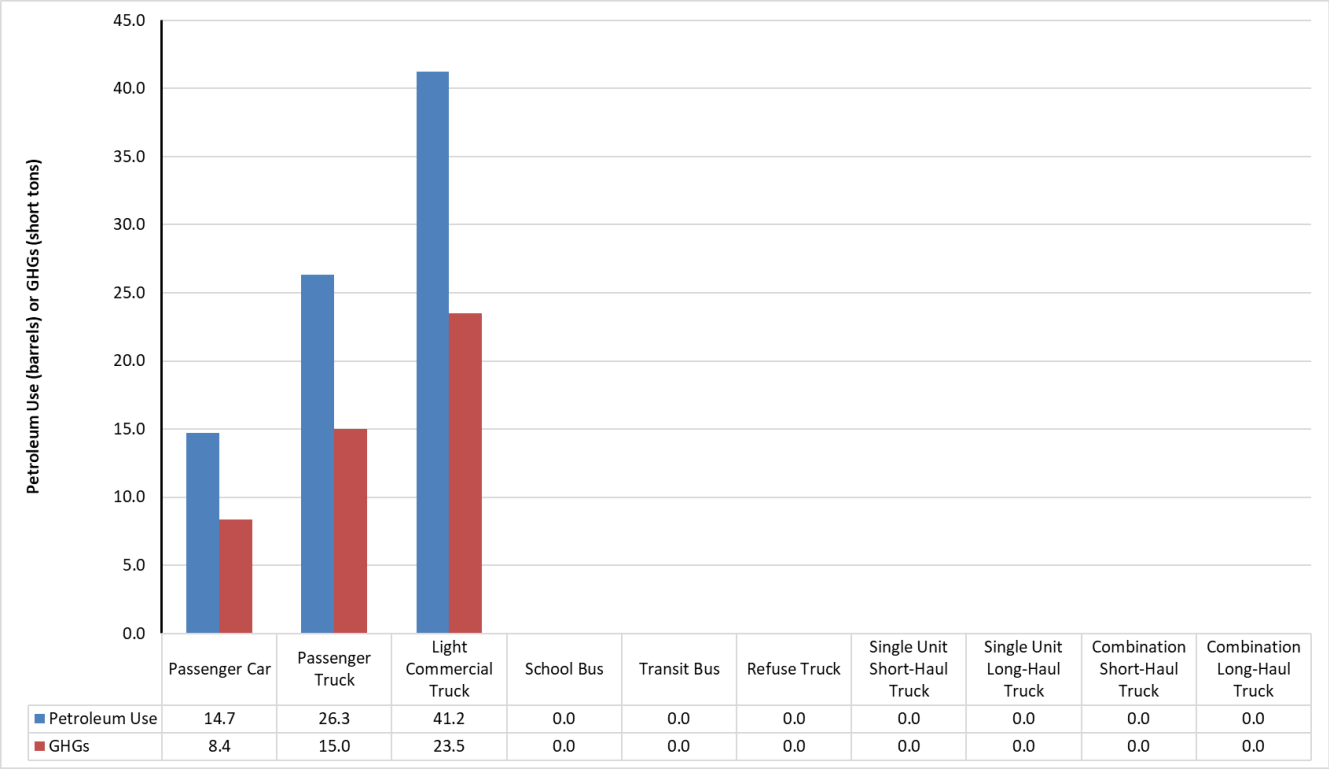
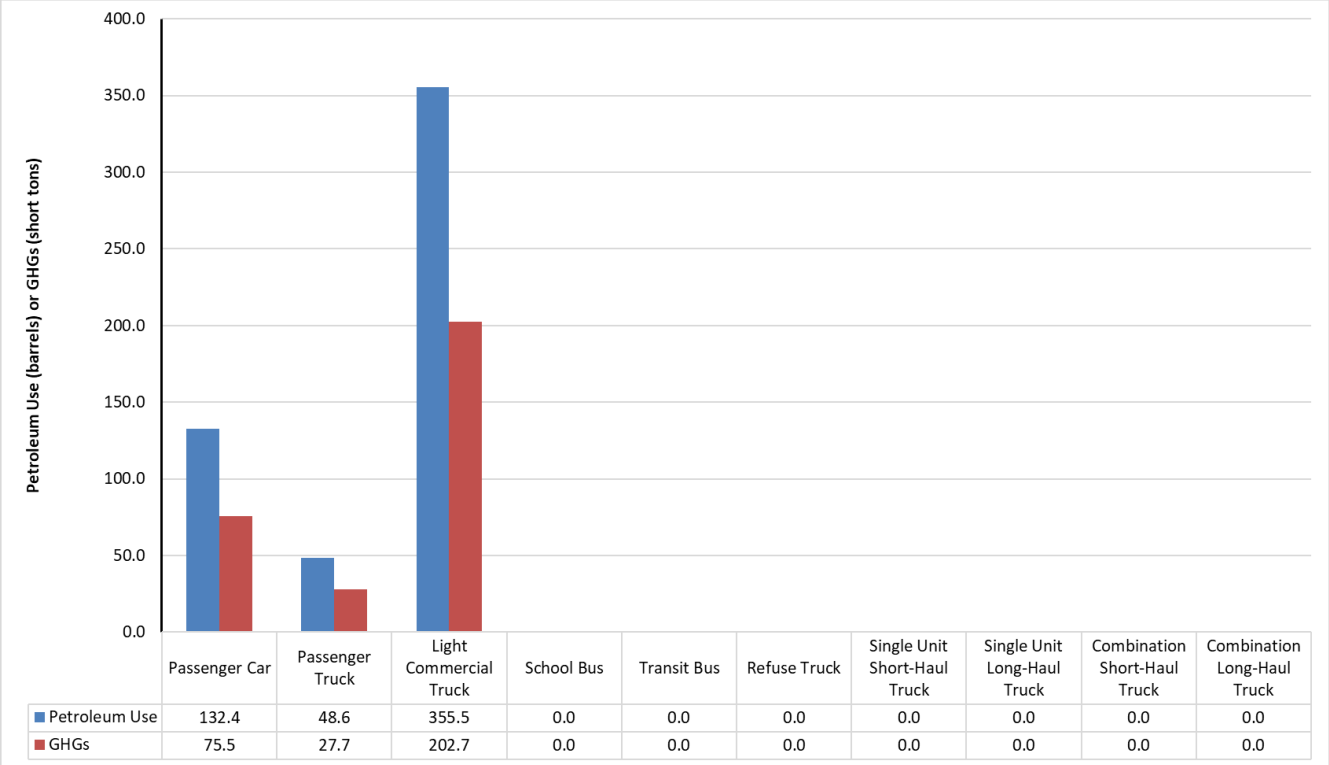


Figure 2: Facilities Current Year Petroleum Use and GHGs

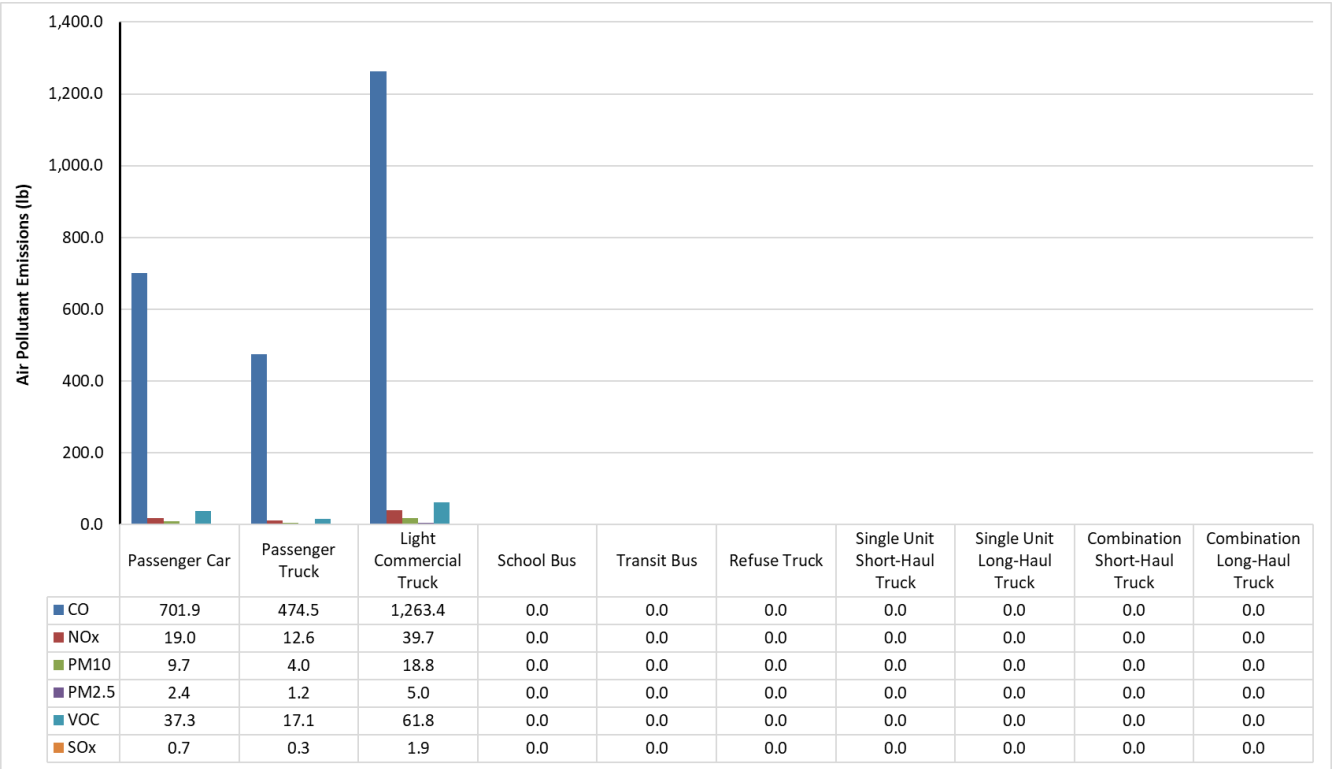
	Passenger Car	Passenger Truck	Light Commercial Truck	School Bus	Transit Bus	Refuse Truck	Single Unit Short-Haul Truck	Single Unit Long-Haul Truck	Combination Short-Haul Truck	Combination Long-Haul Truck
CO	58.6	431.3	182.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NOx	1.9	54.8	8.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PM10	1.1	2.1	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PM2.5	0.2	0.8	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VOC	3.2	30.8	7.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SOx	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Figure 3: Facilities Current Year Vehicle Operational Air Pollutants



	Passenger Car	Passenger Truck	Light Commercial Truck	School Bus	Transit Bus	Refuse Truck	Single Unit Short-Haul Truck	Single Unit Long-Haul Truck	Combination Short-Haul Truck	Combination Long-Haul Truck
Petroleum Use	132.4	48.6	355.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GHGs	75.5	27.7	202.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Figure 4: Facilities Remaining Lifetime Well-to-Wheels Petroleum Use and GHG Emissions



	Passenger Car	Passenger Truck	Light Commercial Truck	School Bus	Transit Bus	Refuse Truck	Single Unit Short-Haul Truck	Single Unit Long-Haul Truck	Combination Short-Haul Truck	Combination Long-Haul Truck
CO	701.9	474.5	1,263.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NOx	19.0	12.6	39.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PM10	9.7	4.0	18.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PM2.5	2.4	1.2	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VOC	37.3	17.1	61.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SOx	0.7	0.3	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Figure 5: Facilities Remaining Lifetime Vehicle Operation Air-Pollutants

Two vehicles that can be evaluated for replacement are the 19 and 20 year old Chevrolet Silverado trucks, one is currently planned for replacement next year. The 19 year old Silverado has over 120,000 miles currently and will exceed 125,000 miles next year based on provided VMT. The following analysis will provide details for the replacement of both vehicles with alternative fuel options. Additional savings may be possible if the use of these two trucks can be consolidated and replaced with a single truck. Average daily mileage was used to calculate EV charging requirements.

Table 8: Facilities Options

Year	Make	Model	Price	Type	Fuel Economy	Miles/Day	Battery Size (kWh)	Range (miles)	% left after 1 day	kW used	Time to full after 1 use (8 kW charger)	Time to full after 1 use (12 kW charger)	Days before a charger is needed	Time to full if empty (8kW charger)	Time to full is empty (12 kW charger)
2004	Chevrolet	Silverado		Gas	14	24.35									
2003	Chevrolet	Silverado		Gas	14	6.98									
2024	Chevrolet	Silverado	$49,995	Gas -4cyl	20										
2024	Chevrolet	Silverado	$52,385	Diesel	26										
2024	Ford	F-150	$52,325	HEV	25										
2025	Ford	Lightning	$49,995	BEV	68	16	123	240	93.3%	8.20	62 minutes	41 minutes	15	15.4 hours	10.3 hours

Analysis of similar trim levels between gasoline, diesel, B20, hybrid electric, and full electric pickup options that are currently available on the market, based on vehicle manufacturer MSRP values shows considerable savings opportunities present. If a Ford Lightning battery electric truck is selected as a replacement for both old Silverado pickups, savings can range from $19,321 to nearly $36,000 over a 15-year period. Compared to all options Ford Lightning trucks would provide operational savings from the first day of operation. The improved fuel economy of diesel and biodiesel options is not sufficient to overcome higher fuel prices. The difference between a gasoline and hybrid option is minimal and would need to be justified by the benefits of use as a remote power source if applicable on the model selected.

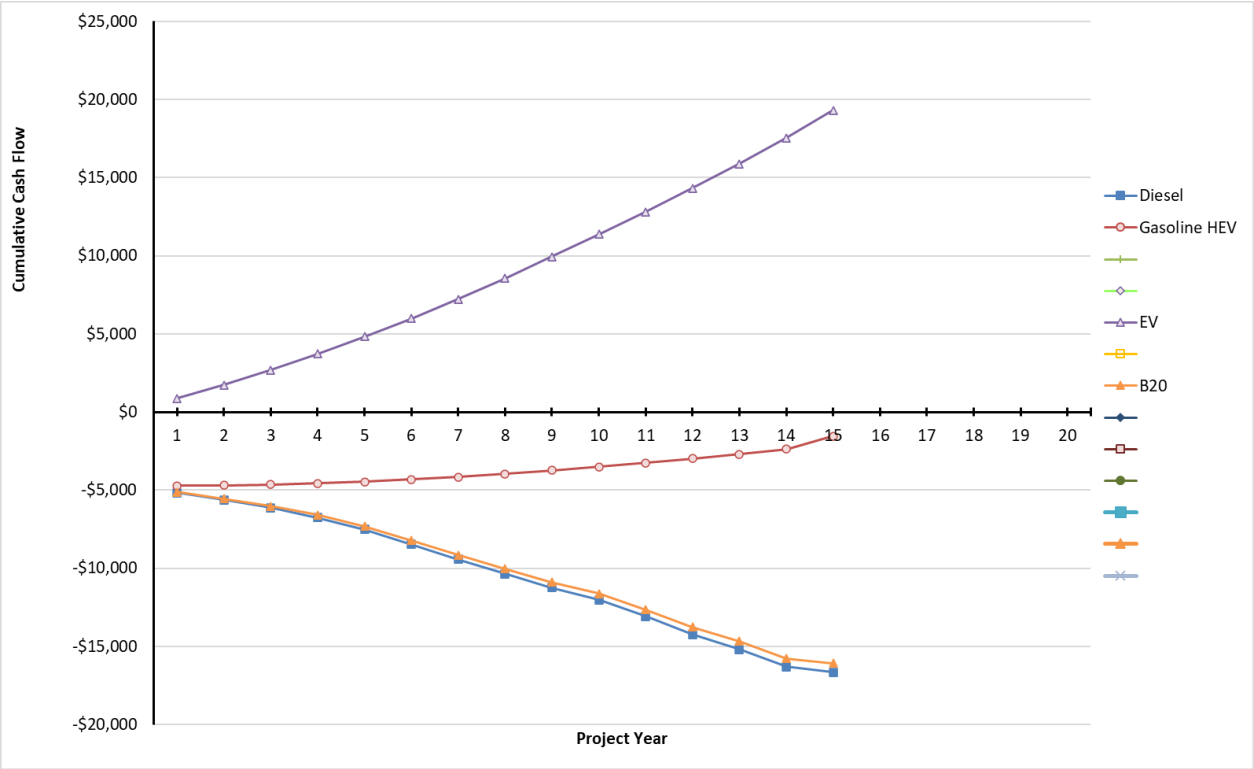


Figure 6: Facilities Truck Total Cost of Ownership Cumulative Cash Flow Compared to Gasoline

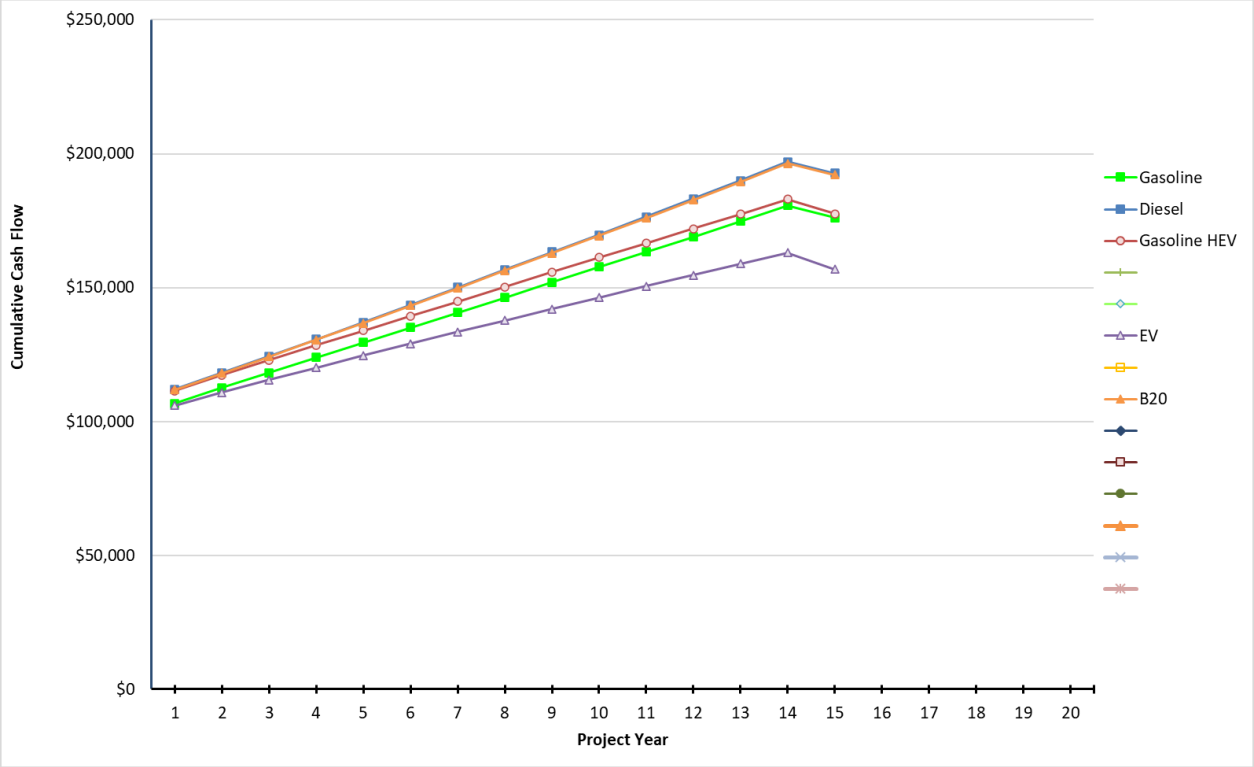


Figure 7: Facilities Truck Total Cost of Ownership Cumulative Cash Flow

In terms of emissions, the shift to electric pickups provides the greatest benefit by a large margin compared to all other options. Gasoline trucks have between 101 and 127 times more petroleum use than the electric trucks. Gasoline hybrid and diesel have nearly equal petroleum use and greenhouse gas emissions impact. Impact in regard to vehicle air pollutants is even more significant in regards to CO, NOx, PM, and VOC emissions.

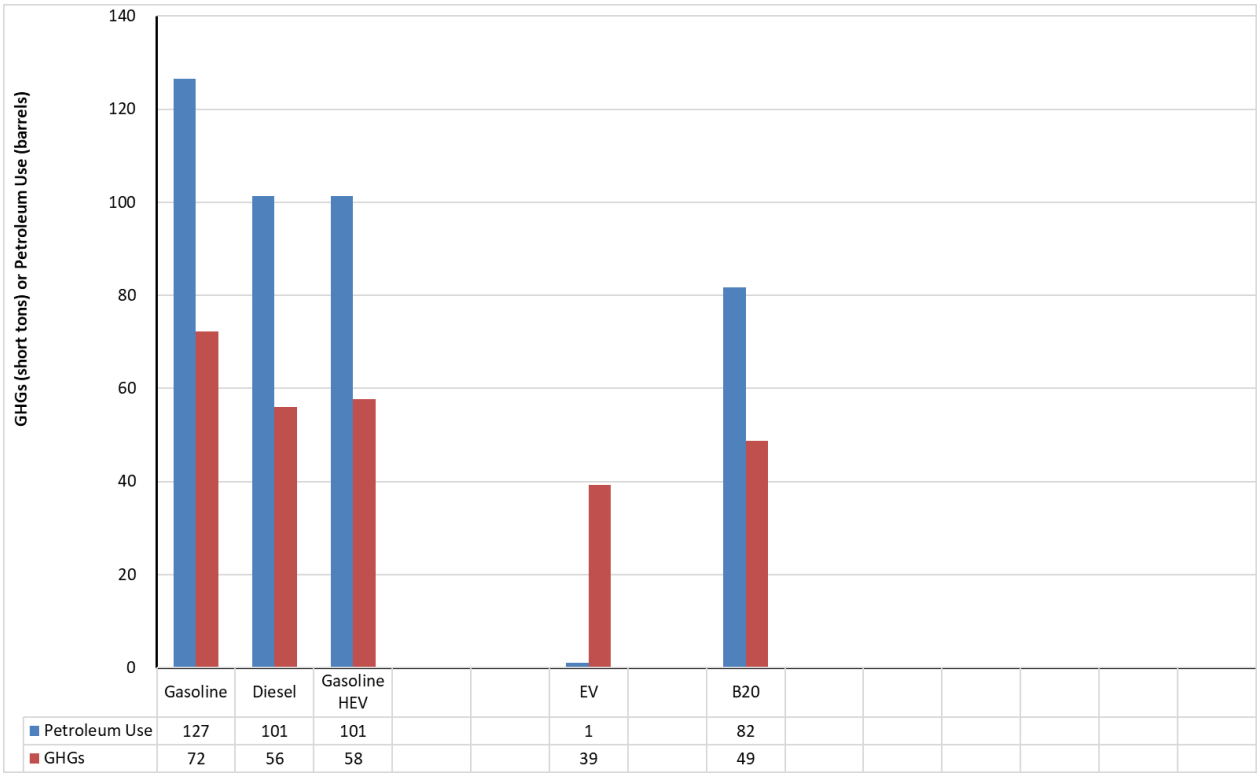


Figure 8: Facilities Truck Lifetime Well-to-Wheels Petroleum Use and GHG Emissions

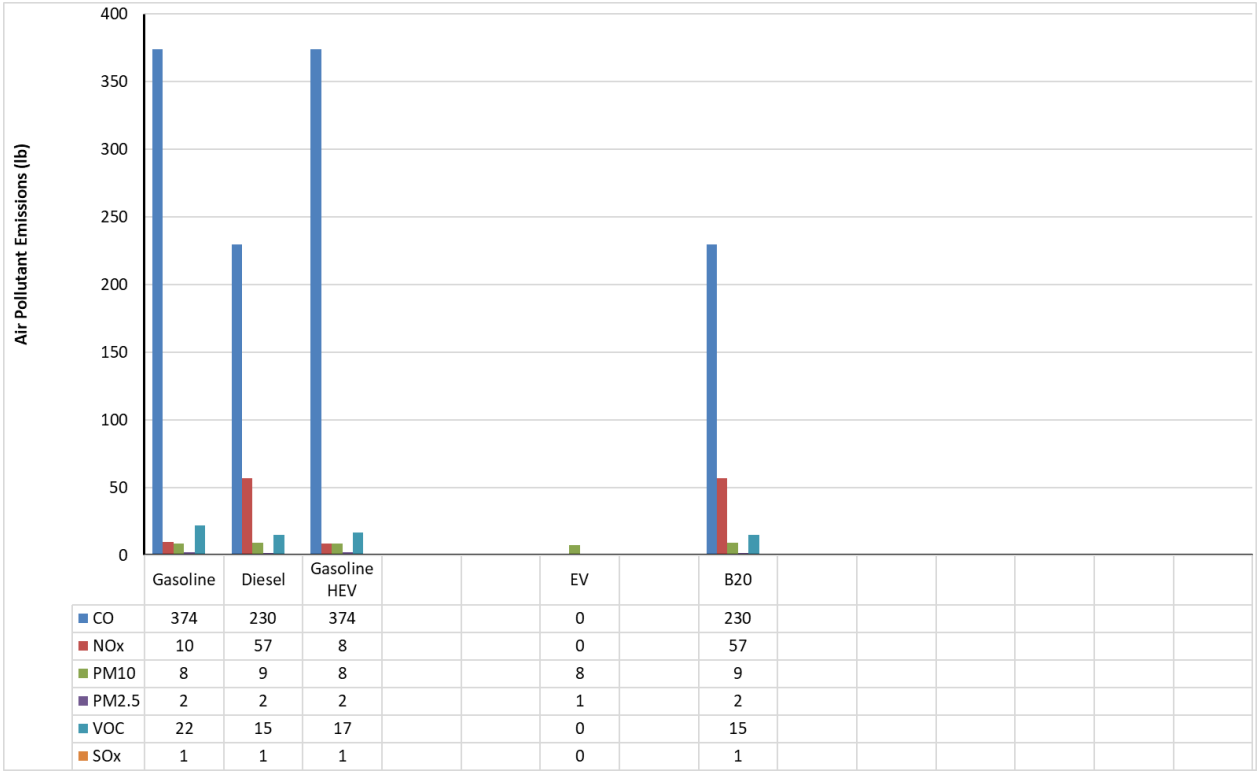


Figure 9: Facilities Truck Lifetime Vehicle Operation Air-Pollutants

Highway Department Fleet

The Highway Department fleet data included 81 vehicles consisting of 13 diesel medium duty trucks, 1 diesel passenger truck, 53 diesel dump / equipment trucks, 6 gas medium duty trucks, a passenger van, 7 gas half ton trucks, and two medium duty trucks capable of operating on LPG. Each of these vehicle categories will be evaluated separately. Review of calculated fuel economy showed several vehicles with anomalous values. These values were corrected to calculate emissions footprints for each vehicle category. Thirty-nine vehicles in the Highway Department fleet are over 11 years old.

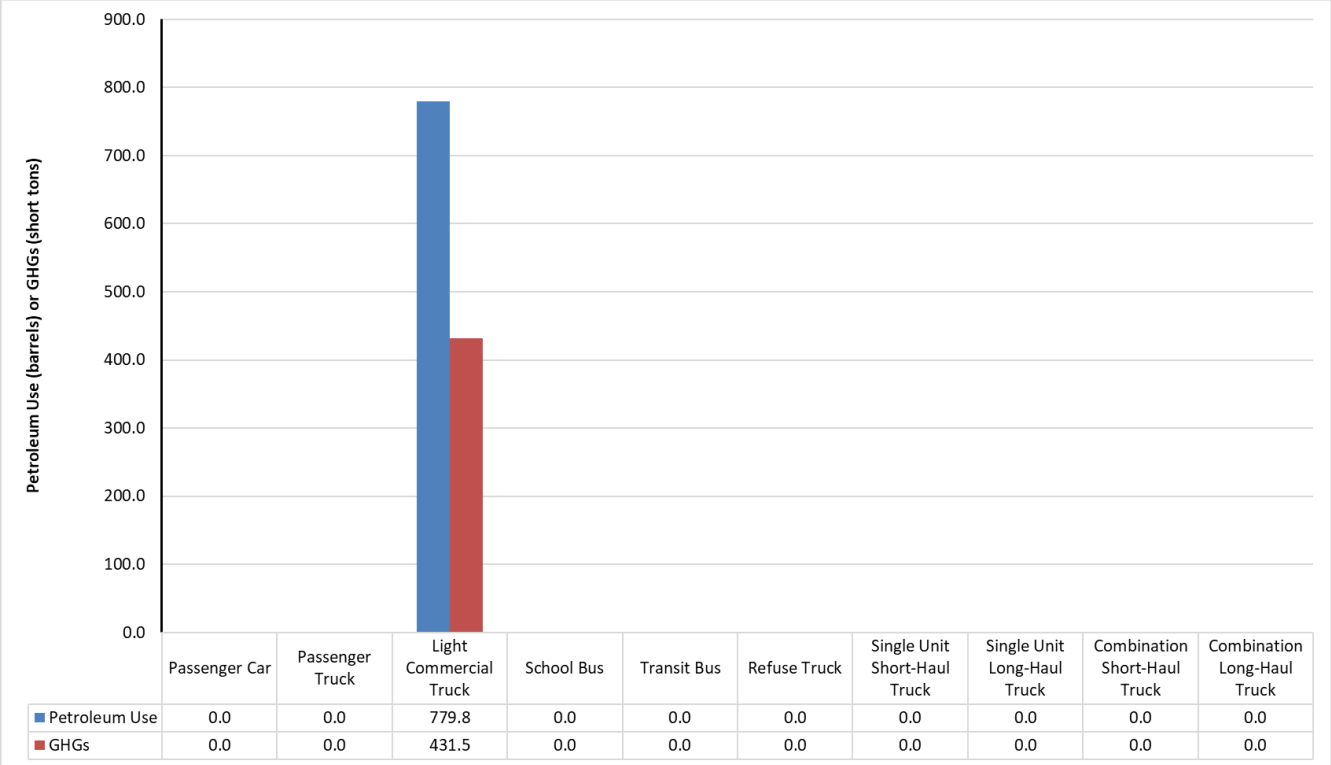
Table 9. Highway Diesel Light Commercial Truck Fleet

UNIT	Vehicle Model Year	Make	Model	Annual Miles	Annual Gallons	Odometer	Fuel Economy MPG	Age	Earliest Replacement Year	Latest Replacement Year
17	2022	Ford F-450 Foreman panel	f-450 6.7 L	20,299	1,575.57	20,299	13	1	2037	2042
18	2019	Ford F-350 Foreman panel	f-350 6.7L	12,356	2,635.48	49,425	5	4	2034	2039
20	2016	Ford Shop Truck	F-750	5,512	611.65	38,584	9	7	2031	2036
22	2005	Ford Ton Truck	F-350 6.0L	9,360	1,392.36	168,471	7	18	2020	2025
23	2022	Ford F-450 Foreman panel	F-450 6.7 L	20,855	959.2	20,855	22	1	2037	2042
75	2003	Chevrolet Truck	K3500 8.1-496V8	7,974	1,560.68	159,493	5	20	2018	2023
76	2015	International single axle	7600SFAN13-SCR4300	10,800	1,828.20	86,397	6	8	2030	2035
77	2015	International Truck single axle	7600SFAN13-SCR4300	10,349	229.32	82,788	45	8	2030	2035
143	1991	Ford Truck attenuator	LN8000 7.8L	8,245	500.83	263,824	16	32	2006	2011
144	1991	Ford Truck attenuator	LN8000 7.8L	7,105	383.61	227,362	19	32	2006	2011
280	2014	Ford boom mower truck	F-450 6.7L	3,836	597.08	26,854	6	9	2029	2034

In the group of vehicles classified as diesel light duty commercial trucks there are 4 vehicles that had unusual fuel economy values based on provided mileage and fuel consumption data. Two are very old Ford Attenuator trucks. For units 143 and 144 fuel consumption was calculated based on mileage and the average fuel consumption of similar vehicles in the fleet at 7 mpg. A similar approach was taken for unit 23 and 77 with fuel economy set at 10 mpg and 7 mpg respectively for footprint analysis.

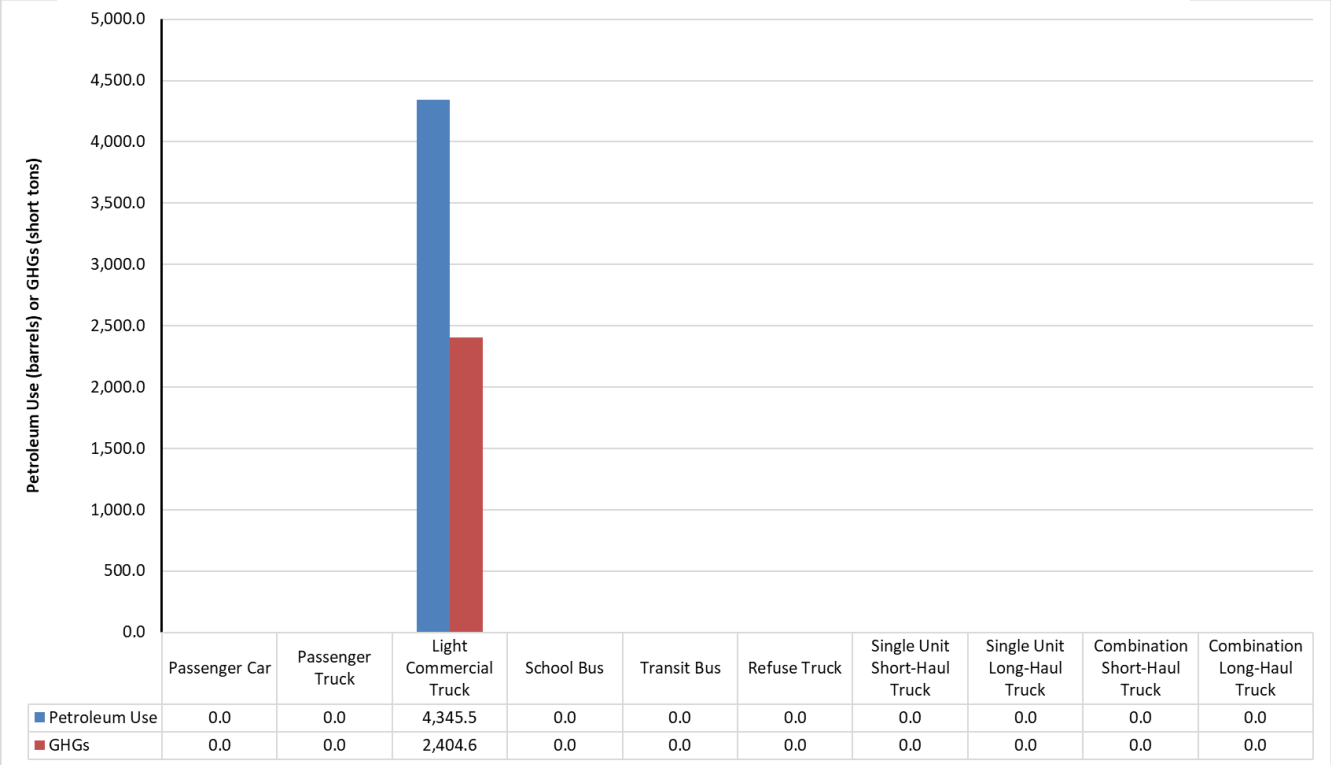
Table 10: Highwy Diesel Light Commercial Truck Footprint

	Current Year	Remaining Lifetime
Petroleum Use (barrels)	779.8	4,345.5
GHGs (short tons)	431.5	2,404.6
CO (lb)		1,722.6
NOx (lb)		831.3
PM10 (lb)		77.4
PM2.5 (lb)		14.0
VOC (lb)		123.0
SOx (lb)	4.9	27.2



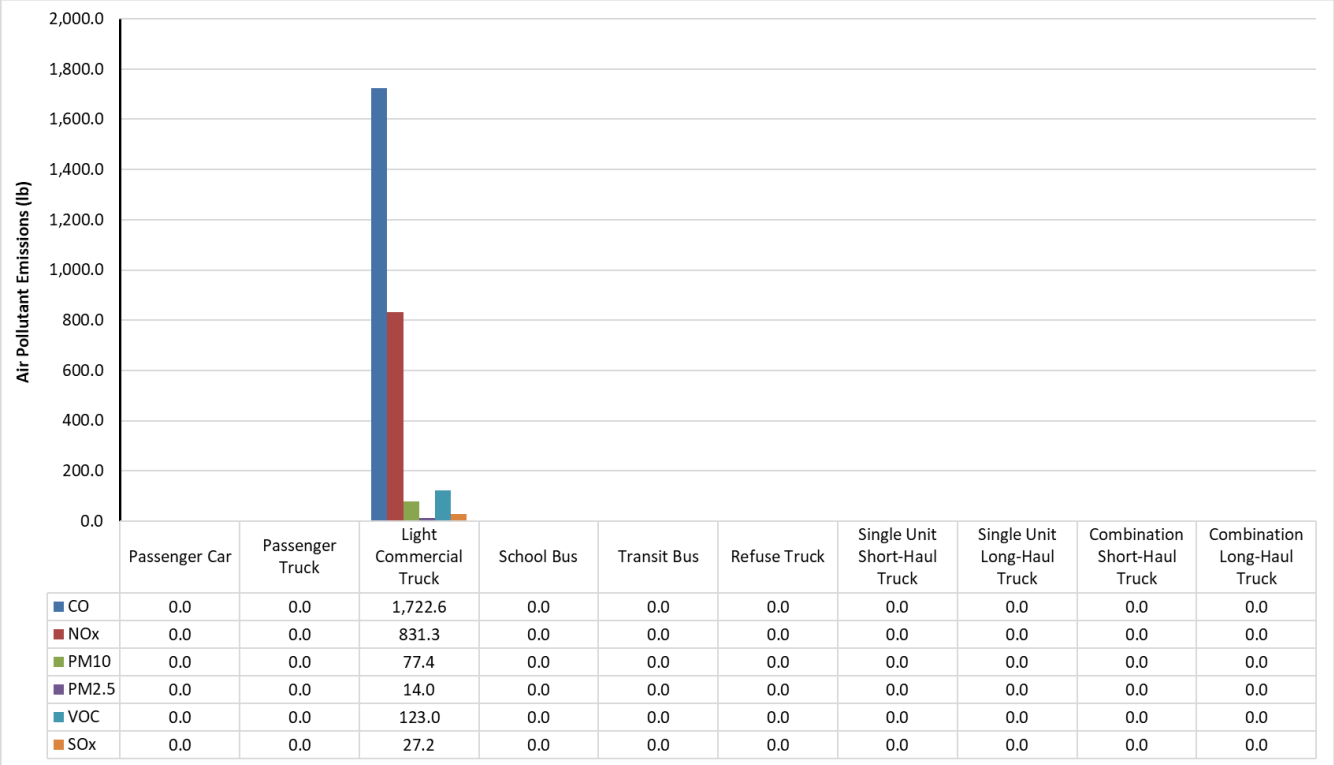
	Passenger Car	Passenger Truck	Light Commercial Truck	School Bus	Transit Bus	Refuse Truck	Single Unit Short-Haul Truck	Single Unit Long-Haul Truck	Combination Short-Haul Truck	Combination Long-Haul Truck
Petroleum Use	0.0	0.0	779.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GHGs	0.0	0.0	431.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Figure 10: Highway Diesel Light Commercial Current Year Vehicle Operational Air Pollutants



	Passenger Car	Passenger Truck	Light Commercial Truck	School Bus	Transit Bus	Refuse Truck	Single Unit Short-Haul Truck	Single Unit Long-Haul Truck	Combination Short-Haul Truck	Combination Long-Haul Truck
Petroleum Use	0.0	0.0	4,345.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GHGs	0.0	0.0	2,404.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Figure 11: Highway Diesel Light Commercial Lifetime Well-to-Wheels Petroleum Use and GHG Emissions



	Passenger Car	Passenger Truck	Light Commercial Truck	School Bus	Transit Bus	Refuse Truck	Single Unit Short-Haul Truck	Single Unit Long-Haul Truck	Combination Short-Haul Truck	Combination Long-Haul Truck
CO	0.0	0.0	1,722.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NOx	0.0	0.0	831.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PM10	0.0	0.0	77.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PM2.5	0.0	0.0	14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VOC	0.0	0.0	123.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SOx	0.0	0.0	27.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Figure 12: Highway Diesel Light Commercial Lifetime Vehicle Operation Air-Pollutants

Two vehicles are good candidates to consider for replacement in 2024 – unit 22, a 2005 Ford F-350 which is 18 years old with 168,471 miles, and unit 75 a 2003 Chevrolet K3500 with 159,493 miles. Chevrolet, Ford, and Ram all offer vehicles in this category which are compatible with biodiesel and compressed natural gas along with traditional gas and diesel options. Ford F-350XL was used as a point of comparison as it offers diesel and gas options with the diesel listed as B20 capable. Numerous upfitters are available to sell CNG equipped F-350s with a typical upfit cost of $8,000 over a gasoline model. The average of the two vehicles annual miles traveled was used for estimation purposes.

Table 11: Highway Diesel Light Commercial Options

Year	Make	Model	Price	Type	Annual VMT	Fuel Economy
2005	Ford Ton Truck	F-350 6.0L		DSL	9,360	7
2003	Chevrolet Truck	K3500 8.1-496V8		DSL	7,974	5
2024	Ford	F-350 XL 2WD 6.8 Gas	$48,010	Gas	8,667	13
2024	Ford	F-350 XL 2WD 6.7 DSL	$58,005	DSL	8,667	15.6
2024	Ford	F-350 XL 2WD 6.7 DSL	$58,005	B20	8,667	15.6
2024	Ford	F-350 XL 2WD 6.8 CNG	$56,010	CNG	8,667	12.4

Table 12: 15YR Total Cost of Ownership Highway Diesel Light Commercial Department Options				
	Gasoline	**Diesel**	**B20**	**CNG**
Price Per Vehicle	$48,010	$58,005	$58,005	$56,010
Depreciation	$85,758	$103,611	$103,611	$100,048
Fuel	$56,941	$54,129	$52,051	$53,136
Diesel Exhaust Fluid	$0	$872	$872	$0
Maintenance and Repair	$83,094	$122,875	$122,875	$83,094
Insurance	$38,561	$43,722	$43,722	$42,692
License and Registration	$9,399	$9,399	$9,399	$9,399
Total Cost of Ownership	$273,752	$334,608	$332,530	$288,369

If a gasoline model provides sufficient capabilities for its designated use it is recommended from a total cost of ownership perspective as it is nearly $61,000 cheaper for 2 trucks over a 15-year period. If a diesel vehicle is required, the use of biodiesel does provide some cost savings opportunity compared to conventional diesel fuel. If it is possible to obtain CNG at facility buildings either through commercial utility rates or sourced from local landfill / wastewater treatment facilities could drastically reduce the operating cost through lower fuel costs. The biggest benefit of CNG compared to other fuel options is the large decrease in emissions. Gasoline generates the highest level of emissions, followed by diesel and B20 among the liquid fuels.

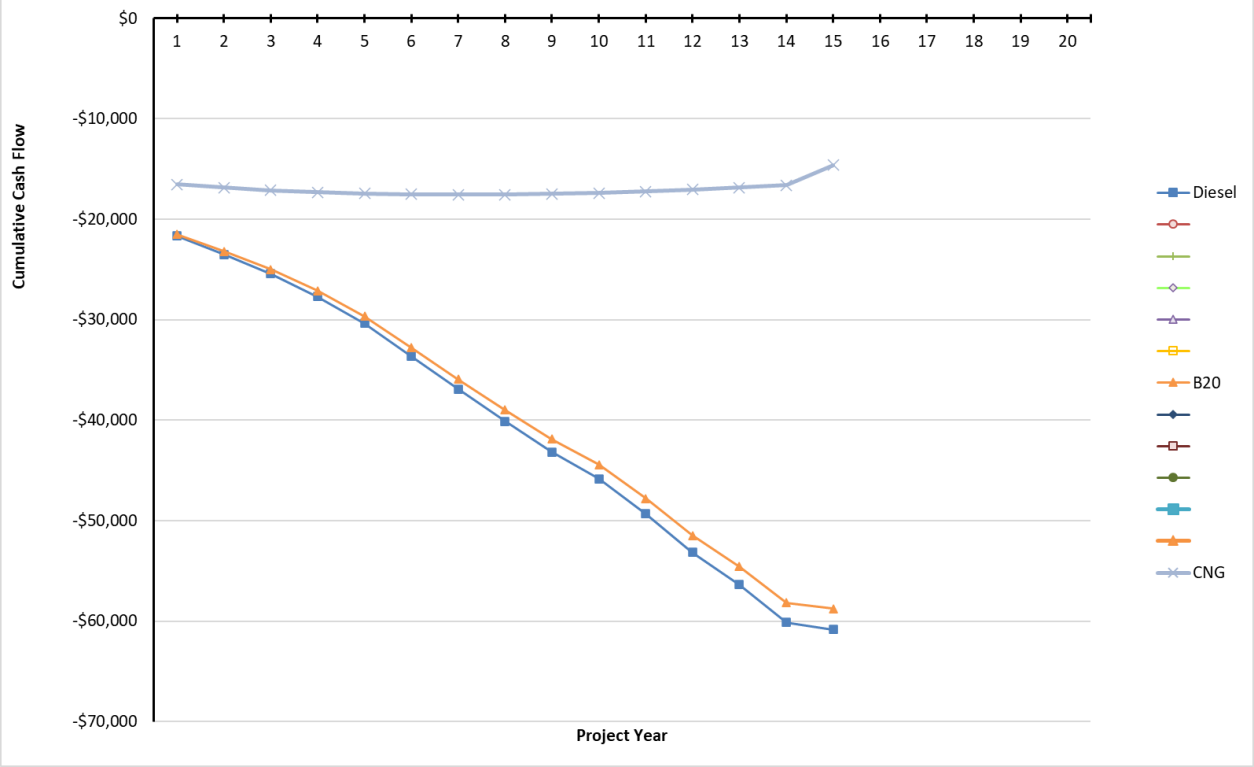


Figure 13: Highway Diesel Light Commercial Total Cost of Ownership Cumulative Cash Flow Compared to Gasoline

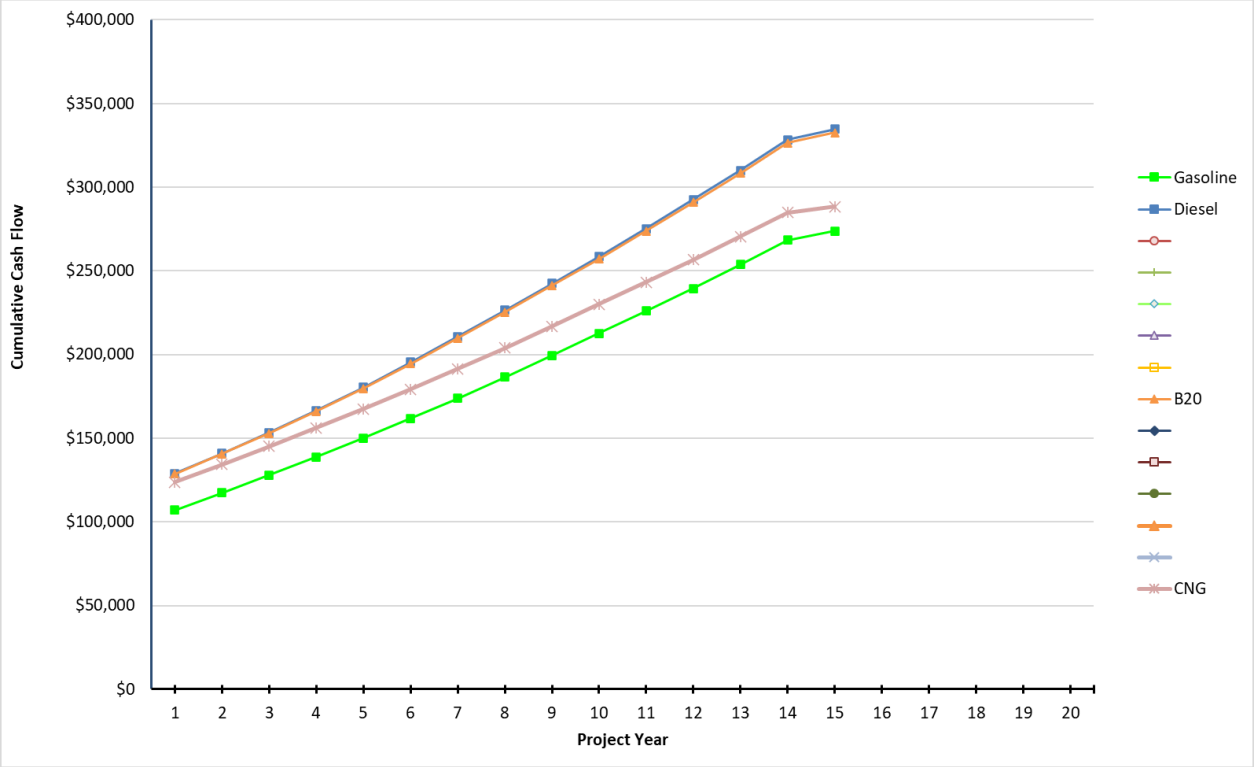


Figure 14: Highway Diesel Light Commercial Total Cost of Ownership Cumulative Cash Flow

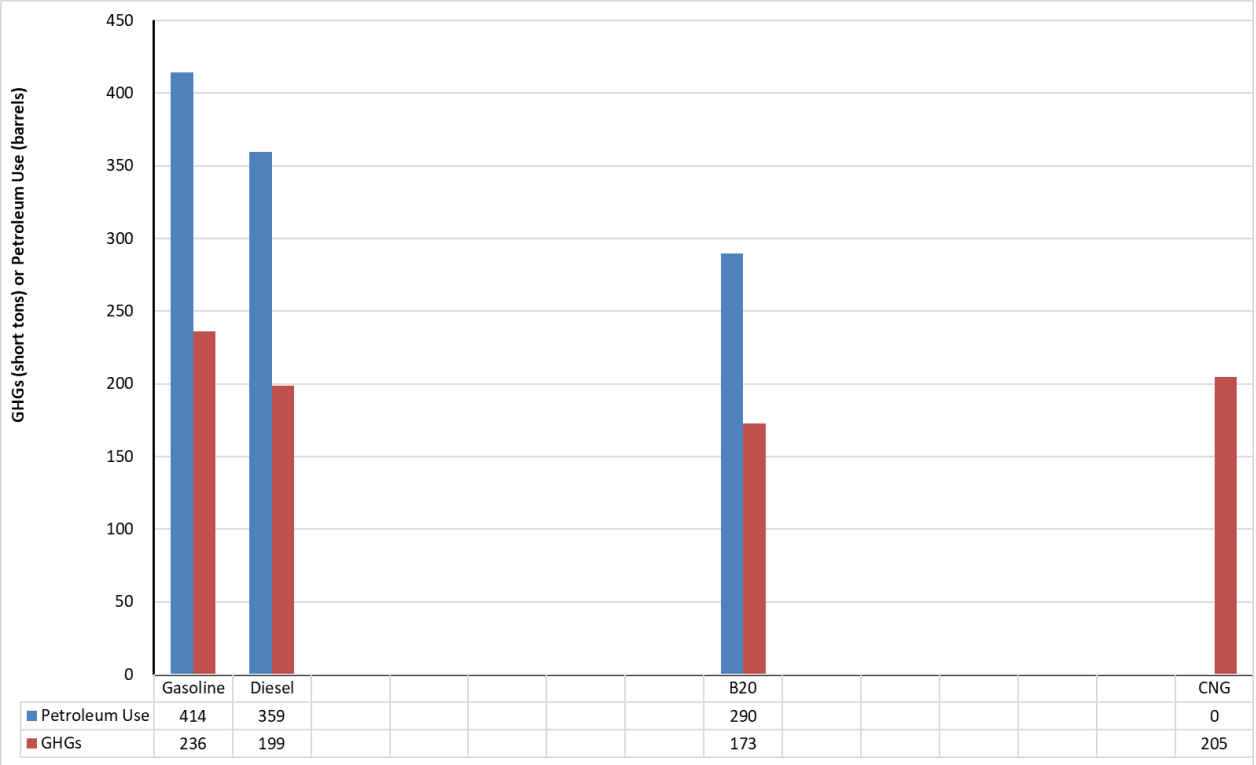
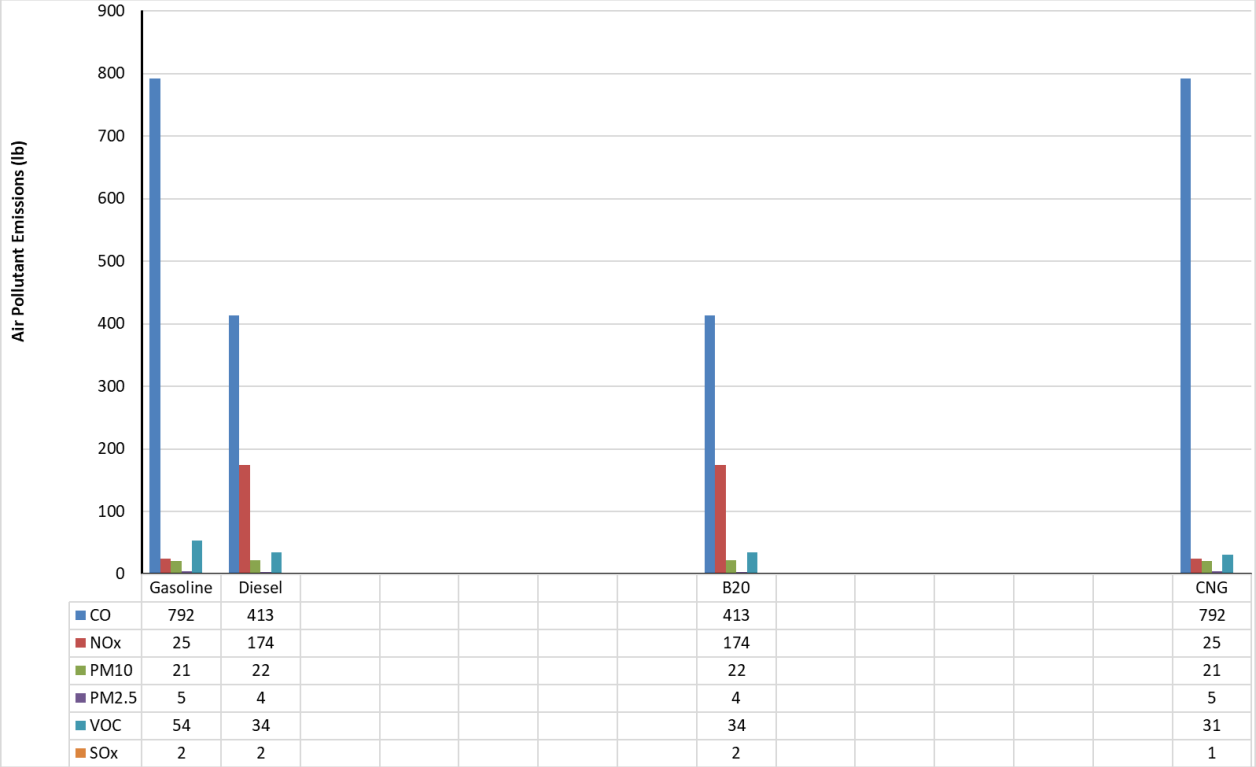


Figure 15: Highway Diesel Light Commercial Lifetime Well-to-Wheels Petroleum Use and GHG Emissions



	Gasoline	Diesel	B20	CNG
CO	792	413	413	792
NOx	25	174	174	25
PM10	21	22	22	21
PM2.5	5	4	4	5
VOC	54	34	34	31
SOx	2	2	2	1

Figure 16: Highway Diesel Light Commercial Lifetime Vehicle Operation Air-Pollutants

The highway department operates a single 2016 Ram 1500 equipped with the 3.0L diesel engine. This truck is only 7 years old but has accumulated over 161,000 miles. The calculated average daily miles of approximately 89 indicates that an electric truck may be feasible as a replacement in the near future. In order to calculate the footprint for this vehicle it is noted that the calculated fuel economy was 42 mpg based on provided information. To correct this issue the EPA rated fuel economy was used to estimate the number of gallons more likely to have been consumed.

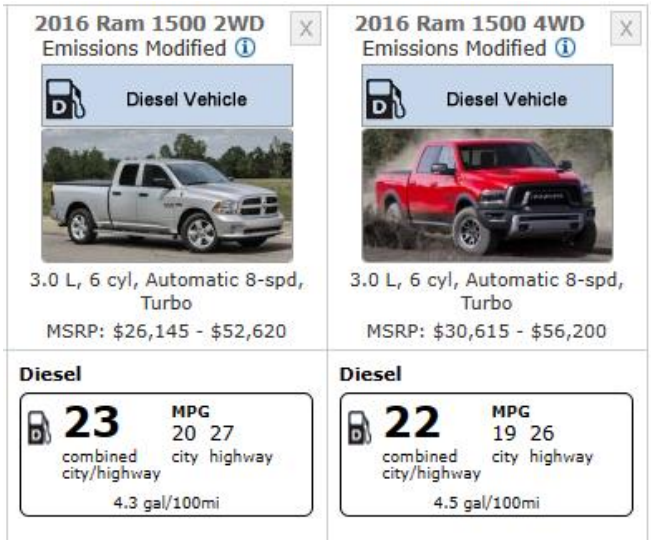


Figure 17: 2016 Ram 1500 Diesel EPA Fuel Economy Rating

Table 13: Highway Diesel Passenger Truck Fleet										
UNIT	Vehicle Model Year	Make	Model	Annual Miles	Annual Gallons	Odometer	Fuel Economy MPG	Age	Earliest Replacement Year	Latest Replacement Year
11	2016	Dodge Pickup Supt	ram 1500 3.0 ecodiesel	23,077	544	161,537	42	7	2031	2036

Table 14: Highway Diesel Passenger Truck Footprint		
	Current Year	Remaining Lifetime
Petroleum Use (barrels)	26.1	208.8
GHGs (short tons)	14.4	115.5
CO (lb)	76.4	733.0
NOx (lb)	24.0	193.8
PM10 (lb)	1.8	14.6
PM2.5 (lb)	0.4	2.8
VOC (lb)	3.5	28.8
SOx (lb)	0.2	1.3

Based on results from the analysis of the Facilities pickup truck options of various alternative fuels a similar analysis was performed for this potential replacement.

Table 15: Highwy Diesel Passenger Truck Options															
Year	Make	Model	Price	Type	Fuel Economy	Miles/Day	Battery Size (kWh)	Range (miles)	% left after 1 day	kW used	Time to full after 1 use (8 kW charger)	Time to full after 1 use (12 kW charger)	Days before a charger is needed	Time to full if empty (8kW charger)	Time to full is empty (12 kW charger)
2016	Dodge Pickup Supt	ram 1500 3.0 ecodiesel		Diesel	22	88.76									
2024	Chevrolet	Silverado	$49,995	Gas -4cyl	20										
2024	Chevrolet	Silverado	$52,385	Diesel	26										
2024	Ford	F-150	$52,325	HEV	25										
2025	Ford	Lightning	$49,995	BEV	68	88.76	123	240	63.0%	45.49	341 minutes	227 minutes	2	15.4 hours	10.3 hours

Table 16: 15YR Total Cost of Ownership Facilities Department Options					
	2024 Chevrolet Silverado LT 2WD 4CYL Gas	2024 Chevrolet Silverado LT 2WD 6CYL DSL	2024 Chevrolet Silverado LT 2WD 6CYL B20	2024 Ford F-150 XLT 2WD HEV	2024 Ford F-150 Lightning Pro
Price Per Vehicle	$49,995	$52,385	$52,385	$52,325	$49,995
Depreciation	$44,652	$46,786	$46,786	$46,733	$44,652
Fuel	$49,274	$43,237	$41,578	$39,419	$15,548
Diesel Exhaust Fluid	$0	$697	$697	$0	$0
Maintenance and Repair	$77,132	$114,059	$114,059	$70,513	$48,629
Insurance	$19,793	$20,410	$20,410	$20,394	$19,793
License and Registration	$1,320	$1,320	$1,320	$2,310	$2,640
Total Cost of Ownership	$192,171	$226,510	$224,850	$179,369	$131,262

By making the switch from the current 2016 Ram to a current model year electric Ford Lightning would provide over $60,000 in savings over the new vehicles 15-year operational life. In comparison to currently available diesel pickups the Ford Lightning would save over $95,000 dollars over 15 years. These savings would start immediately upon the deployment of the vehicle in year one compared to the current vehicle or any other alternative fuel option.

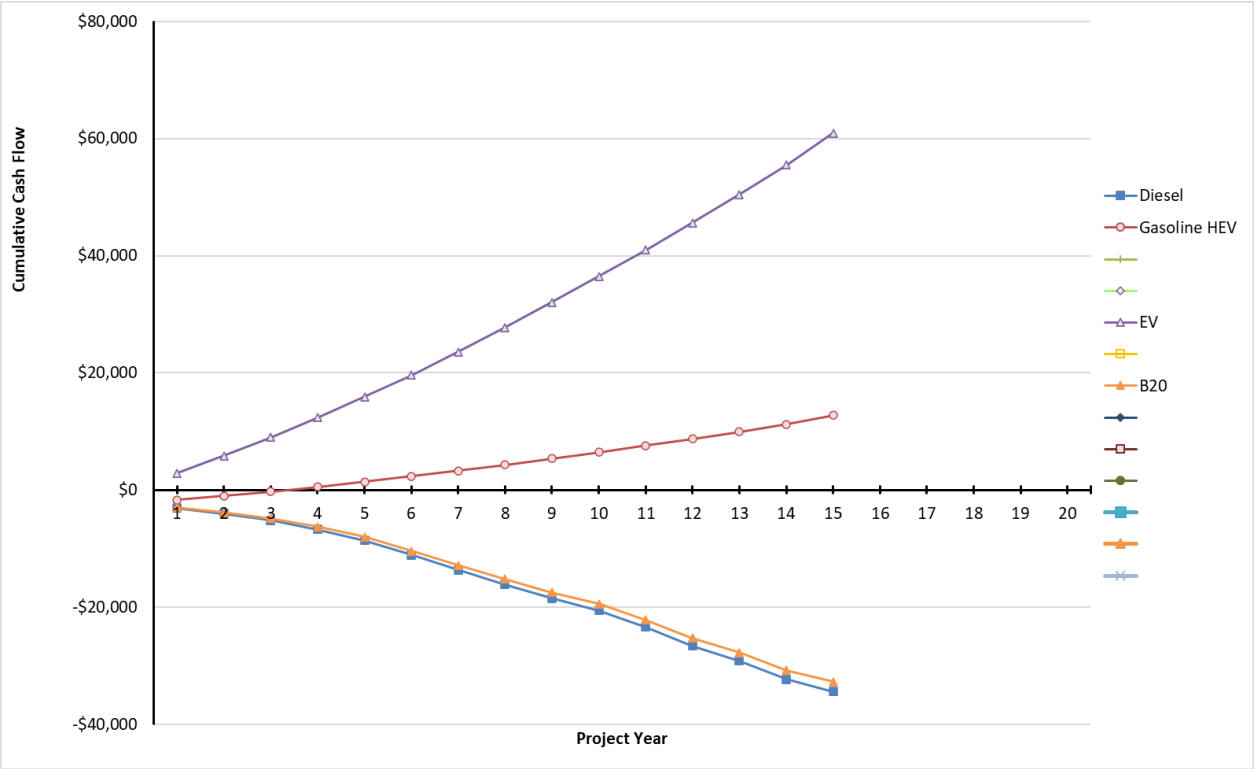


Figure 18: Highway Diesel Passenger Truck Total Cost of Ownership Cumulative Cash Flow Compared to Gasoline

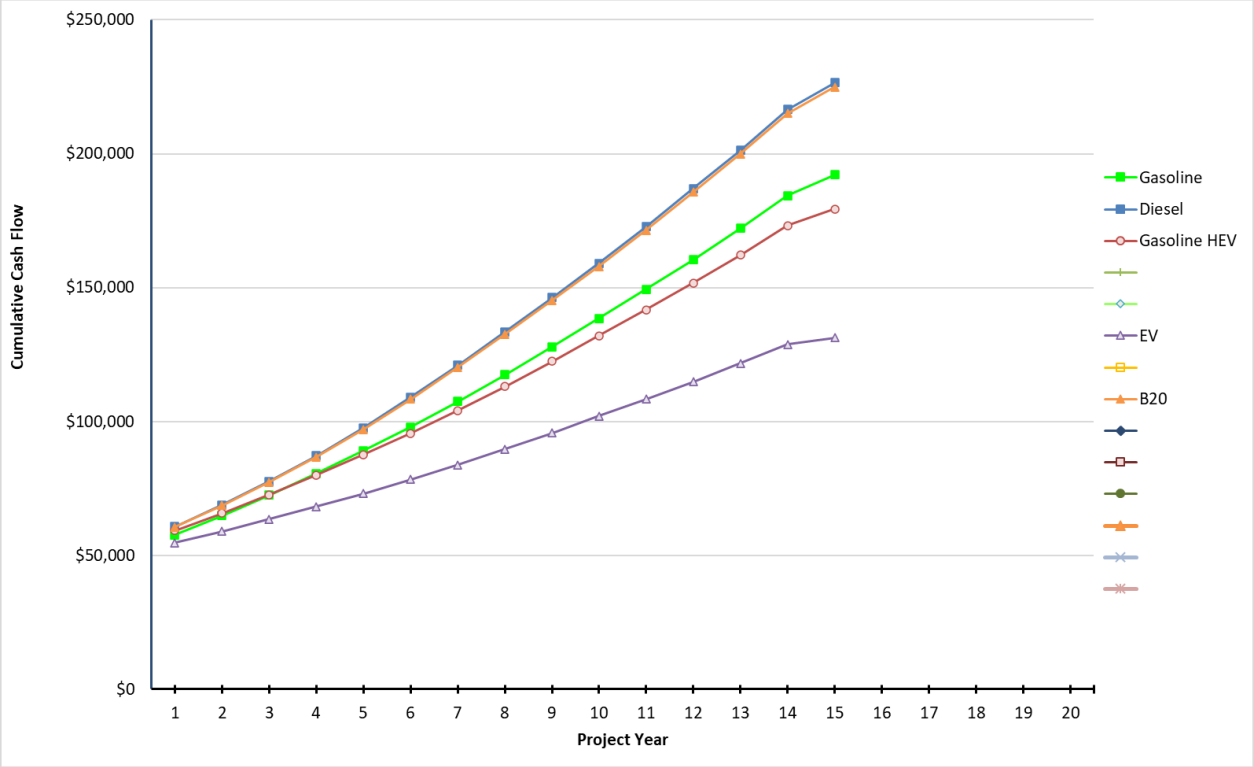
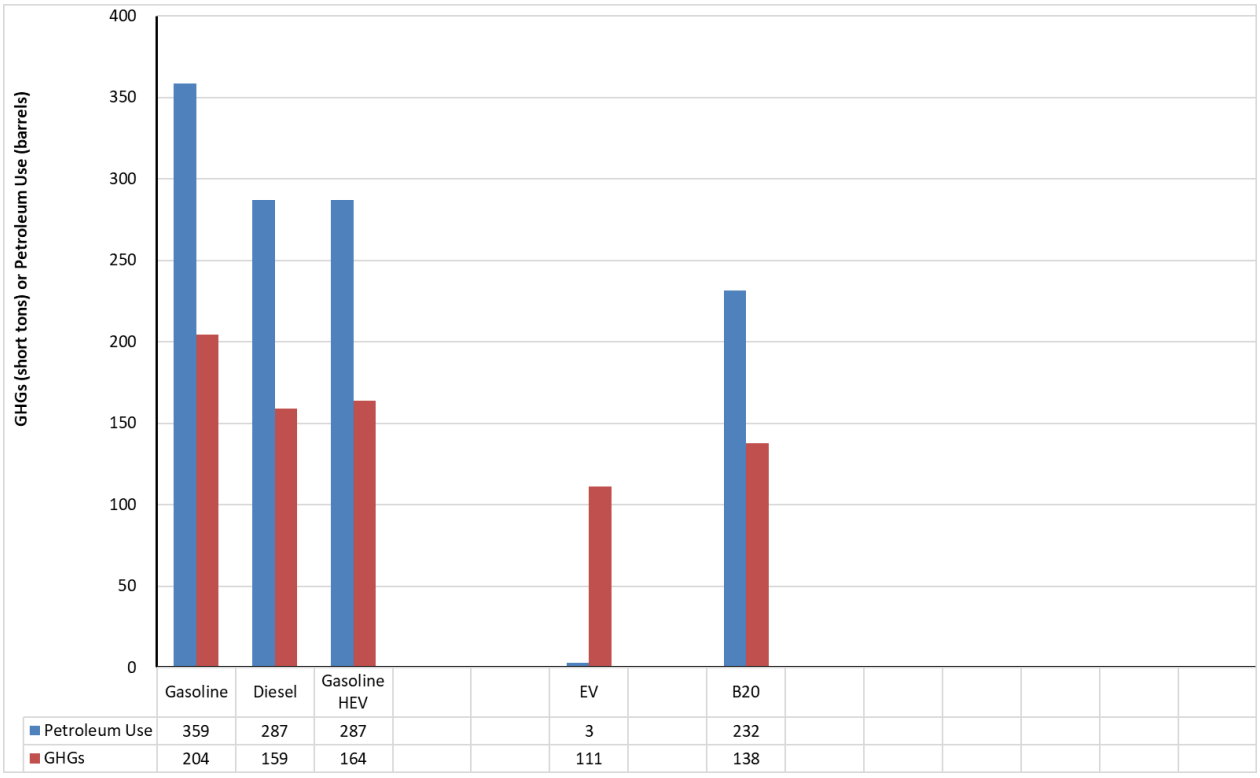


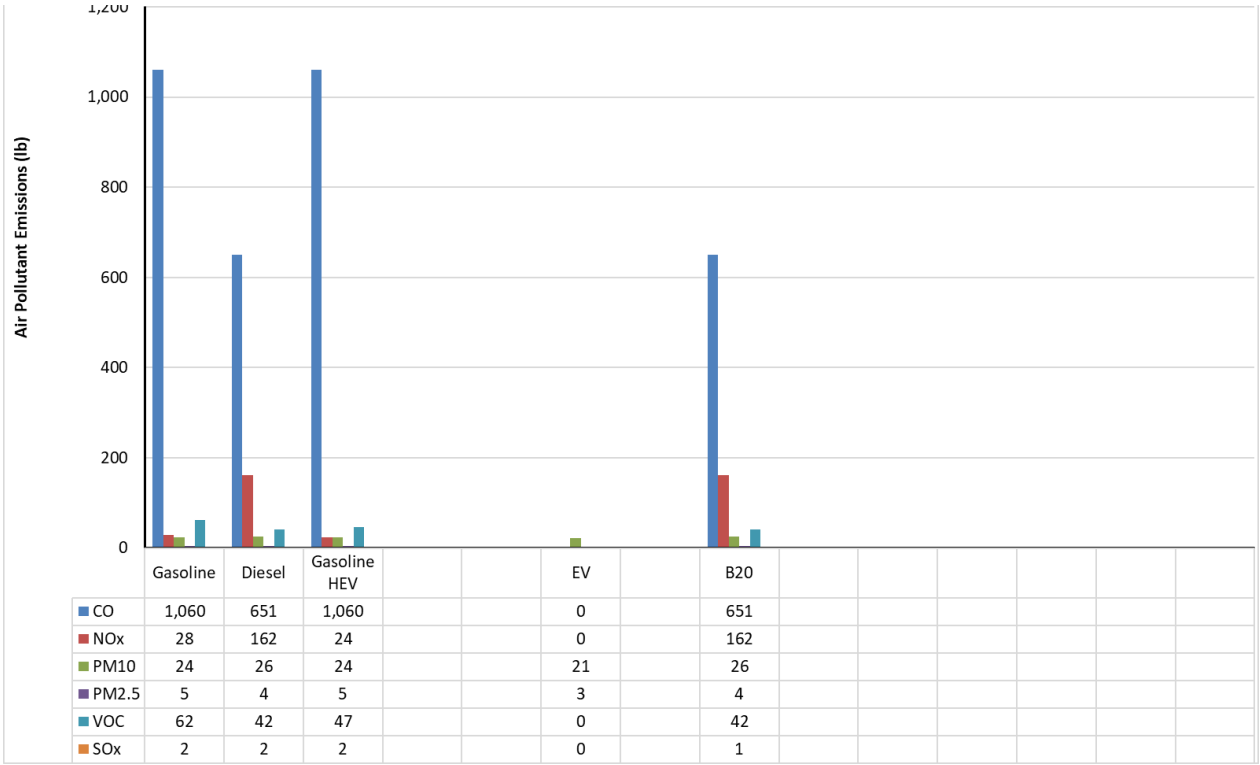
Figure 19: Highway Diesel Passenger Truckl Total Cost of Ownership Cumulative Cash Flow

Conversion to an electric pickup provides massive emissions benefits compared to all other options. The high number of miles travelled annually by this vehicle increases emissions generated by gasoline, diesel, and B20 options.



	Gasoline	Diesel	Gasoline HEV	EV	B20
Petroleum Use	359	287	287	3	232
GHGs	204	159	164	111	138

Figure 20: Highway Diesel Passenger Truck Lifetime Well-to-Wheels Petroleum Use and GHG Emissions



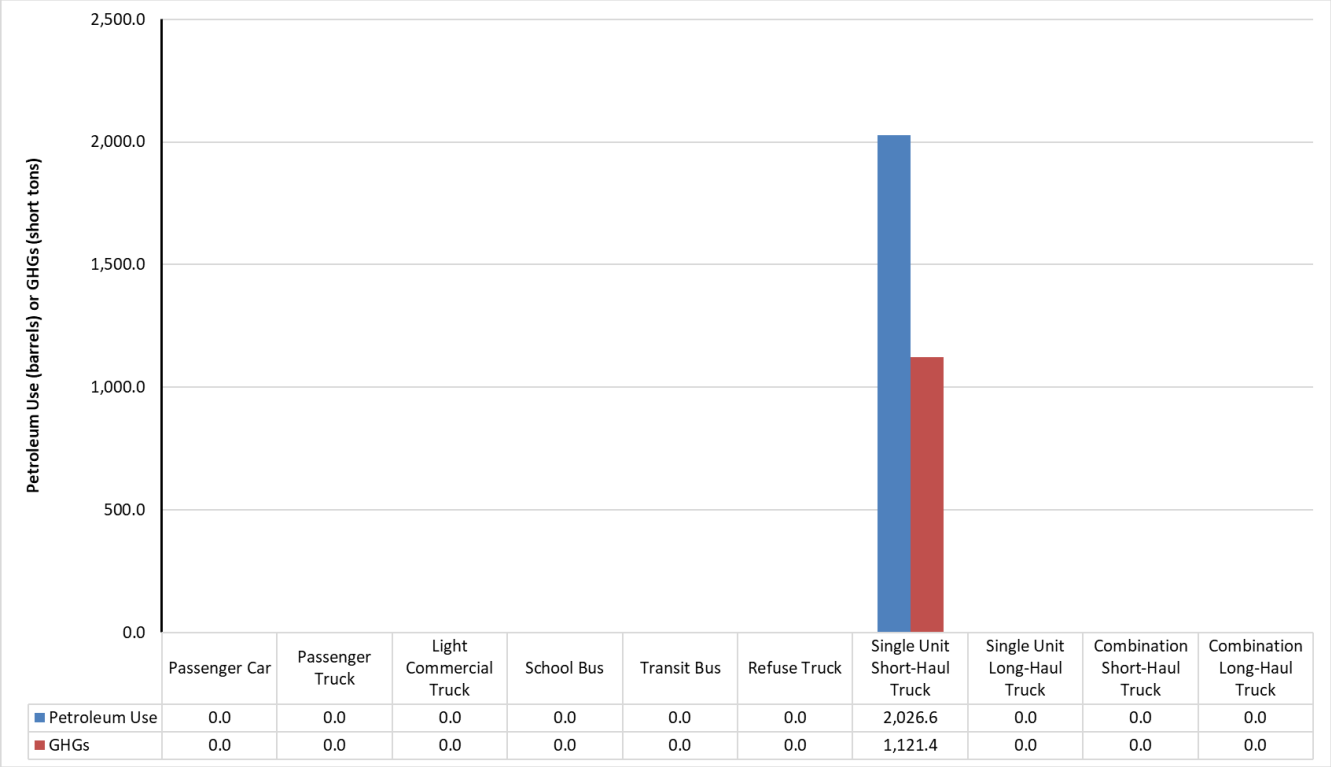
	Gasoline	Diesel	Gasoline HEV	EV	B20
CO	1,060	651	1,060	0	651
NOx	28	162	24	0	162
PM10	24	26	24	21	26
PM2.5	5	4	5	3	4
VOC	62	42	47	0	42
SOx	2	2	2	0	1

Figure 21: Highway Diesel Passenger Truck Lifetime Vehicle Operation Air-Pollutants

The largest vehicle group among all departments classified by AFLEET as diesel single unit short haul trucks operated by the highway department. This group consists of 53 vehicles most of these are various makes and models of dump truck, but also includes sign trucks, water/brine trucks, and flatbeds. The dump trucks that are present in the fleet include single, double, and triple axle models. In review of vehicle ages the fleet 64% of the vehicles are less than 15 years old, the remaining 19 range in age from 16 to 29 years old. With the wide variety of ages, high current odometer readings, and vehicle types additional information would be required to complete a full report for the highway department's dump trucks. Information that would need to be collected relates to vehicle replacement rates (number of vehicles planned to be replaced per year), details on how equipment is currently fueled – centralized facility, retail station, or facilities across the county, and a discussion related to prioritization for new equipment between single, double, or triple axle models. A conversion to alternative fuels would bring potential cost and emissions savings benefits, however it would also require understanding of current and needed fueling infrastructure. This report will provide details on current year and remaining life footprint for these vehicles and can be discussed as a future work opportunity.

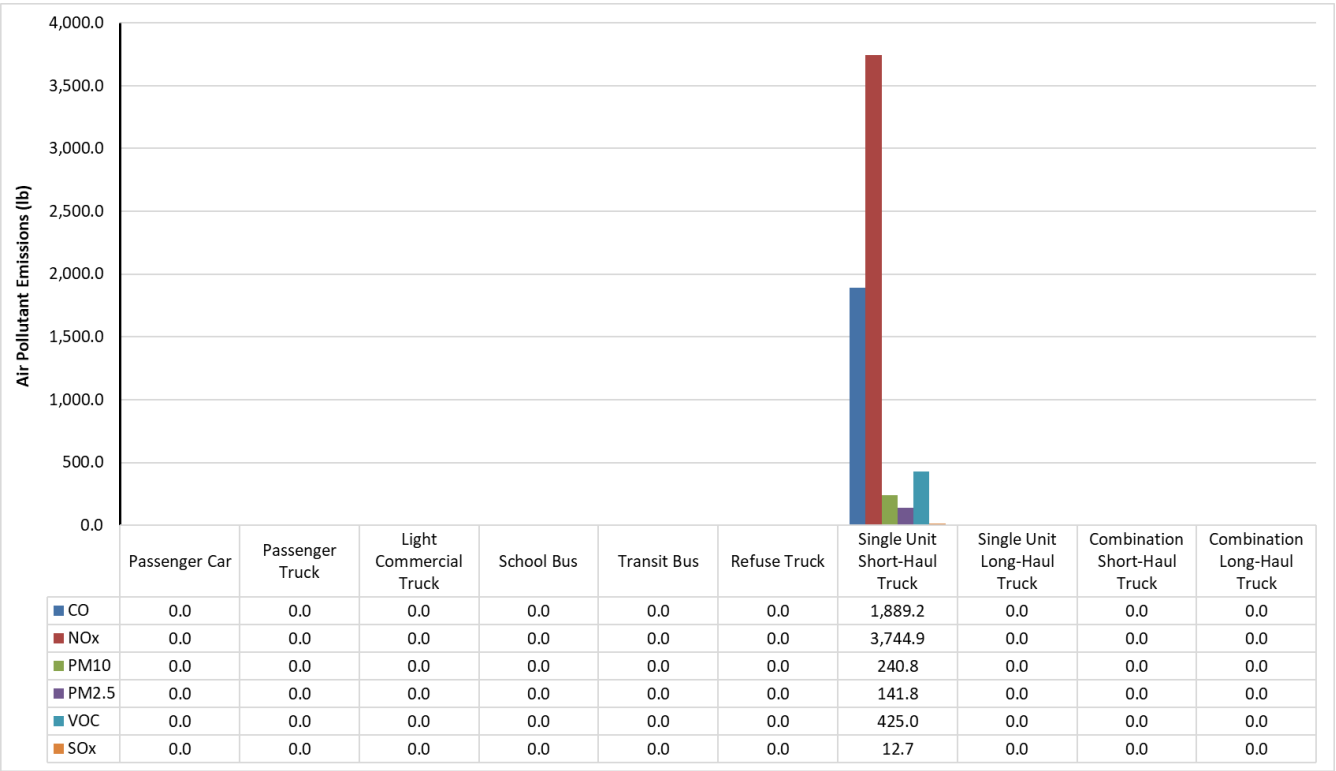
Table 17: Highwy Diesel Single Unit Short Haul Footprint

	Current Year	Remaining Lifetime
Petroleum Use (barrels)	2,026.6	12,382.4
GHGs (short tons)	1,121.4	6,851.9
CO (lb)	1,889.2	7,258.7
NOx (lb)	3,744.9	9,867.7
PM10 (lb)	240.8	622.6
PM2.5 (lb)	141.8	120.8
VOC (lb)	425.0	919.3
SOx (lb)	12.7	77.4



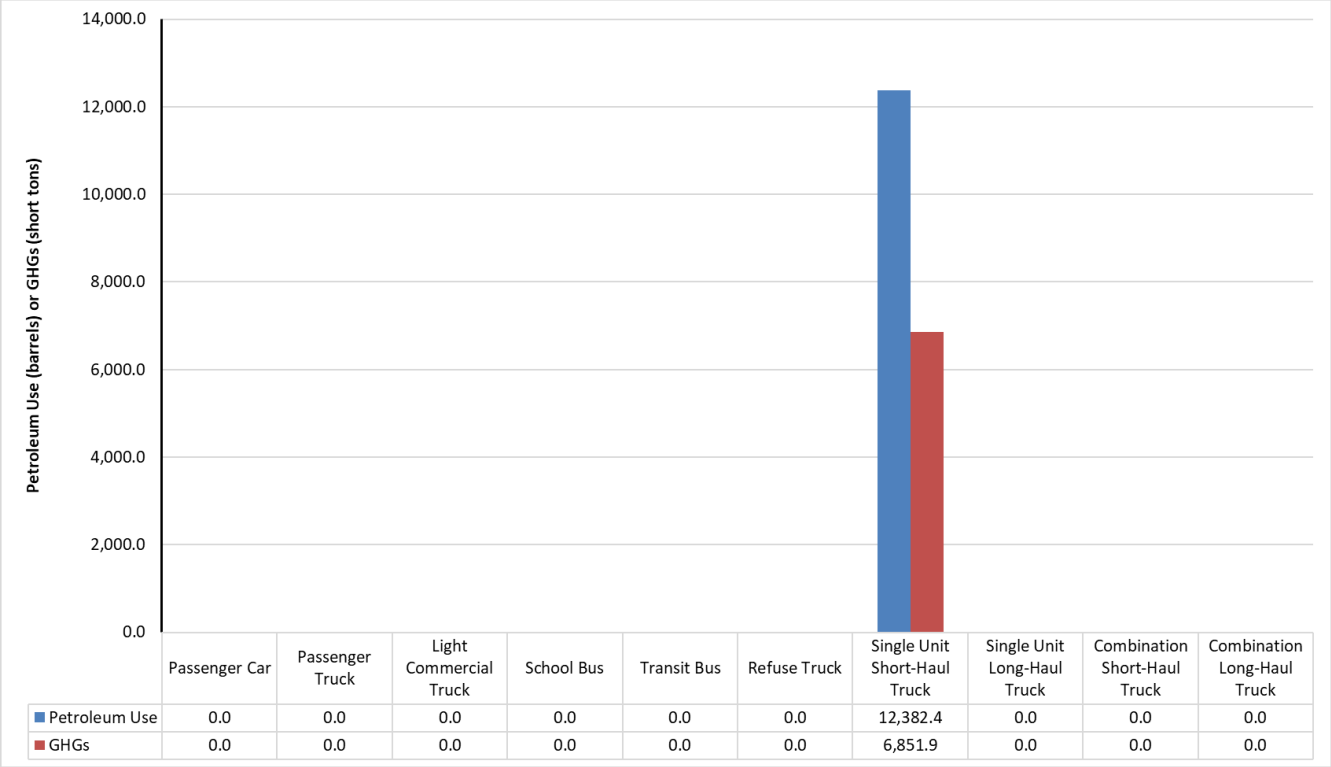
	Passenger Car	Passenger Truck	Light Commercial Truck	School Bus	Transit Bus	Refuse Truck	Single Unit Short-Haul Truck	Single Unit Long-Haul Truck	Combination Short-Haul Truck	Combination Long-Haul Truck
Petroleum Use	0.0	0.0	0.0	0.0	0.0	0.0	2,026.6	0.0	0.0	0.0
GHGs	0.0	0.0	0.0	0.0	0.0	0.0	1,121.4	0.0	0.0	0.0

Figure 22: Highway Diesel Single Unit Short Haul Current Year Well-to-Wheels Petroleum Use and GHG Emissions



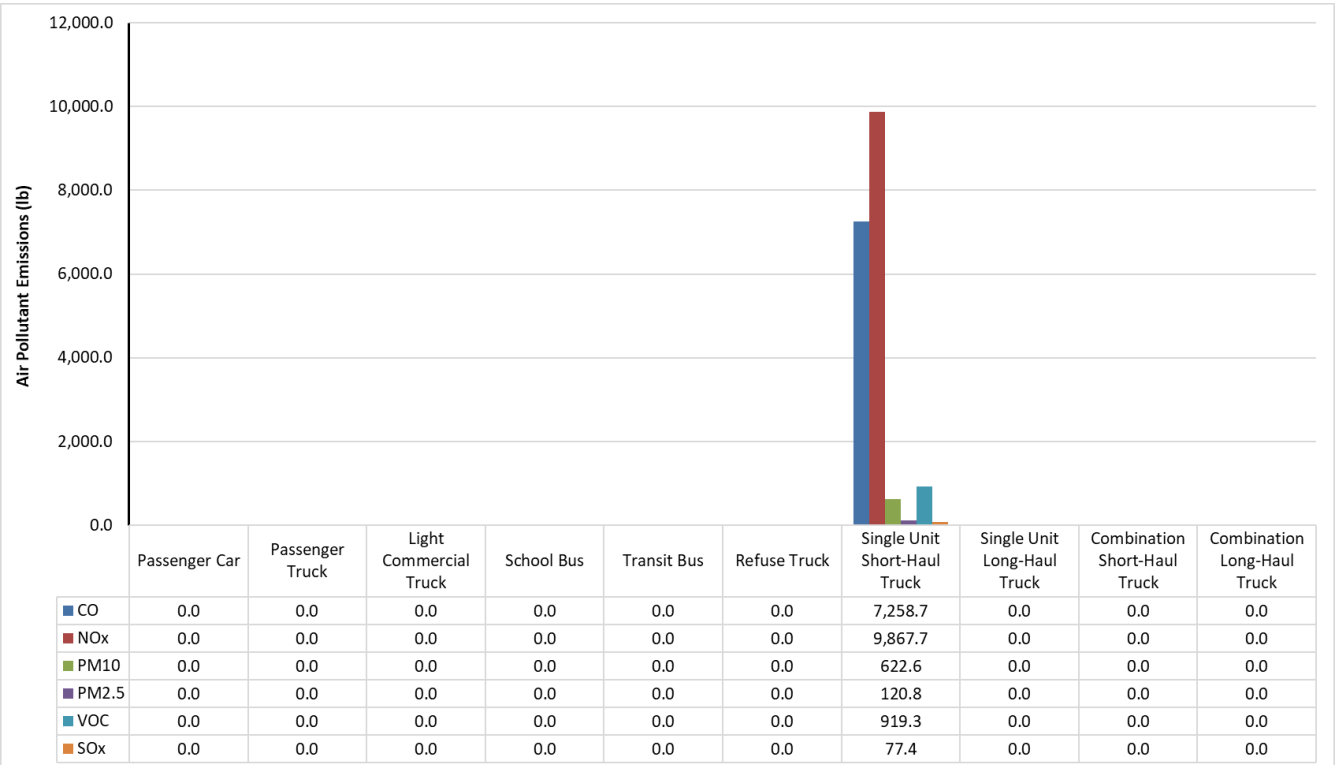
	Passenger Car	Passenger Truck	Light Commercial Truck	School Bus	Transit Bus	Refuse Truck	Single Unit Short-Haul Truck	Single Unit Long-Haul Truck	Combination Short-Haul Truck	Combination Long-Haul Truck
CO	0.0	0.0	0.0	0.0	0.0	0.0	1,889.2	0.0	0.0	0.0
NOx	0.0	0.0	0.0	0.0	0.0	0.0	3,744.9	0.0	0.0	0.0
PM10	0.0	0.0	0.0	0.0	0.0	0.0	240.8	0.0	0.0	0.0
PM2.5	0.0	0.0	0.0	0.0	0.0	0.0	141.8	0.0	0.0	0.0
VOC	0.0	0.0	0.0	0.0	0.0	0.0	425.0	0.0	0.0	0.0
SOx	0.0	0.0	0.0	0.0	0.0	0.0	12.7	0.0	0.0	0.0

Figure 23: Highway Diesel Single Unit Short Haul Current Year Vehicle Operational Air Pollutants



	Passenger Car	Passenger Truck	Light Commercial Truck	School Bus	Transit Bus	Refuse Truck	Single Unit Short-Haul Truck	Single Unit Long-Haul Truck	Combination Short-Haul Truck	Combination Long-Haul Truck
Petroleum Use	0.0	0.0	0.0	0.0	0.0	0.0	12,382.4	0.0	0.0	0.0
GHGs	0.0	0.0	0.0	0.0	0.0	0.0	6,851.9	0.0	0.0	0.0

Figure 24: Highway Diesel Single Unit Short Haul Remaining Lifetime Year Well-to-Wheels Petroleum Use and GHG Emissions



	Passenger Car	Passenger Truck	Light Commercial Truck	School Bus	Transit Bus	Refuse Truck	Single Unit Short-Haul Truck	Single Unit Long-Haul Truck	Combination Short-Haul Truck	Combination Long-Haul Truck
CO	0.0	0.0	0.0	0.0	0.0	0.0	7,258.7	0.0	0.0	0.0
NOx	0.0	0.0	0.0	0.0	0.0	0.0	9,867.7	0.0	0.0	0.0
PM10	0.0	0.0	0.0	0.0	0.0	0.0	622.6	0.0	0.0	0.0
PM2.5	0.0	0.0	0.0	0.0	0.0	0.0	120.8	0.0	0.0	0.0
VOC	0.0	0.0	0.0	0.0	0.0	0.0	919.3	0.0	0.0	0.0
SOx	0.0	0.0	0.0	0.0	0.0	0.0	77.4	0.0	0.0	0.0

Figure 25: Highway Diesel Single Unit Short Haul Remaining Lifetime Vehicle Operational Air Pollutants

The Highway Department operates 6 vehicles classified as gasoline fueled light commercial consisting of one E-350 passenger van and five ¾ and 1 ton trucks. All of these vehicles are over 13 years except for unit 13 which is new. Based on current annual vehicle miles travelled it is unlikely that the E-350 van will reach 125,000 miles prior to 20 years of operation so only footprint was calculated for this vehicle. Several BEV shuttle vans are currently available and the market should expand with viable options available at the time of replacement. All older trucks in this category have over 125,000 miles and should be considered for replacement.

Table 18: Highway Gas Light Commercial Truck Fleet

UNIT	Vehicle Model Year	Make	Model	Annual Miles	Annual Gallons	Odometer	Fuel Economy MPG	Age	Earliest Replacement Year	Latest Replacement Year
6	2009	Ford Passenger Van	E-350 5.4L	4,459	209	62,432	21	14	2024	2029
7	2010	Dodge Pickup	ram 2500 5.7L	15,370	777	199,803	20	13	2025	2030
13	2023	¾ ton Dodge Pickup	Ram 2500HD 6.4L V8	2,706		2,706		0	2038	2043
29	1997	Chev Truck	K2500 5.7L	4,811	869	125,084	6	26	2012	2017
30	2005	Chev Pickup dump	K3500 6.0L	15,316	1,468	275,683	10	18	2020	2025
31	2005	Chev Pickup dump	K3500 6.0L	10,103	1,110	181,858	9	18	2020	2025

Table 19: Highwy Gas Light Commercial Footprint

	Current Year	Remaining Lifetime
Petroleum Use (barrels)	97.5	120.6
GHGs (short tons)	55.6	68.8
CO (lb)	1,107.0	487.0
NOx (lb)	83.9	15.0
PM10 (lb)	4.8	6.0
PM2.5 (lb)	1.6	1.5
VOC (lb)	54.1	23.1
SOx (lb)	0.5	0.7

Following the methodology used for the light diesel commercial truck group a total cost of ownership and emissions analysis was performed for the replacement for four of the gas light commercial trucks.

Table 20: Highway Gas Light Commercial Options

Year	Make	Model	Price	Type	Annual VMT	Fuel Economy
2010	Dodge Pickup	ram 2500 5.7L		Gas	15,370	19.8
1997	Chev Truck	K2500 5.7L		Gas	4,811	5.5
2005	Chev Pickup dump	K3500 6.0L		Gas	15,316	10.4
2005	Chev Pickup dump	K3500 6.0L		Gas	10,103	9.1
2024	Ford	F-350 XL 2WD 6.8 Gas	$48,010	Gas	11,400	13
2024	Ford	F-350 XL 2WD 6.7 DSL	$58,005	DSL	11,400	15.6
2024	Ford	F-350 XL 2WD 6.7 DSL	$58,005	B20	11,400	15.6
2024	Ford	F-350 XL 2WD 6.8 CNG	$56,010	CNG	11,400	12.4

Table 21: 15YR Total Cost of Ownership Highway Gas Light Commercial Department Options				
	Gasoline	**Diesel**	**B20**	**CNG**
Price Per Vehicle	$48,010	$58,005	$58,005	$56,010
Depreciation	$171,516	$207,223	$207,223	$200,096
Fuel	$149,793	$142,394	$136,928	$139,784
Diesel Exhaust Fluid	$0	$2,295	$2,295	$0
Maintenance and Repair	$218,593	$323,242	$323,242	$218,593
Insurance	$77,122	$87,444	$87,444	$85,384
License and Registration	$18,798	$18,798	$18,798	$18,798
Total Cost of Ownership	$635,820	$781,396	$775,930	$662,653

Gasoline provides the lowest total cost of ownership for the replacement of 4 trucks at $635,820 over 15 years. This is over $145,000 less than the TCO cost for replacement with similar diesel vehicles. If diesel is required based on capacity the operational use of biodiesel could save $5,466 over 15 years at current pricing. From an environmental perspective if CNG is a viable option it can provide significant emissions reduction opportunities. As noted above fuel costs can be reduced depending on sourcing and fueling system implementation to be competitive or less than gasoline alternatives.

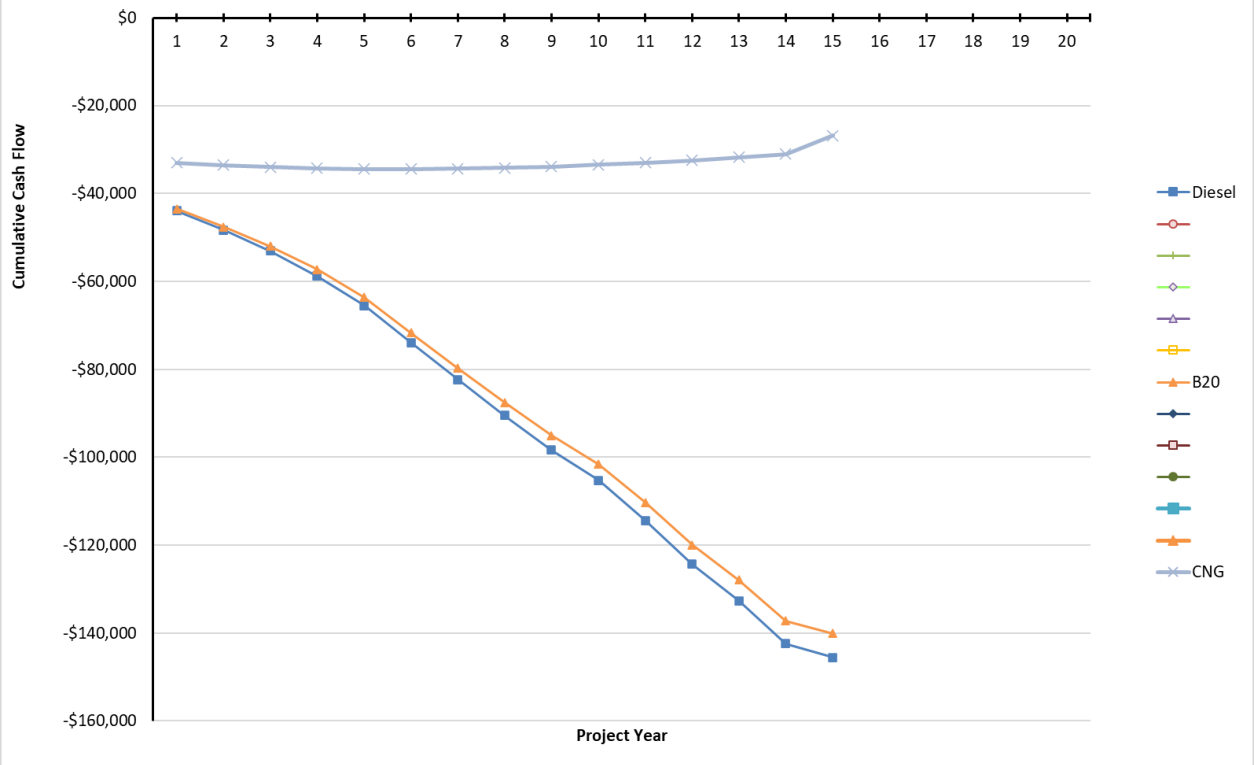


Figure 26: Highway Gasoline Light Commercial Total Cost of Ownership Cumulative Cash Flow Compared to Gasoline

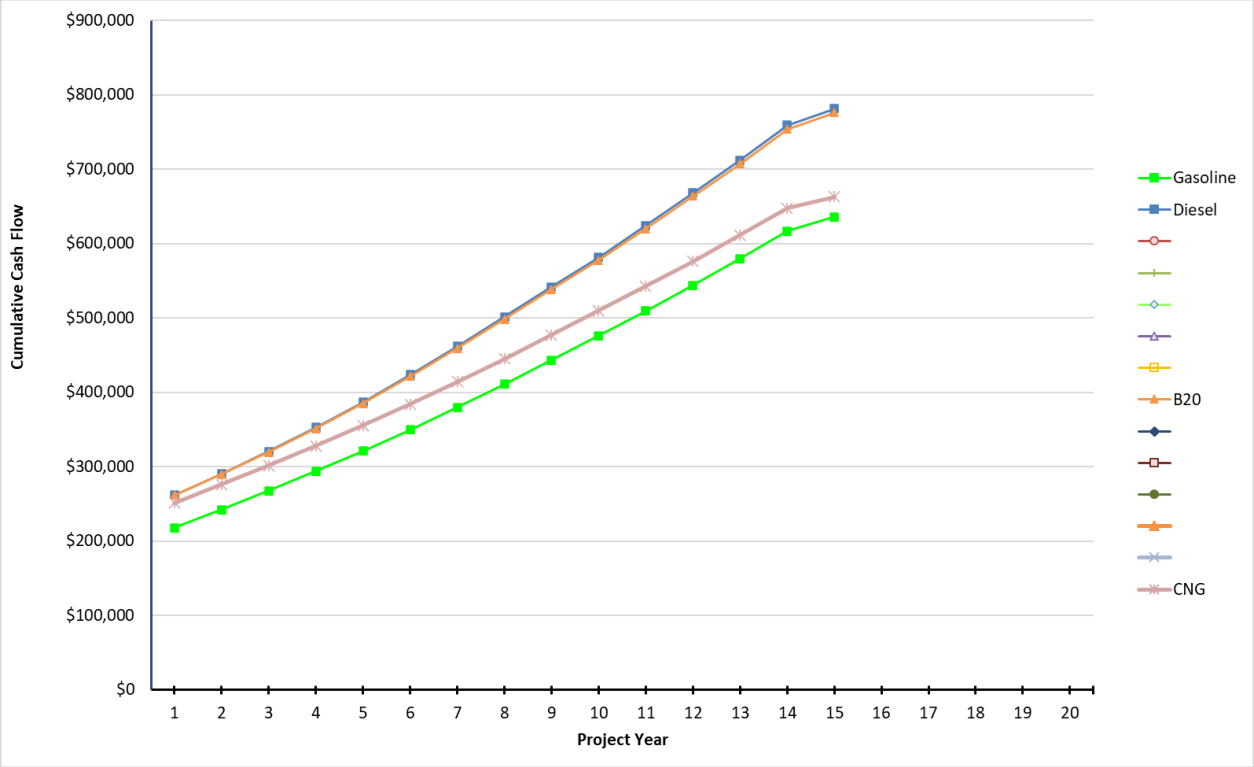


Figure 27: Highway Gasoline Light Commercial Total Cost of Ownership Cumulative Cash Flow

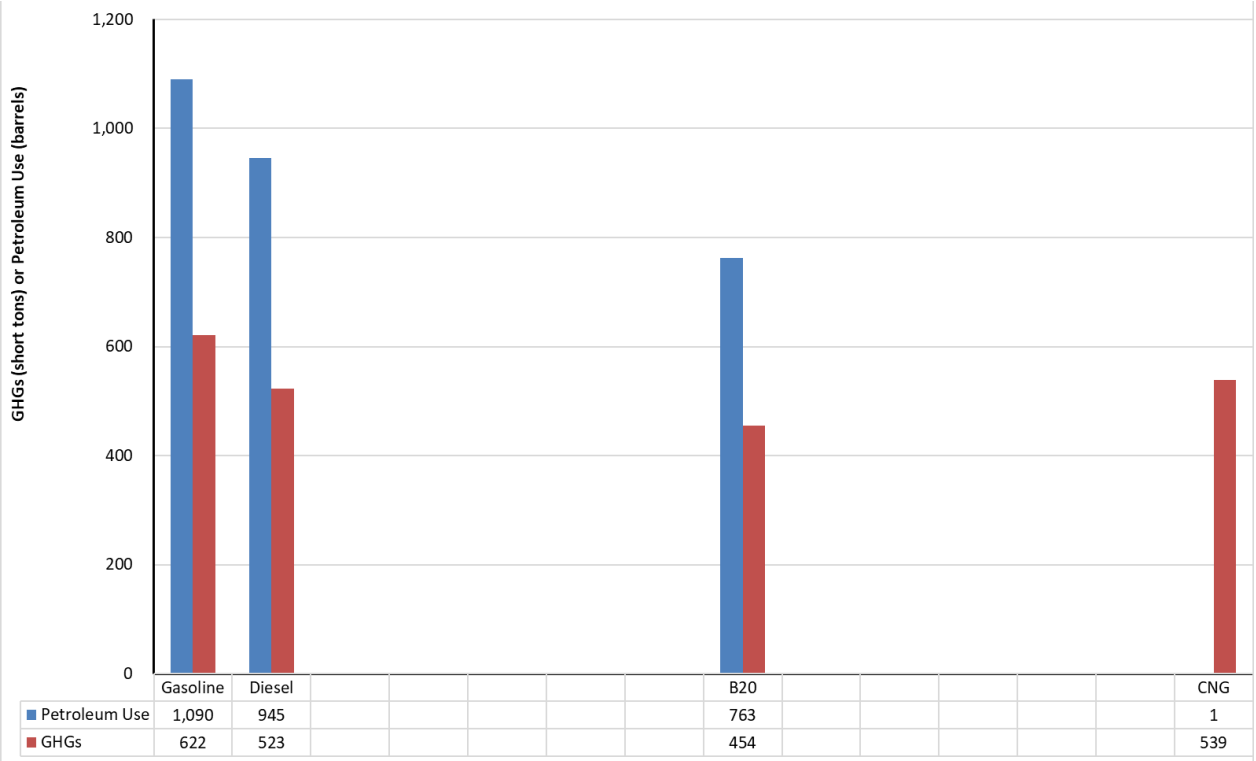


Figure 28: Highway Gasoline Light Commercial Lifetime Well-to-Wheels Petroleum Use and GHG Emissions

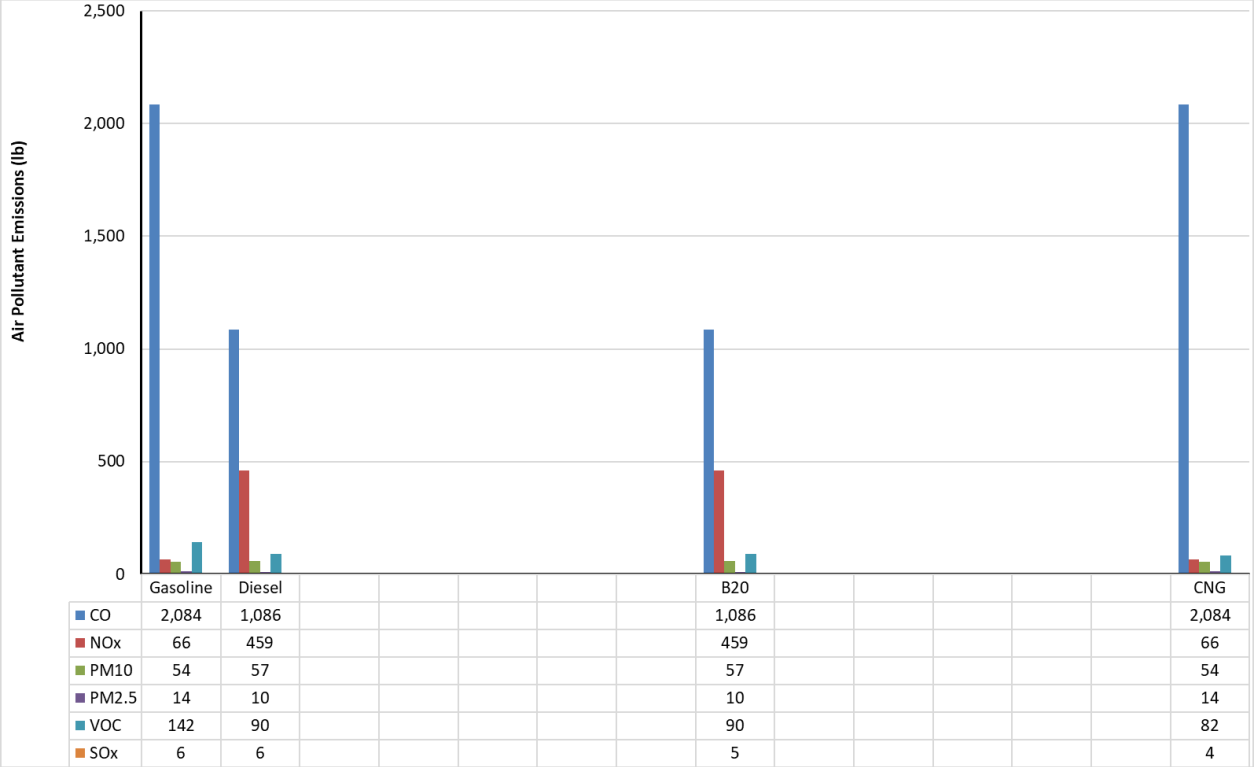


Figure 29: Highway Gasoline Light Commercial Lifetime Vehicle Operation Air-Pollutants

The Highway Department gas passenger truck fleet consists of eight trucks ranging in age from 1 to 12 years old and averaging 20,851 miles annually. These trucks are equipped with V-6 and V-8 engines. Several of these vehicles had a calculated fuel economy over 29 mpg. As this is likely an error a value of 17 mpg was used to calculate a corrected annual fuel consumption value for use in footprint analysis for those units highlighted yellow in the table below.

Table 22: Highway Gas Passenger Truck Fleet

UNIT	Vehicle Model Year	Make	Model	Annual Miles	Annual Gallons	Odometer	Fuel Economy MPG	Age	Earliest Replacement Year	Latest Replacement Year
1	2021	Dodge Pickup	ram 1500 3.6L	10,196	606.5	20,391	17	2	2036	2041
2	2012	Dodge Pickup	ram 1500 4.7L	14,977	479.1	164,742	31	11	2027	2032
4	2011	Dodge Pickup	ram 1500 4.7L	21,629	697.49	259,550	31	12	2026	2031
5	2020	Ford Cty Supt Pickup	f-150 5.0L	26,958	1,584.62	80,873	17	3	2035	2040
9	2022	Dodge Pickup Supt	ram 1500 5.7L	37,003	937.17	37,003	39	1	2037	2042
10	2018	Ford Pickup	F-150 5.0L	24,454	1,452.08	122,270	17	5	2033	2038
12	2019	Ford Pickup supt	F-150 5.0L	20,065	695.97	80,260	29	4	2034	2039
14	2020	Ford Pickup	f-150 5.0L	11,527	969.23	34,582	12	3	2035	2040

Table 23: Highwy Gas Passenger Footprint		
	Current Year	Remaining Lifetime
Petroleum Use (barrels)	209.7	2,151.6
GHGs (short tons)	119.6	1,226.9
CO (lb)	706.6	7,568.0
NOx (lb)	21.2	226.1
PM10 (lb)	11.8	124.1
PM2.5 (lb)	2.7	31.7
VOC (lb)	32.1	361.8
SOx (lb)	1.1	11.7

An analysis was performed for the replacement of units 2 and 4 which are both over 10 years old and well over the 125,000 mile reading on their odometers. Future consideration should be placed on replacement of unit 10 which will exceed 125,000 miles next year as well as any that will approach that value in the next two years. Units 2 and 4 on average travel 70 miles per day. This is well within the range of a electric Ford Lightning Pickup. The average annual miles for these trucks is 18,303.

Table 24: Highwy Gas Passenger Truck Options

Year	Make	Model	Price	Type	Fuel Economy	Miles/Day	Battery Size (kWh)	Range (miles)	% left after 1 day	kW used	Time to full after 1 use (8 kW charger)	Time to full after 1 use (12 kW charger)	Days before a charger is needed	Time to full if empty (8kW charger)	Time to full is empty (12 kW charger)
2012	Dodge Pickup	ram 1500 4.7L		Gas	31	58									
2011	Dodge Pickup	ram 1500 4.7L		Gas	31	83									
2024	Chevrolet	Silverado	$49,995	Gas -4cyl	20										
2024	Chevrolet	Silverado	$52,385	Diesel	26										
2024	Ford	F-150	$52,325	HEV	25										
2025	Ford	Lightning	$49,995	BEV	68	70	123	240	70.8%	35.88	269 minutes	179 minutes	3	15.4 hours	10.3 hours

Table 25: 15YR Total Cost of Ownership Highway Gas Passenger Truck Department Options					
	2024 Chevrolet Silverado LT 2WD 4CYL Gas	2024 Chevrolet Silverado LT 2WD 6CYL DSL	2024 Chevrolet Silverado LT 2WD 6CYL B20	2024 Ford F-150 XLT 2WD HEV	2024 Ford F-150 Lightning Pro
Price Per Vehicle	$49,995	$52,385	$52,385	$52,325	$49,995
Depreciation	$89,304	$93,573	$93,573	$93,466	$89,304
Fuel	$78,161	$68,585	$65,953	$62,529	$24,662
Diesel Exhaust Fluid	$0	$1,106	$1,106	$0	$0
Maintenance and Repair	$122,352	$180,927	$180,927	$111,851	$77,139
Insurance	$39,586	$40,820	$40,820	$40,789	$39,586
License and Registration	$2,640	$2,640	$2,640	$4,620	$5,280
Total Cost of Ownership	$332,043	$387,650	$385,017	$313,255	$235,971

As with other vehicle segments a conversion of older gas or diesel vehicles to an electric option can provide a large amount of savings and emissions impact even compared to currently available options. In this case the replacement of the 2 oldest gas passenger trucks with two Ford Lightnings would save over $96,000 during a 15 year period. Compared to a diesel option, the savings are even greater at over $151,000.

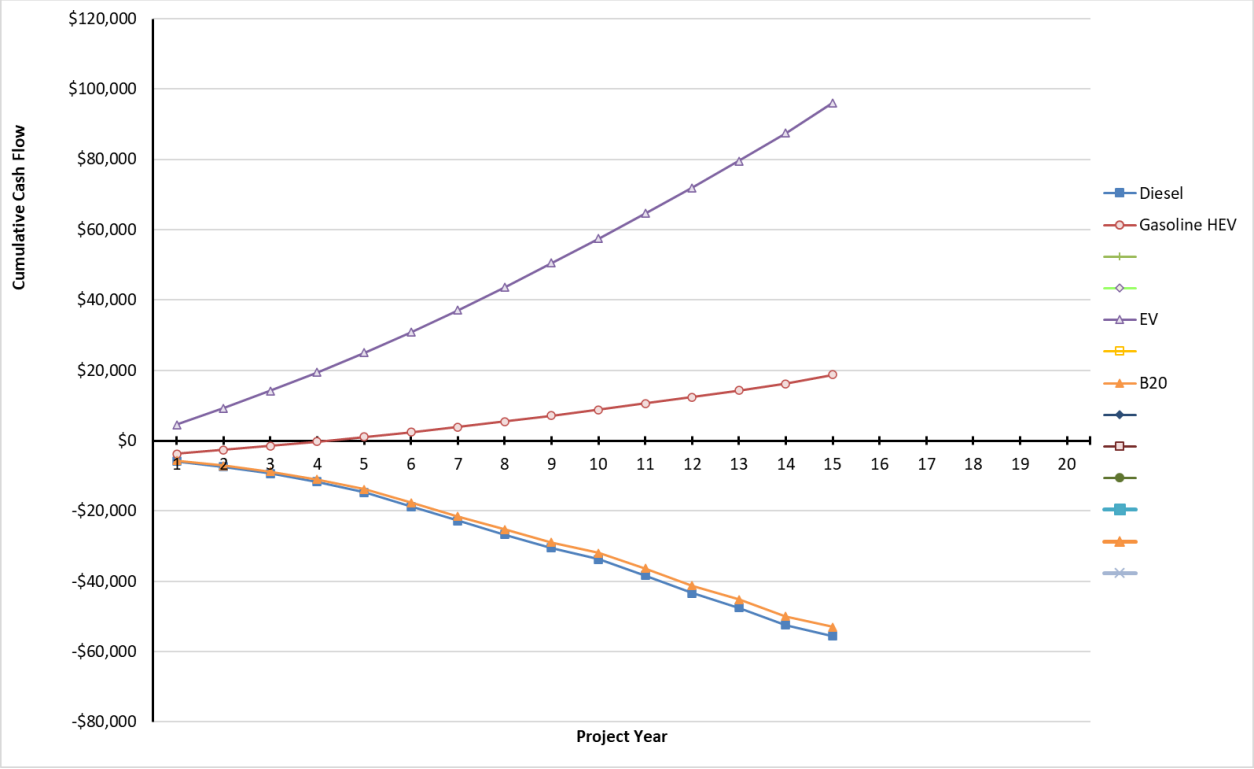


Figure 30: Highway Gasoline Passenger Truck Total Cost of Ownership Cumulative Cash Flow Compared to Gasoline

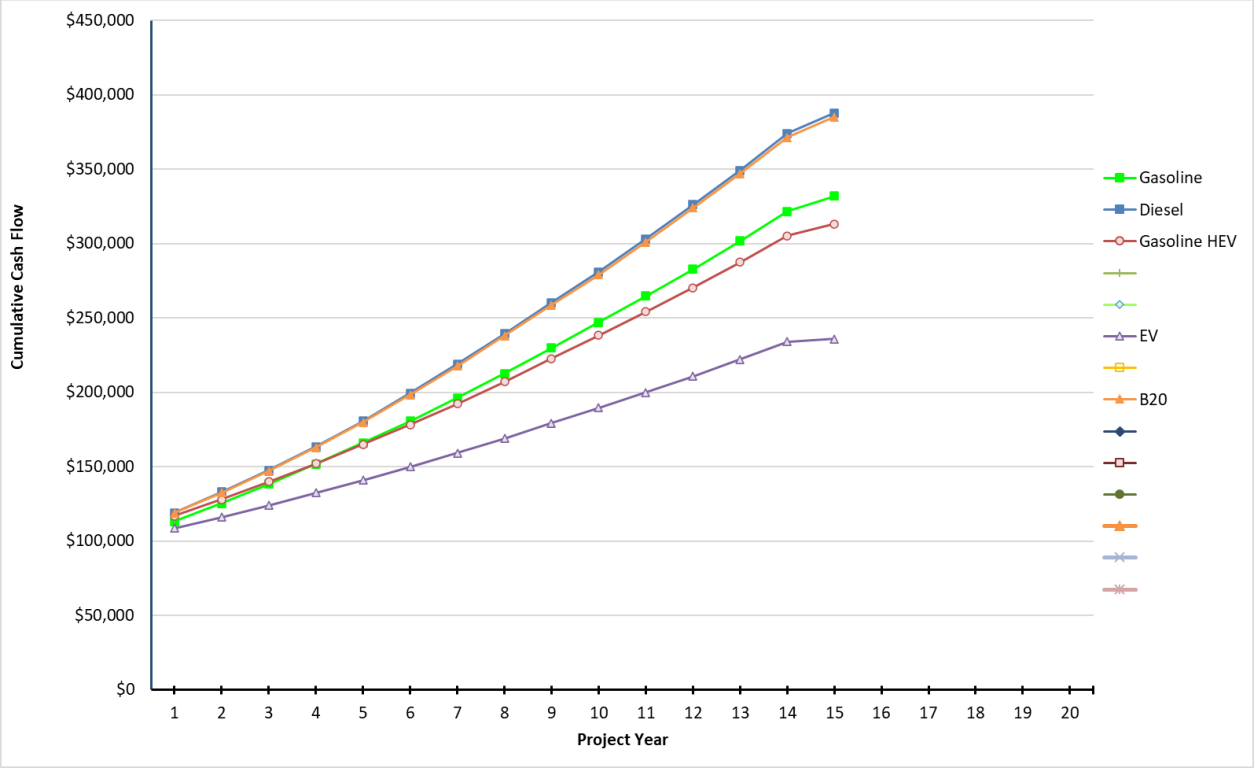
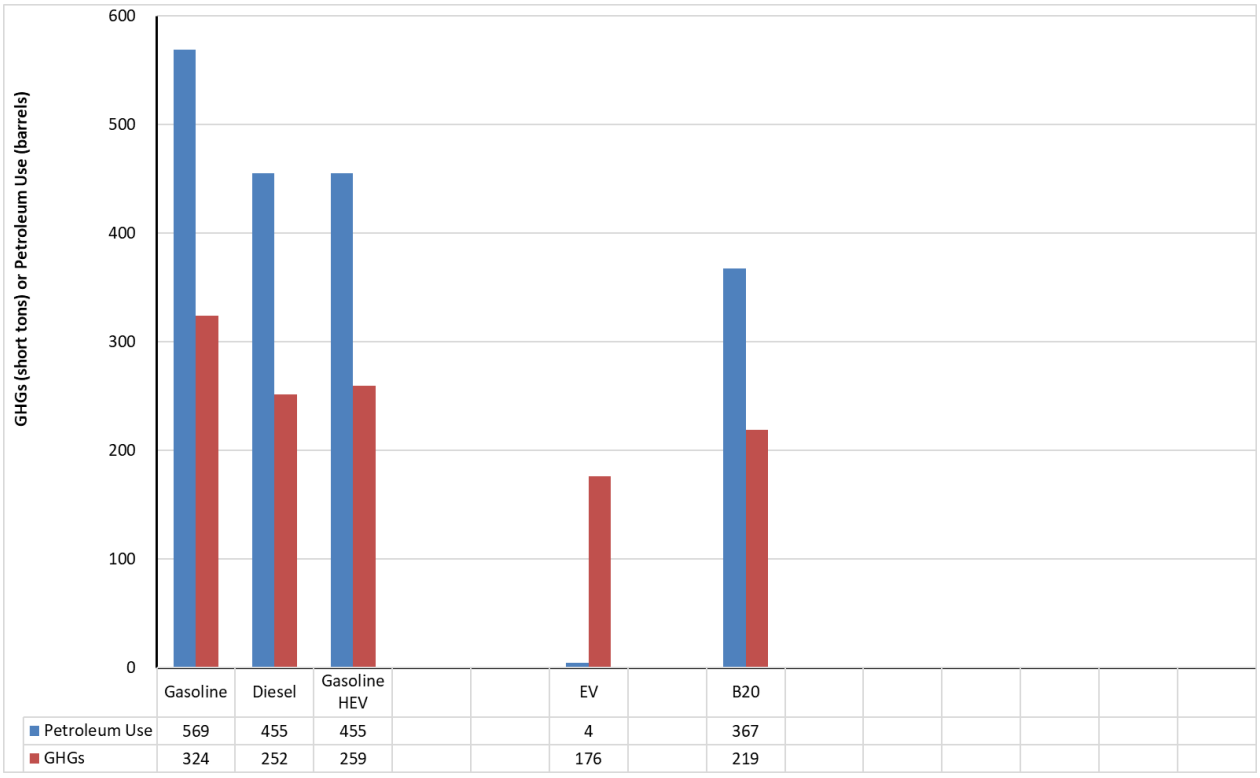
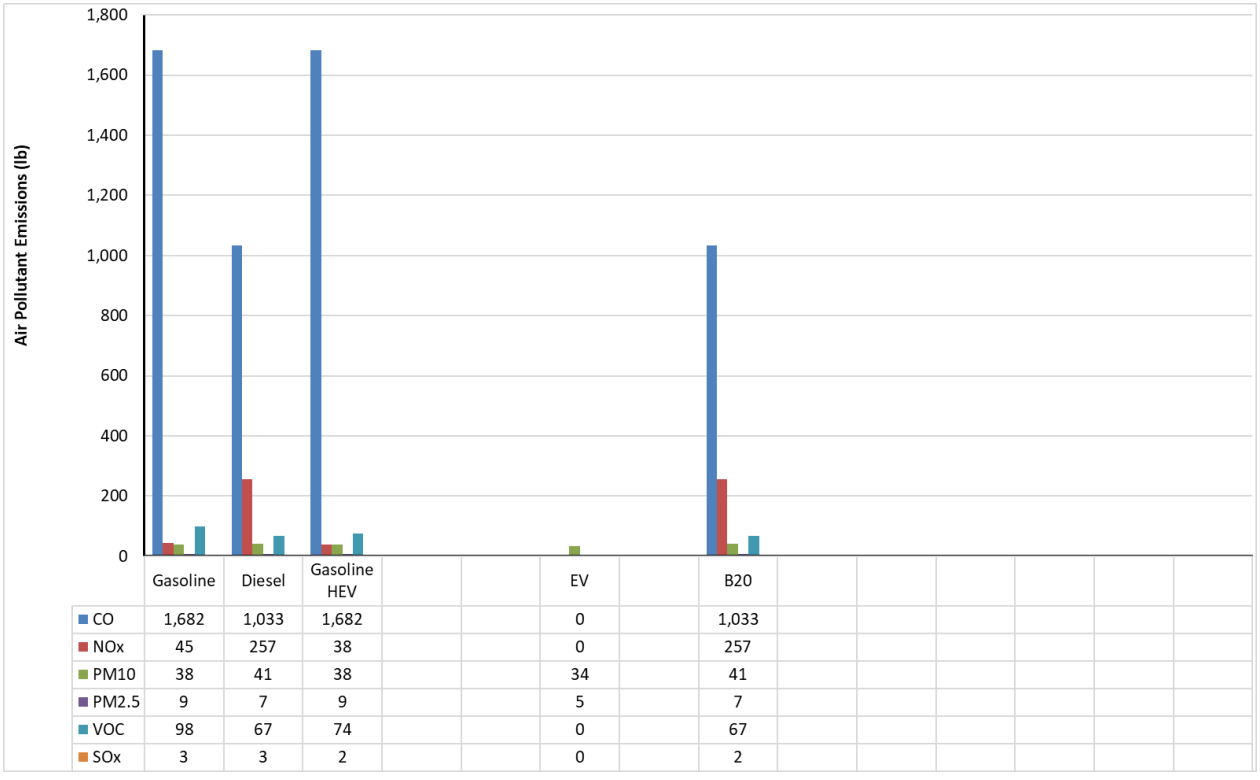


Figure 31: Highway Gasoline Passenger Truck Total Cost of Ownership Cumulative Cash Flow



	Gasoline	Diesel	Gasoline HEV			EV		B20
Petroleum Use	569	455	455			4		367
GHGs	324	252	259			176		219

Figure 32: Highway Gasoline Passenger Truck Lifetime Well-to-Wheels Petroleum Use and GHG Emissions



	Gasoline	Diesel	Gasoline HEV			EV		B20
CO	1,682	1,033	1,682			0		1,033
NOx	45	257	38			0		257
PM10	38	41	38			34		41
PM2.5	9	7	9			5		7
VOC	98	67	74			0		67
SOx	3	3	2			0		2

Figure 33: Highway Gas Passenger Truck Commercial Lifetime Vehicle Operation Air-Pollutants

The last Highway Department vehicle segment consists of two ¾ ton trucks that have been setup as bi-fuel gasoline and LP gas. Estimation was done in order to calculate the footprint for this category as provided annual vehicle miles traveled was significantly different than calculated for both vehicles. This affected calculated fuel economy and gallons consumed. The values used for estimation are provided in the table below. Footprint values were determined assuming that all fuel consumed was LPG.

Table 26: Highway Gas/LP Light Commercial Truck Fleet

UNIT	Vehicle Model Year	Make	Model	Annual Miles	Annual Gallons	Odometer	Fuel Economy MPG	Age	Corrected VMT	Corrected Fuel Economy	Estimated Gallons	Earliest Replacement Year	Latest Replacement Year
3	2014	Ford Pickup	F-250 6.2L	9,733	51	187,601	190	9	20,845	16	1,303	2029	2034
8	2015	Dodge Pickup	ram 2500 5.7L	159,375	1,011	127,479	158	8	15,935	16	1,011	2030	2035

Table 27: Highwy Gas Passenger Footprint

	Current Year	Remaining Lifetime
Petroleum Use (barrels)	9.8	62.8
GHGs (short tons)	18.0	116.0
CO (lb)	261.0	2,054.5
NOx (lb)	8.5	60.3
PM10 (lb)	3.0	19.7
PM2.5 (lb)	0.8	4.9
VOC (lb)	6.8	47.0
SOx (lb)	0.0	0.0

These vehicles have traveled over 125,000 miles, however the earliest age based replacement year may be 2029. As both of these vehicles are already using what is likely a dedicated LPG fueling system discussion should be had related to LPG pricing that is being paid currently and use this value to update analysis for other fleet segments that use similar vehicles. If LPG is likely to be phased out analysis can be performed to compare alternatives.

Sheriffs Department

The provided Sheriffs Department fleet includes 29 Police Interceptor-SUVs, two Ford Fusions, and two Dodge Grand Caravans. 12 of the SUVs are noted as being brand new and were provided without annual gallons or vehicle miles travelled. This information was available for the remaining 17 SUVs. For footprint analysis the average fuel economy from units with data was used to calculate an estimated value of gallons consumed for those without data. Based on the date when information was provided it was assumed that mileage for the 12 SUVs without annual VMT was approximately equal to 1 years worth of mileage. Calculated fuel economy for the Grand Caravans indicated likely errors in the data provided, EPA fuel economy was used to calculate updated fuel consumption values for foot print calculations. No vehicles in this fleet are old enough to consider for replacement and all are leased instead of purchased.

Table 28: Sheriffs Department SUV No VMT Fleet

UNIT	Vehicle Model Year	Make	Model	Annual Miles	Annual Gallons	Odometer	Fuel Economy MPG	Age	Estimated VMT	Estimated Fuel Economy	Estimated Gallons
106	2023	Ford	Explorer	NA	NA	4,695	NA	0	4,695	17	276
117	2023	Ford	Explorer	NA	NA	5,771	NA	0	5,771	17	339
118	2023	Ford	Explorer	NA	NA	16,249	NA	0	16,249	17	956
121	2023	Ford	Explorer	NA	NA	400	NA	0	400	17	24
123	2023	Ford	Explorer	NA	NA	7,610	NA	0	7,610	17	448
127	2023	Ford	Explorer	NA	NA	12,721	NA	0	12,721	17	748
131	2023	Ford	Explorer	NA	NA	782	NA	0	782	17	46
134	2023	Ford	Explorer	NA	NA	2,756	NA	0	2,756	17	162
136	2023	Ford	Explorer	NA	NA	539	NA	0	539	17	32
138	2023	Ford	Explorer	NA	NA	3,580	NA	0	3,580	17	211
142	2023	Ford	Explorer	NA	NA	11,011	NA	0	11,011	17	648
144	2023	Ford	Explorer	NA	NA	9,053	NA	0	9,053	17	533

Table 29: Sheriffs Department SUV No VMT Fleet Footprint		
	Current Year	Remaining Lifetime
Petroleum Use (barrels)	91.6	1,374.1
GHGs (short tons)	52.2	783.6
CO (lb)	152.0	3,407.0
NOx (lb)	4.6	96.2
PM10 (lb)	5.0	77.6
PM2.5 (lb)	1.0	17.6
VOC (lb)	9.4	191.9
SOx (lb)	0.5	7.5

Table 30: Sheriffs Department SUV Fleet								
UNIT	Vehicle Model Year	Make	Model	Annual Miles	Annual Gallons	Odometer	Fuel Economy MPG	Age
129	2020	Ford	Explorer	4,855	367.8	14,564	13	3
119	2021	Ford	Explorer	24,742	1871.73	74,227	13	2
100	2020	Ford	Explorer	7,446	521.4	22,337	14	3
139	2020	Ford	Explorer	23,006	1608.82	69,017	14	3
140	2021	Ford	Explorer	29,319	1993.93	65,968	15	2
115	2020	Ford	F150	8,667	581.1	26,001	15	3
120	2020	Ford	Explorer	24,226	1623.81	72,679	15	3
111	2020	Ford	Explorer	24,548	1537.91	73,645	16	3
114	2020	Ford	Explorer	23,667	1438.3	71,000	16	3
126	2020	Ford	Explorer	24,123	1460.15	72,369	17	3
128	2021	Ford	Explorer	28,085	1650.97	56,170	17	2
137	2020	Ford	Explorer	25,930	1513.41	77,789	17	3
124	2022	Ford	Explorer	15,490	880.87	19,363	18	1
109	2022	Ford	Explorer	7,715	434.25	9,644	18	1
145	2021	Ford	Explorer	35,626	1923.67	80,160	19	2
116	2022	Ford	Explorer	10,122	478.79	12,652	21	1
108	2022	Ford	Explorer	34,894	1326.27	43,617	26	1

Table 31: Sheriffs Department SUV Fleet Footprint		
	Current Year	Remaining Lifetime
Petroleum Use (barrels)	439.5	5,557.6
GHGs (short tons)	250.6	3,169.0
CO (lb)	842.7	17,144.9
NOx (lb)	27.8	512.7
PM10 (lb)	23.7	318.2
PM2.5 (lb)	5.0	79.1
VOC (lb)	48.7	869.4
SOx (lb)	2.4	30.2

Table 32: Sheriffs Department Sedan Fleet										
UNIT	Vehicle Model Year	Make	Model	Annual Miles	Annual Gallons	Odometer	Fuel Economy MPG	Age	Estimated Fuel Economy	Estimated Gallons
112	2020	Ford	Fusion	4,967	136	14,900	37	3	17	292
130	2019	Ford	Fusion	9,321	543	37,283	17	4	17	543

Table 33: Sheriffs Department Sedan Fleet Footprint		
	Current Year	Remaining Lifetime
Petroleum Use (barrels)	17.3	196.5
GHGs (short tons)	9.9	112.0
CO (lb)	40.1	693.8
NOx (lb)	1.5	18.7
PM10 (lb)	1.0	11.7
PM2.5 (lb)	0.2	2.7
VOC (lb)	2.5	37.2
SOx (lb)	0.1	1.1

Table 34: Sheriffs Department Van Fleet

UNIT	Vehicle Model Year	Make	Model	Annual Miles	Annual Gallons	Odometer	Fuel Economy MPG	Age	Estimated Fuel Economy	Estimated Gallons
152	2019	Dodge	Caravan	24,109	8,468	102,462	3	4	20	1,205
153	2019	Dodge	Caravan	23,884	773	101,509	31	4	20	1,194

Table 35: Sheriffs Department Van Fleet Footprint		
	Current Year	Remaining Lifetime
Petroleum Use (barrels)	49.7	546.9
GHGs (short tons)	28.4	311.9
CO (lb)	146.4	2,326.2
NOx (lb)	5.2	63.2
PM10 (lb)	3.3	38.3
PM2.5 (lb)	0.7	9.3
VOC (lb)	8.7	125.6
SOx (lb)	0.3	3.0

SMRT Bus Fleet

La Crosse County provided data for 7 shuttle buses that make up its SMRT Bus Fleet. Two of these buses have been disposed of. Odometer readings were provided along with estimated annual vehicle miles traveled. No fuel consumption data was provided other than a total annual amount of 28,073 gallons. The fleet is a mix of gasoline and diesel vehicles. Complete analysis and suggestions for this fleet would require the collection of additional information related to fuel consumption, replacement schedule, and fueling operations/pricing. For this report AFLEET default values for efficiency of shuttle buses was used to calculate fuel consumption based on the estimated annual VMT.

Table 36: SMRT Bus Fleet

UNIT	Vehicle Model Year	Make	Model	Annual Miles	Annual Gallons	Odometer	Fuel Economy MPG	Age	Estimated Fuel Economy	Estimated Gallons
321	2019		Starcraft Starlite	10,000		88,850		4	17.4	575
320	2019		Starcraft Starlite	20,000		30,340		4	17.4	1,149
313	2015	Ford	ElDorado National	50,000		334,688		8	17.4	2,874
320	2019	Ford	ElDorado National	50,000		191,340		4	17.4	2,874
326	2022	Ford	F550	75,000		51,278		1	14.5	5,172
327	2022	Ford	F550	75,000		42,650		1	14.5	5,172
325	2019	Ford	ElDorado National	75,000		65,332		4	17.4	4,310

Table 37: SMRT Bus Fleet Footprint		
	Current Year	Remaining Lifetime
Petroleum Use (barrels)	507.4	5,938.9
GHGs (short tons)	284.4	3,337.0
CO (lb)	693.8	10,936.1
NOx (lb)	217.9	2,503.6
PM10 (lb)	28.1	338.3
PM2.5 (lb)	5.5	73.1
VOC (lb)	48.8	710.1
SOx (lb)	3.0	34.7

Solid Waste

The provide solid waste fleet includes 5 pickups ranging in size from midsized to ¾ ton and 1 new tractor. All of the trucks except for one are 5 years or less old and are not close to reaching a replacement mileage range. Based on provided annual vehicle miles travelled and gallons consumed for the 2013 Ford F-150 it is assumed that this vehicle has entered a partially retired or low mileage role and would not be due for replacement until closer to the 15+ year age range. The following tables provide a summary of the fleet and emissions details. An analysis of potentially operating the tractor on biodiesel did not show significant cost savings based on the minimal number of hours it operates annually.

Table 38: Solid Waste Fleet

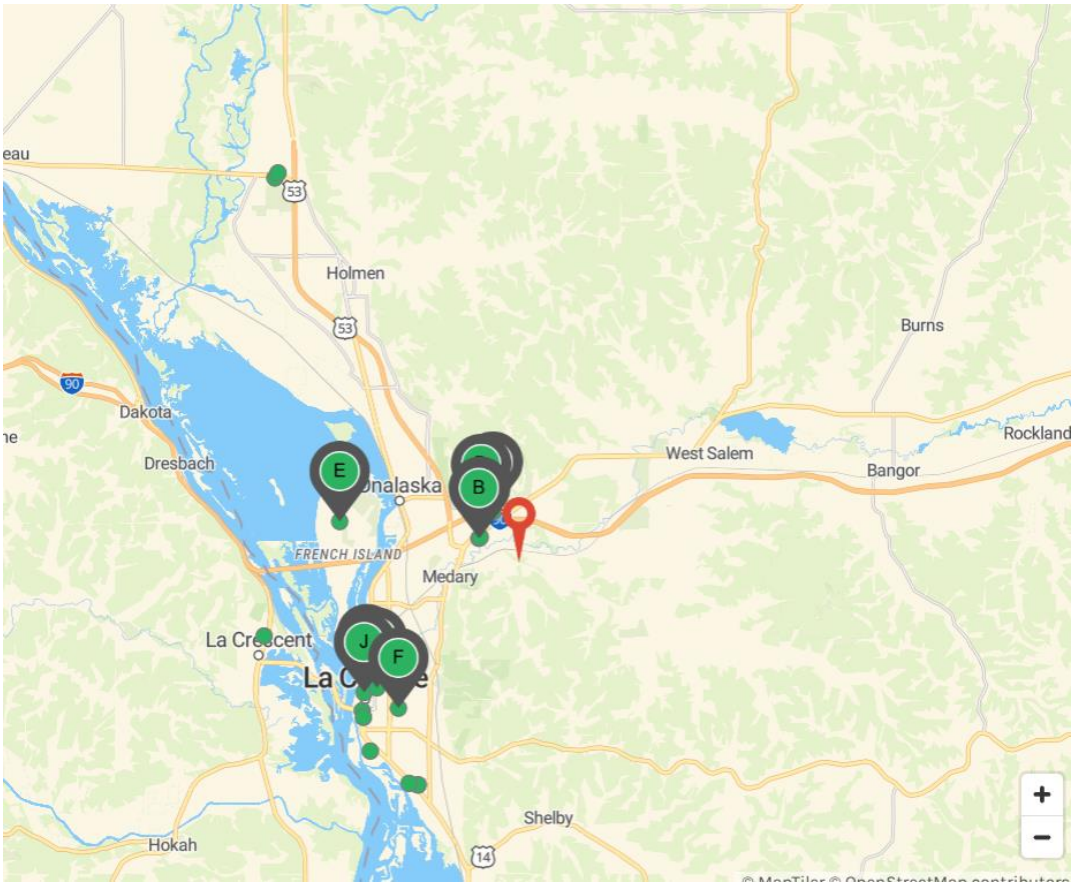
UNIT	Vehicle Model Year	Make	Model	Annual Miles	Annual Gallons	Odometer	Fuel Economy MPG	Age	Earliest Replacement Year	Latest Replacement Year
1FTEWIEB4NK507516	2022	Ford	F-150 Super Crew	9,800	544	9,461	18	1	2037	2042
1FTER1FHXLLA52074	2020	Ford	Ranger	7,300	405	28,261	18	3	2035	2040
1FT7W2B65KEE57936	2019	Ford	F-250 Super Crew	2,500	178	12,002	14	4	2034	2039
1GCHTCEN5K1149310	2018	Chev	Colorado	6,500	361	41,270	18	5	2033	2038
1FTYR15E08PA76744	2013	Ford	F-150 Reg. Cab	1,500	92	117,956	16	10	2028	2033
LVCG129016229351	2022	*John Deere	3046R	85 HRS	100					

Table 39: Solid Waste On Road Fleet Footprint		
	Current Year	Remaining Lifetime
Petroleum Use (barrels)	32.7	383.4
GHGs (short tons)	18.7	218.6
CO (lb)	84.6	1,342.0
NOx (lb)	2.8	40.8
PM10 (lb)	1.9	23.6
PM2.5 (lb)	0.5	6.0
VOC (lb)	4.4	66.1
SOx (lb)	0.2	2.1

Table 40: Solid Waste Off Road Fleet Footprint		
	Current Year	**Remaining Lifetime**
Petroleum Use (barrels)	2.5	248.8
GHGs (short tons)	1.4	137.7
CO (lb)	0.5	45.4
NOx (lb)	4.4	442.9
PM10 (lb)	0.0	2.8
PM2.5 (lb)	0.0	2.8
VOC (lb)	0.2	16.0
SOx (lb)	0.0	1.6

La Crosse County Electric Vehicle Infrastructure

La Crosse County has developed a comprehensive plan outlining sustainability initiatives and goals out to the year 2050. This plan includes details on including electric vehicles and charging infrastructure as part of a collaborative strategy for reducing environmental impact for the county. At this time a review of charging stations listed in the alternative fuel station locator based on zip code notes 22 locations with 16 level 2 and 13 DCFC plugs being available currently. All of these stations are currently located within the cities of La Crosse, Onalaska, Holmen, and West Salem. Additional stations will need to be developed to support travel outside of the cities within La Crosse County.



La Crosse County has the benefit of a designated alternative fuel corridor and the Wisconsin Electric Vehicle Infrastructure Deployment Plan has identified 4 potential DCFC locations which based on feedback would result in the selection of one NEVI compliant station in the county.

Additional station development in the county will need to be supported through CFI and electric utility incentive programs. Details on EV infrastructure related regulations and funding support can be found on the Alternative Fuel Data Center Laws and Incentives Page:

- Wisconsin Laws and Incentives
- Bipartisan Infrastructure Law
- Inflation Reduction Act

More details on the Wisconsin Electric Vehicle Infrastructure Deployment Plan and map can be found here:

- Wisconsin Electrification Initiative
- Wisconsin Electric Vehicle Infrastructure Deployment Plan

The Alternative Fuel Data Center and Joint Office of Energy and Transportation websites also have a number of resources which will be of assistance in planning, funding, and promoting the installation of charging infrastructure in La Crosse County:

- Joint Office of Energy and Transportation
- AFDC Electric Vehicle Charging Stations

Although La Crosse County currently does not operate any charging stations at its facilities plans are underway to start installations in the near future. Wisconsin Clean Cities will be assisting in this effort both through the Drive Clean Rural USA program and the EMPOWER Workplace Charging Program.

More can be learned about EMPOWER here:

- EMPOWER Workplace Charging

Several locations have already been identified as potential charging location deployment sites:

High priority locations:

Administrative Center (downtown campus), 212 6th St North, La Crosse
Health and Human Services Building (downtown campus), 300 4th Street North, La Crosse
Law Enforcement Center (downtown campus), 333 Vine t, La Crosse
Highway Dept. Shop, 310 Carlson Rd, West Salem
Solid Waste Dept./Landfill, 3200 Berlin Dr, La Crosse

Medium priority locations:

Various non-county owned township halls as satellite locations for Highway and Sheriff's Dept. charging.

Lower priority locations:

Carroll Heights Apartments, 3501 Park Lane Dr., La Crosse
Hillview Health Center, 3501 Park Lane Dr., La Crosse
Lakeview Health Center, 962 Garland St E, West Salem
Maplewood Apartments, 994 Garland St, West Salem
Monarch Manor, 848 Garlands St E
Regent Manor, 856 Garland St E
Library Administration Center, 121 W Legion St, Holmen – not county owned
Veteran's Park, West Salem
Goose Island Park, La Crosse

La Crosse County Recommendations

- Near Term (2-3 years)
  - Review report findings and deploy electric vehicles into fleet segments as procurement schedule and budget allows.
  - Review Highway Department heavy duty equipment and discuss potential upgrades to biodiesel or compressed natural gas as a way to decrease costs and emissions.
  - Become engaged in feedback related to Wisconsin Electric Vehicle Infrastructure Initiative so that station installed can benefit county fleet vehicles.
  - Take advantage of available tax incentives to accelerate the adoption of electric vehicles.
- Long Term (next 4+ years)
  - Review fleet vehicles as they approach replacement and consider electric and hybrid models that are available at the time of purchase.
  - Review off road vehicles and equipment for potential conversion to electric.
  - Build partnerships with local communities and businesses to maximize the benefit of infrastructure development.

- Create or maximize fleet right-sizing policies and procedures to all new vehicle and equipment acquisitions.
- Develop procedures to track and eliminate unnecessary vehicle idling.

Appendix F:

2023 Sawatch Labs Vehicle Fleet Assessment

SAWATCH
LABS

ezEV Suitability Assessment

La Crosse County

Generated on: 04/03/24

sawatchlabs.com
info@sawatchlabs.com
Tel: 303-578-2465
Denver, Colorado | Petaluma, California

Suitability Assessment
La Crosse County

What is ezEV?

Our ezEV software uses your driving data to assess if an electric vehicle (EV) will meet your driver's needs every single day. We do this by calculating the energy needed to complete daily operations each day based on each vehicle's actual operations. We also calculate the total cost of ownership, the daily and max charging requirements, the ideal charging location(s), and the GHG emissions for each of your vehicles. With our ezEV analytics, you can confidently electrify your fleet.

Your ezEV Suitability Assessment summary report includes:

- ezEV Summary
- ezEV Scoring Explanation
- Next Steps
- Single Vehicle Summaries
- Custom Settings

La Crosse County ezEV Summary

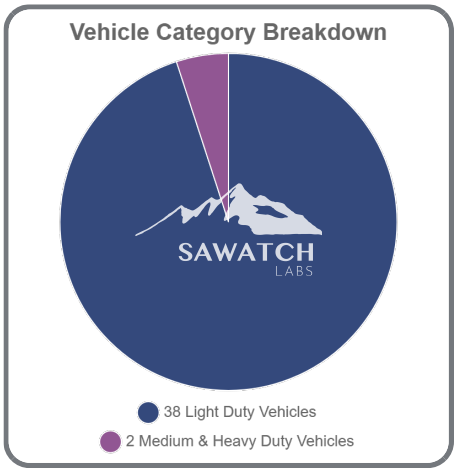
The ezEV analysis for *La Crosse County* included all 40 vehicles in the fleet. Vehicle operations from November 19, 2023 to April 3, 2024 were analyzed to determine which vehicles are a good fit for replacement with an EV. The operational data, including driving, speed, idling, and parking, was analyzed on a minute-by-minute basis to understand the daily energy needs for each individual vehicle. Additionally, the total cost of ownership over the lifetime of each vehicle was calculated. This report provides a brief summary of the ezEV results for *La Crosse County* along with detailed results for each vehicle in the following pages.

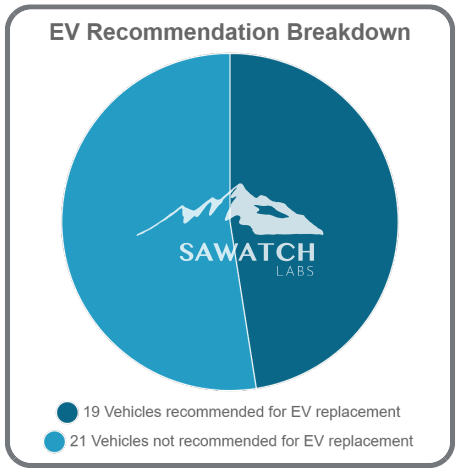
19

EV Ready Vehicles

Group: All Vehicles

Category: All Vehicles





GHG Emissions Reduction*

▼ 961 Tons

TCO Savings*

▼ $280,000

*Estimated lifetime impact of replacing your 19 EV Candidates.

SAWATCH LABS

info@sawatchlabs.com | sawatchlabs.com

Suitability Assessment
La Crosse County

ezEV Scoring

The **Overall Score** indicates if an EV would be a good operational and economic fit for your vehicle. A score of 85 or higher is considered passing.

The **Confidence Score** indicates if sufficient data is available to assess the vehicle. A score of 100 indicates that data from at least 90 days of vehicle operations was assessed.

The **Energy Score** indicates the percentage of days that the selected EV could meet the daily driving needs on a single charge. For example, a score of 97 indicates that midday charging would be required 3% of the days. A score of 90 or higher is considered passing. This score is not factored in for PHEVs because the battery capacity does not limit the vehicle's range.

The **Economics Score** indicates if the total cost of ownership (TCO) will be lower or higher in the selected EV relative to a comparable ICE. A score of 90 indicates that the TCO for an EV or ICE will be about the same over the vehicles' lifetime. A score of 100 indicates that the TCO for an EV will be about 10% less than that of an ICE. A score of 85 or higher is considered passing.

The **Parking Score** indicates the frequency with which the vehicle parks at or very near the same primary parking location for extended parking events. This identifies when access to charging may be complex. A score of 75 or higher is considered passing.

Next Steps

When you are ready to begin procurement of EVs, we recommend beginning with the vehicles in the table below which identifies the vehicles with high ezEV scores. For additional information on these and all other vehicles, please go to your Sawatch Labs dashboard to view details on each vehicle in ezEV.

As you embark on your fleet electrification journey, you may also find it helpful to consider:

- When, where, and how much will my vehicles charge?
- How many charging ports will my fleet require?
- What will my charging demand be at each of my facilities?

For answers to these and many more EV charging infrastructure questions, please visit your ezIO analysis in the Sawatch dashboard.

Have additional questions or want to discuss next steps? Contact your Sawatch Labs account manager or contact us at info@sawatchlabs.com.

Suitability Assessment
La Crosse County

Your Top 10 vehicles that are ready for replacement with an EV are listed below:

Asset ID	Model	Recommendation	ezEV Overall Score	TCO Savings	Projected Charging Location
G92PXRJ1EAPU	2023 Ford Explorer	2024 Chevrolet Blazer EV Pursuit	99	-$54,000-57,000	4009 Beverly Dr, Onalaska, Wisconsin, 54650
G9HYR16XRXA9	2020 Ford Explorer	2024 Chevrolet Blazer EV Pursuit	99	-$9,000-12,000	1001-1099 Branding Iron Rd, West Salem, Wisconsin, 54669
G9D9T9FSE0DW	2015 Dodge Grand Caravan	2024 Chrysler Pacifica PHEV	99	-$3,000-6,000	Lakeview Health Center
G97PM67VFM1H	2012 Dodge Ram	2024 Ford F-150 Lightning Pro	97	-$3,000-6,000	W4175-W4161 Old County Road B, West Salem, Wisconsin, 54669
G9TANTM8J8KH	2020 Ford F150	2024 Chevrolet Silverado EV 3WT	97	-$36,000-39,000	W22999-W22701 Prairie Wood Dr, Trempealeau, Wisconsin, 54661
G9TU531MKFK3	2016 Dodge Grand Caravan	2024 Chrysler Pacifica PHEV	97	-$9,000-12,000	846-1116 Garland St E, West Salem, Wisconsin, 54669
G9YFNBUX31W5	2019 Chevrolet Colorado	2024 Ford F-150 Lightning Pro	96	Cost parity	3240 Berlin Dr, La Crosse, Wisconsin, 54601
G974213CEKMV	2010 Dodge Ram	2024 Ford F-150 Lightning Pro	96	Cost parity	W4175-W4161 Old County Road B, West Salem, Wisconsin, 54669
G9D6J47AED1A	2020 Ford F150	2024 Ford F-150 Lightning Pro	96	Cost parity	W000005596 Deerfield Rd, La Crosse, Wisconsin, 54601
G9UTN76WD776	2020 Ford Explorer	2024 Chevrolet Blazer EV Pursuit	96	-$57,000-60,000	W4281 Ceresa Dr, West Salem, Wisconsin, 54669

About Sawatch Labs

Sawatch Labs is the leading transportation electrification analytics firm helping fleets identify opportunities to increase their ROI and meet their sustainability goals. Our advanced analytics unlock the potential in your operational data, providing real-time insight at your fingertips. Since 2017, we've been supporting data-driven fleet management, working with fleets of all sizes around the country. Fleets rely on our ezEV software to confidently determine which vehicles to replace with an EV. Using your driving data, we can quickly determine if an EV would meet your drivers' needs every single day of the year. We also provide the total cost of ownership comparison and GHG emissions reductions for each vehicle. With our ezEV analytics, you'll have the confidence you're putting EVs into successful applications.

Your ezEV results are available for you to incorporate into presentations, analyses, or other work products. In any instance where this analysis is shared, the work shall be attributed to Sawatch Labs.[1]

[1] The recommended citation for this analysis is "*ezEV Suitability Assessment: La Crosse County .* 2024 April 3. Sawatch Labs. www.sawatchlabs.com"

Suitability Assessment

G92PXRJ1EAPU - 2023 Ford Explorer

Recommended Replacement:

2024 Chevrolet Blazer EV Pursuit

Overall	Confidence	Energy	Economics	Parking
99	100	100	100+	96

Client: La Crosse County
Observation: 11/19/23 - 04/01/24
Days Tracked: 135 days
Trips Tracked: 338 trips
Last Trip: 03/29/24
VIN: 1FM5K8AB4PGA35443
Total Miles: 9,162
Temperature Range: -8°F - 54°F

Estimated Operational Metrics in a 2024 Chevrolet Blazer EV Pursuit

This table shows the estimated usage metrics if the trips driven by your 2023 Ford Explorer had been driven in a 2024 Chevrolet Blazer EV Pursuit.

Annual Vehicle Miles Traveled	GHG Reduction (%)	GHG Reduction (lbs)	Operational Cost Difference*	TCO* (Lifetime)	TCO** (%)	Average Daily Idling Hours
24,770	79%	263,060	▼ -$69,000-72,000	▼ -$54,000-57,000	▼ -38%	3.3

*Total Cost of Ownership (TCO) Change and Operational Savings reflect the financial savings over the lifetime of the vehicle.
**TCO Change takes into account the purchase price of the recommended vehicle, Operational Savings does not.

Top Parking & Projected Charging Locations

This table shows the **4** most frequent locations where your vehicle parked for an extended period of time. These *extended dwell periods* are any parking event that exceeds 9 hours. We observed **76** extended dwell periods for this vehicle.

Address	Dwell Time (Avg Hrs)	Frequency
4009 Beverly Dr, Onalaska, Wisconsin, 54650*	15	96%
410 3rd St N, La Crosse, Wisconsin, 54601	16	1%
W3682-W3684 US-14, Coon Valley, Wisconsin, 54623	16	1%
N4690-N4694 CR-B, Bangor, Wisconsin, 54614	16	1%

*This location has been identified as the vehicle's current homebase parking location based on its operations over the past 30 days.
To view results of these **4** parking locations and other detailed information for G92PXRJ1EAPU, please visit ezEV dashboard.
For the purpose of calculating dwell time (average hours), extended dwell periods are capped at a duration of 16 $hours.

Charge Time & Cost - Average on days used

The charging needs of this 2023 Ford Explorer would require an average of **20.8 kWh per day, on days used**. Based on the observed driving, **midday charging would not be needed.**

Average Daily Energy Use (kWh)	Max Daily Energy Use (kWh)	Effective Usable Battery Capacity (kWh)*	Level 1 Hrs	Level 2 Hrs	DCFC Hrs	Daily Cost
20.8	45.3	73.6	15.9	3.3	0.5	$2.29

*The Effective Usable Battery Capacity takes into account the usable battery capacity of the vehicle and the charge to/discharge to settings provided by your fleet.

Suitability Assessment

G9HYR16XRXA9 - 2020 Ford Explorer

Recommended Replacement:

2024 Chevrolet Blazer EV Pursuit

Overall	Confidence	Energy	Economics	Parking
99	100	100	100+	96

Client: La Crosse County
Observation: 11/19/23 - 04/01/24
Days Tracked: 135 days
Trips Tracked: 446 trips
Last Trip: 03/27/24
VIN: 1FM5K8AB8LGA55527
Total Miles: 4,496
Temperature Range: -6°F - 68°F

Estimated Operational Metrics in a 2024 Chevrolet Blazer EV Pursuit

This table shows the estimated usage metrics if the trips driven by your 2020 Ford Explorer had been driven in a 2024 Chevrolet Blazer EV Pursuit.

Annual Vehicle Miles Traveled	GHG Reduction (%)	GHG Reduction (lbs)	Operational Cost Difference*	TCO* (Lifetime)	TCO** (%)	Average Daily Idling Hours
12,160	68%	83,550	▼ -$24,000-27,000	▼ -$9,000-12,000	▼ -14%	0.8

*Total Cost of Ownership (TCO) Change and Operational Savings reflect the financial savings over the lifetime of the vehicle.
**TCO Change takes into account the purchase price of the recommended vehicle, Operational Savings does not.

Top Parking & Projected Charging Locations

This table shows the **5** most frequent locations where your vehicle parked for an extended period of time. These *extended dwell periods* are any parking event that exceeds 9 hours. We observed **89** extended dwell periods for this vehicle.

Address	Dwell Time (Avg Hrs)	Frequency
1001-1099 Branding Iron Rd, West Salem, Wisconsin, 54669*	16	96%
Quick Lane	16	1%
N5189-N5299 Innsbruck Rd N, West Salem, Wisconsin, 54669	16	1%
410 3rd St N, La Crosse, Wisconsin, 54601	16	1%
2551 E Main St, Onalaska, Wisconsin, 54650	15	1%

*This location has been identified as the vehicle's current homebase parking location based on its operations over the past 30 days.
To view results of these **5** parking locations and other detailed information for G9HYR16XRXA9, please visit ezEV dashboard.
For the purpose of calculating dwell time (average hours), extended dwell periods are capped at a duration of 16 $hours.

Charge Time & Cost - Average on days used

The charging needs of this 2020 Ford Explorer would require an average of **13 kWh per day, on days used**. Based on the observed driving, **midday charging would not be needed.**

Average Daily Energy Use (kWh)	Max Daily Energy Use (kWh)	Effective Usable Battery Capacity (kWh)*	Level 1 Hrs	Level 2 Hrs	DCFC Hrs	Daily Cost
13	42.5	73.6	10.0	2.1	0.3	$1.43

*The Effective Usable Battery Capacity takes into account the usable battery capacity of the vehicle and the charge to/discharge to settings provided by your fleet.

SAWATCH LABS
info@sawatchlabs.com | sawatchlabs.com

Suitability Assessment

G9D9T9FSE0DW - 2015 Dodge Grand Caravan

Recommended Replacement:

2024 Chrysler Pacifica PHEV

Overall	Confidence	Energy*	Economics	Parking
99	100	N/A	99	99

*Energy Score is not factored in for PHEVs because the battery capacity does not limit the vehicle's range.

Client: La Crosse County
Observation: 11/24/23 - 04/01/24
Days Tracked: 130 days
Trips Tracked: 203 trips
Last Trip: 04/01/24
VIN: 2C7WDGBGXFR686020
Total Miles: 1,927
Temperature Range: 0°F - 68°F

Estimated Operational Metrics in a 2024 Chrysler Pacifica PHEV

This table shows the estimated usage metrics if the trips driven by your 2015 Dodge Grand Caravan had been driven in a 2024 Chrysler Pacifica PHEV.

Annual Vehicle Miles Traveled	GHG Reduction (%)	GHG Reduction (lbs)	Operational Cost Difference*	TCO* (Lifetime)	TCO** (%)	Electric Miles	Average Daily Idling Hours
5,410	69%	47,400	▼ -$12,000-15,000	▼ -$3,000-6,000	▼ -8%	94%	0.3

*Total Cost of Ownership (TCO) Change and Operational Savings reflect the financial savings over the lifetime of the vehicle.
**TCO Change takes into account the purchase price of the recommended vehicle, Operational Savings does not.

Top Parking & Projected Charging Locations

This table shows the **4** most frequent locations where your vehicle parked for an extended period of time. These *extended dwell periods* are any parking event that exceeds 9 hours. We observed **67** extended dwell periods for this vehicle.

Address	Dwell Time (Avg Hrs)	Frequency
Lakeview Health Center*	16	93%
Kwik Trip	16	4%
846-1116 Garland St E, West Salem, Wisconsin, 54669	16	1%
1722-1854 South Ave, La Crosse, Wisconsin, 54601	16	1%

*This location has been identified as the vehicle's current homebase parking location based on its operations over the past 30 days.
To view results of these **4** parking locations and other detailed information for G9D9T9FSE0DW, please visit ezEV dashboard.
For the purpose of calculating dwell time (average hours), extended dwell periods are capped at a duration of 16 $hours.

Charge Time & Cost - Average on days used

The charging needs of this 2015 Dodge Grand Caravan would require an average of **7.9 kWh per day, on days used**, to operate the recommended PHEV using only electric miles. However, **midday charging is not required to operate the vehicle.**

Average Daily Energy Use (kWh)	Max Daily Energy Use (kWh)	Effective Usable Battery Capacity (kWh)*	Level 1 Hrs	Level 2 Hrs	DCFC Hrs	Daily Cost
7.9	35.7	11.5	6.1	1.3	0.2	$0.87

*The Effective Usable Battery Capacity takes into account the usable battery capacity of the vehicle and the charge to/discharge to settings provided by your fleet.

Suitability Assessment

G97PM67VFM1H - 2012 Dodge Ram

Recommended Replacement:

2024 Ford F-150 Lightning Pro

Overall	Confidence	Energy	Economics	Parking
97	100	100	96	96

Client: La Crosse County
Observation: 11/20/23 - 04/01/24
Days Tracked: 134 days
Trips Tracked: 277 trips
Last Trip: 04/01/24
VIN: 1C6RD7FP1CS232468
Total Miles: 2,604
Temperature Range: 3°F - 68°F

Estimated Operational Metrics in a 2024 Ford F-150 Lightning Pro

This table shows the estimated usage metrics if the trips driven by your 2012 Dodge Ram had been driven in a 2024 Ford F-150 Lightning Pro.

Annual Vehicle Miles Traveled	GHG Reduction (%)	GHG Reduction (lbs)	Operational Cost Difference*	TCO* (Lifetime)	TCO** (%)	Average Daily Idling Hours
7,090	60%	59,400	▼ -$18,000-21,000	▼ -$3,000-6,000	▼ -6%	0.4

*Total Cost of Ownership (TCO) Change and Operational Savings reflect the financial savings over the lifetime of the vehicle.
**TCO Change takes into account the purchase price of the recommended vehicle, Operational Savings does not.

Top Parking & Projected Charging Locations

This table shows the **5** most frequent locations where your vehicle parked for an extended period of time. These *extended dwell periods* are any parking event that exceeds 9 hours. We observed **72** extended dwell periods for this vehicle.

Address	Dwell Time (Avg Hrs)	Frequency
W4175-W4161 Old County Road B, West Salem, Wisconsin, 54669*	16	78%
301 Carlson Rd, West Salem, Wisconsin, 54669	16	18%
1-99 Buol Rd, West Salem, Wisconsin, 54669	16	1%
Iron Physique Gym	16	1%
N1751 County Road M, La Crosse, Wisconsin, 54601	16	1%

*This location has been identified as the vehicle's current homebase parking location based on its operations over the past 30 days.
To view results of these **5** parking locations and other detailed information for G97PM67VFM1H, please visit ezEV dashboard.
For the purpose of calculating dwell time (average hours), extended dwell periods are capped at a duration of 16 $hours.

Charge Time & Cost - Average on days used

The charging needs of this 2012 Dodge Ram would require an average of **15.8 kWh per day, on days used**. Based on the observed driving, **midday charging would not be needed.**

Average Daily Energy Use (kWh)	Max Daily Energy Use (kWh)	Effective Usable Battery Capacity (kWh)*	Level 1 Hrs	Level 2 Hrs	DCFC Hrs	Daily Cost
15.8	54.4	73.6	12.1	1.6	0.4	$1.74

*The Effective Usable Battery Capacity takes into account the usable battery capacity of the vehicle and the charge to/discharge to settings provided by your fleet.

SAWATCH LABS
info@sawatchlabs.com | sawatchlabs.com

Suitability Assessment

G9TANTM8J8KH - 2020 Ford F150

Recommended Replacement:

2024 Chevrolet Silverado EV 3WT

97	100	100	100+	89
Overall	Confidence	Energy	Economics	Parking

Client: La Crosse County
Observation: 11/20/23 - 04/01/24
Days Tracked: 134 days
Trips Tracked: 486 trips
Last Trip: 04/01/24
VIN: 1FTEW1E56LFC11669
Total Miles: 12,452
Temperature Range: -6°F - 68°F

Estimated Operational Metrics in a 2024 Chevrolet Silverado EV 3WT

This table shows the estimated usage metrics if the trips driven by your 2020 Ford F150 had been driven in a 2024 Chevrolet Silverado EV 3WT .

Annual Vehicle Miles Traveled	GHG Reduction (%)	GHG Reduction (lbs)	Operational Cost Difference*	TCO* (Lifetime)	TCO** (%)	Average Daily Idling Hours
33,920	52%	203,920	▼ -$75,000-78,000	▼ -$36,000-39,000	▼ -23%	0.8

*Total Cost of Ownership (TCO) Change and Operational Savings reflect the financial savings over the lifetime of the vehicle.
**TCO Change takes into account the purchase price of the recommended vehicle, Operational Savings does not.

Top Parking & Projected Charging Locations

This table shows the **top 5** most frequent locations where your vehicle parked for an extended period of time. These *extended dwell periods* are any parking event that exceeds 9 hours. We observed **94** extended dwell periods for this vehicle.

Address	Dwell Time (Avg Hrs)	Frequency
W22999-W22701 Prairie Wood Dr, Trempealeau, Wisconsin, 54661*	14	89%
301 Carlson Rd, West Salem, Wisconsin, 54669	13	2%
Village of Holmen, Wisconsin	13	2%
2nd Ave S, Onalaska, Wisconsin, 54650	14	1%
W8000-W8022 WI-35, Holmen, Wisconsin, 54636	12	1%

*This location has been identified as the vehicle's current homebase parking location based on its operations over the past 30 days.
To view results of all **9** parking locations and other detailed information for G9TANTM8J8KH, please visit ezEV dashboard.
For the purpose of calculating dwell time (average hours), extended dwell periods are capped at a duration of 16 $hours.

Charge Time & Cost - Average on days used

The charging needs of this 2020 Ford F150 would require an average of **56.1 kWh per day, on days used**. Based on the observed driving, **midday charging would not be needed.**

Average Daily Energy Use (kWh)	Max Daily Energy Use (kWh)	Effective Usable Battery Capacity (kWh)*	Level 1 Hrs	Level 2 Hrs	DCFC Hrs	Daily Cost
56.1	140.4	148.8	43.0	5.7	1.2	$6.17

*The Effective Usable Battery Capacity takes into account the usable battery capacity of the vehicle and the charge to/discharge to settings provided by your fleet.

Suitability Assessment

G9TU531MKFK3 - 2016 Dodge Grand Caravan

Recommended Replacement:

2024 Chrysler Pacifica PHEV

Overall	Confidence	Energy*	Economics	Parking
97	100	N/A	100+	92

*Energy Score is not factored in for PHEVs because the battery capacity does not limit the vehicle's range.

Client: La Crosse County
Observation: 11/20/23 - 04/01/24
Days Tracked: 134 days
Trips Tracked: 375 trips
Last Trip: 04/01/24
VIN: 2C4RDGCG3GR117925
Total Miles: 2,541
Temperature Range: -6°F - 72°F

Estimated Operational Metrics in a 2024 Chrysler Pacifica PHEV

This table shows the estimated usage metrics if the trips driven by your 2016 Dodge Grand Caravan had been driven in a 2024 Chrysler Pacifica PHEV.

Annual Vehicle Miles Traveled	GHG Reduction (%)	GHG Reduction (lbs)	Operational Cost Difference*	TCO* (Lifetime)	TCO** (%)	Electric Miles	Average Daily Idling Hours
6,920	71%	64,860	▼ -$18,000-21,000	▼ -$9,000-12,000	▼ -14%	95%	0.2

*Total Cost of Ownership (TCO) Change and Operational Savings reflect the financial savings over the lifetime of the vehicle.
**TCO Change takes into account the purchase price of the recommended vehicle, Operational Savings does not.

Top Parking & Projected Charging Locations

This table shows the **top 5** most frequent locations where your vehicle parked for an extended period of time. These *extended dwell periods* are any parking event that exceeds 9 hours. We observed **100** extended dwell periods for this vehicle.

Address	Dwell Time (Avg Hrs)	Frequency
846-1116 Garland St E, West Salem, Wisconsin, 54669*	16	92%
Kwik Trip	16	4%
Crossing Meadows	16	<1%
Kwik Trip	16	<1%
191 Theater Rd, Onalaska, Wisconsin, 54650	16	<1%

*This location has been identified as the vehicle's current homebase parking location based on its operations over the past 30 days.
To view results of all **6** parking locations and other detailed information for G9TU531MKFK3, please visit ezEV dashboard.
For the purpose of calculating dwell time (average hours), extended dwell periods are capped at a duration of 16 $hours.

Charge Time & Cost - Average on days used

The charging needs of this 2016 Dodge Grand Caravan would require an average of **6.8 kWh per day, on days used**, to operate the recommended PHEV using only electric miles. However, **midday charging is not required to operate the vehicle.**

Average Daily Energy Use (kWh)	Max Daily Energy Use (kWh)	Effective Usable Battery Capacity (kWh)*	Level 1 Hrs	Level 2 Hrs	DCFC Hrs	Daily Cost
6.8	22.6	11.5	5.2	1.1	0.2	$0.75

*The Effective Usable Battery Capacity takes into account the usable battery capacity of the vehicle and the charge to/discharge to settings provided by your fleet.

SAWATCH LABS
info@sawatchlabs.com | sawatchlabs.com

Suitability Assessment

G9YFNBUX31W5 - 2019 Chevrolet Colorado

Recommended Replacement:

2024 Ford F-150 Lightning Pro

Overall	Confidence	Energy	Economics	Parking
96	100	100	94	95

Client: La Crosse County
Observation: 11/20/23 - 03/31/24
Days Tracked: 133 days
Trips Tracked: 633 trips
Last Trip: 03/29/24
VIN: 1GCHTCEN5K1149310
Total Miles: 1,112
Temperature Range: -8°F - 68°F

Estimated Operational Metrics in a 2024 Ford F-150 Lightning Pro

This table shows the estimated usage metrics if the trips driven by your 2019 Chevrolet Colorado had been driven in a 2024 Ford F-150 Lightning Pro.

Annual Vehicle Miles Traveled	GHG Reduction (%)	GHG Reduction (lbs)	Operational Cost Difference*	TCO* (Lifetime)	TCO** (%)	Average Daily Idling Hours
3,050	85%	80,650	▼ -$15,000-18,000	Cost parity	▼ -4%	1.2

*Total Cost of Ownership (TCO) Change and Operational Savings reflect the financial savings over the lifetime of the vehicle.
**TCO Change takes into account the purchase price of the recommended vehicle, Operational Savings does not.

Top Parking & Projected Charging Locations

This table shows the **top 5** most frequent locations where your vehicle parked for an extended period of time. These *extended dwell periods* are any parking event that exceeds 9 hours. We observed **96** extended dwell periods for this vehicle.

Address	Dwell Time (Avg Hrs)	Frequency
3240 Berlin Dr, La Crosse, Wisconsin, 54601*	15	93%
La Crosse, Wisconsin	16	2%
9421 State Road 16, Onalaska, Wisconsin, 54650	16	1%
591 Theater Rd, Onalaska, Wisconsin, 54650	16	1%
Landfill Rd, Onalaska, Wisconsin, 54650	16	1%

*This location has been identified as the vehicle's current homebase parking location based on its operations over the past 30 days.
To view results of all **7** parking locations and other detailed information for G9YFNBUX31W5, please visit ezEV dashboard.
For the purpose of calculating dwell time (average hours), extended dwell periods are capped at a duration of 16 $hours.

Charge Time & Cost - Average on days used

The charging needs of this 2019 Chevrolet Colorado would require an average of **4.3 kWh per day, on days used**. Based on the observed driving, **midday charging would not be needed.**

Average Daily Energy Use (kWh)	Max Daily Energy Use (kWh)	Effective Usable Battery Capacity (kWh)*	Level 1 Hrs	Level 2 Hrs	DCFC Hrs	Daily Cost
4.3	28.8	73.6	3.3	0.4	0.1	$0.47

*The Effective Usable Battery Capacity takes into account the usable battery capacity of the vehicle and the charge to/discharge to settings provided by your fleet.

SAWATCH LABS
info@sawatchlabs.com | sawatchlabs.com

Suitability Assessment

G974213CEKMV - 2010 Dodge Ram

Recommended Replacement:

2024 Ford F-150 Lightning Pro

96	100	100	91	98
Overall	Confidence	Energy	Economics	Parking

Client: La Crosse County
Observation: 12/06/23 - 04/01/24
Days Tracked: 118 days
Trips Tracked: 181 trips
Last Trip: 03/27/24
VIN: 3D7LT2ET4AG162641
Total Miles: 1,690
Temperature Range: -5°F - 65°F

Estimated Operational Metrics in a 2024 Ford F-150 Lightning Pro

This table shows the estimated usage metrics if the trips driven by your 2010 Dodge Ram had been driven in a 2024 Ford F-150 Lightning Pro.

Annual Vehicle Miles Traveled	GHG Reduction (%)	GHG Reduction (lbs)	Operational Cost Difference*	TCO* (Lifetime)	TCO** (%)	Average Daily Idling Hours
5,230	66%	53,430	▼ -$15,000-18,000	Cost parity	▼ -1%	0.5

*Total Cost of Ownership (TCO) Change and Operational Savings reflect the financial savings over the lifetime of the vehicle.
**TCO Change takes into account the purchase price of the recommended vehicle, Operational Savings does not.

Top Parking & Projected Charging Locations

This table shows the **4** most frequent locations where your vehicle parked for an extended period of time. These *extended dwell periods* are any parking event that exceeds 9 hours. We observed **48** extended dwell periods for this vehicle.

Address	Dwell Time (Avg Hrs)	Frequency
W4175-W4161 Old County Road B, West Salem, Wisconsin, 54669*	16	85%
301 Carlson Rd, West Salem, Wisconsin, 54669	16	10%
1432-1460 W City Highway 16, West Salem, Wisconsin, 54669	16	2%
W4125-W4159 Old County Road B, West Salem, Wisconsin, 54669	16	2%

*This location has been identified as the vehicle's current homebase parking location based on its operations over the past 30 days.
To view results of these **4** parking locations and other detailed information for G974213CEKMV, please visit ezEV dashboard.
For the purpose of calculating dwell time (average hours), extended dwell periods are capped at a duration of 16 $hours.

Charge Time & Cost - Average on days used

The charging needs of this 2010 Dodge Ram would require an average of **14 kWh per day, on days used**. Based on the observed driving, **midday charging would not be needed.**

Average Daily Energy Use (kWh)	Max Daily Energy Use (kWh)	Effective Usable Battery Capacity (kWh)*	Level 1 Hrs	Level 2 Hrs	DCFC Hrs	Daily Cost
14	46.8	73.6	10.8	1.4	0.3	$1.54

*The Effective Usable Battery Capacity takes into account the usable battery capacity of the vehicle and the charge to/discharge to settings provided by your fleet.

Suitability Assessment

G9D6J47AED1A - 2020 Ford F150

Recommended Replacement:

2024 Ford F-150 Lightning Pro

Overall	Confidence	Energy	Economics	Parking
96	100	100	93	95

Client: La Crosse County
Observation: 11/20/23 - 04/01/24
Days Tracked: 134 days
Trips Tracked: 406 trips
Last Trip: 03/28/24
VIN: 1FTFW1E5XLKF18970
Total Miles: 2,117
Temperature Range: -8°F - 68°F

Estimated Operational Metrics in a 2024 Ford F-150 Lightning Pro

This table shows the estimated usage metrics if the trips driven by your 2020 Ford F150 had been driven in a 2024 Ford F-150 Lightning Pro.

Annual Vehicle Miles Traveled	GHG Reduction (%)	GHG Reduction (lbs)	Operational Cost Difference*	TCO* (Lifetime)	TCO** (%)	Average Daily Idling Hours
5,770	70%	60,550	▼ -$15,000-18,000	Cost parity	▼ -3%	0.2

*Total Cost of Ownership (TCO) Change and Operational Savings reflect the financial savings over the lifetime of the vehicle.
**TCO Change takes into account the purchase price of the recommended vehicle, Operational Savings does not.

Top Parking & Projected Charging Locations

This table shows the **top 5** most frequent locations where your vehicle parked for an extended period of time. These *extended dwell periods* are any parking event that exceeds 9 hours. We observed **81** extended dwell periods for this vehicle.

Address	Dwell Time (Avg Hrs)	Frequency
W000005596 Deerfield Rd, La Crosse, Wisconsin, 54601*	14	88%
W5699-W5501 Deerfield Rd, La Crosse, Wisconsin, 54601	14	5%
W000005593 Deerfield Rd, La Crosse, Wisconsin, 54601	13	2%
W5699-W5501 Deerfield Rd, La Crosse, Wisconsin, 54601	13	2%
Kelm Ave, La Crosse, Wisconsin, 54601	16	1%

*This location has been identified as the vehicle's current homebase parking location based on its operations over the past 30 days.
To view results of all **6** parking locations and other detailed information for G9D6J47AED1A, please visit ezEV dashboard.
For the purpose of calculating dwell time (average hours), extended dwell periods are capped at a duration of 16 $hours.

Charge Time & Cost - Average on days used

The charging needs of this 2020 Ford F150 would require an average of **9.1 kWh per day, on days used**. Based on the observed driving, **midday charging would not be needed.**

Average Daily Energy Use (kWh)	Max Daily Energy Use (kWh)	Effective Usable Battery Capacity (kWh)*	Level 1 Hrs	Level 2 Hrs	DCFC Hrs	Daily Cost
9.1	24.9	73.6	7.0	0.9	0.2	$1.00

*The Effective Usable Battery Capacity takes into account the usable battery capacity of the vehicle and the charge to/discharge to settings provided by your fleet.

SAWATCH LABS
info@sawatchlabs.com | sawatchlabs.com

Suitability Assessment

G9UTN76WD776 - 2020 Ford Explorer

Recommended Replacement:

2024 Chevrolet Blazer EV Pursuit

96	100	100	100+	85
Overall	Confidence	Energy	Economics	Parking

Client: La Crosse County
Observation: 11/19/23 - 04/01/24
Days Tracked: 135 days
Trips Tracked: 446 trips
Last Trip: 03/29/24
VIN: 1FM5K8ABXLGD01882
Total Miles: 9,960
Temperature Range: -10°F - 68°F

Estimated Operational Metrics in a 2024 Chevrolet Blazer EV Pursuit

This table shows the estimated usage metrics if the trips driven by your 2020 Ford Explorer had been driven in a 2024 Chevrolet Blazer EV Pursuit.

Annual Vehicle Miles Traveled	GHG Reduction (%)	GHG Reduction (lbs)	Operational Cost Difference*	TCO* (Lifetime)	TCO** (%)	Average Daily Idling Hours
26,930	76%	261,050	▼ -$72,000-75,000	▼ -$57,000-60,000	▼ -38%	3.5

*Total Cost of Ownership (TCO) Change and Operational Savings reflect the financial savings over the lifetime of the vehicle.
**TCO Change takes into account the purchase price of the recommended vehicle, Operational Savings does not.

Top Parking & Projected Charging Locations

This table shows the **top 5** most frequent locations where your vehicle parked for an extended period of time. These *extended dwell periods* are any parking event that exceeds 9 hours. We observed **91** extended dwell periods for this vehicle.

Address	Dwell Time (Avg Hrs)	Frequency
W4281 Ceresa Dr, West Salem, Wisconsin, 54669*	14	85%
Kwik Trip	16	3%
Quick Lane	14	2%
Fairgrounds Rd W, West Salem, Wisconsin, 54669	9	1%
301 Carlson Rd, West Salem, Wisconsin, 54669	16	1%

*This location has been identified as the vehicle's current homebase parking location based on its operations over the past 30 days.
To view results of all **12** parking locations and other detailed information for G9UTN76WD776, please visit ezEV dashboard.
For the purpose of calculating dwell time (average hours), extended dwell periods are capped at a duration of 16 $hours.

Charge Time & Cost - Average on days used

The charging needs of this 2020 Ford Explorer would require an average of **21.8 kWh per day, on days used**. Based on the observed driving, **midday charging would not be needed.**

Average Daily Energy Use (kWh)	Max Daily Energy Use (kWh)	Effective Usable Battery Capacity (kWh)*	Level 1 Hrs	Level 2 Hrs	DCFC Hrs	Daily Cost
21.8	62.2	73.6	16.7	3.5	0.5	$2.40

*The Effective Usable Battery Capacity takes into account the usable battery capacity of the vehicle and the charge to/discharge to settings provided by your fleet.

SAWATCH LABS
info@sawatchlabs.com | sawatchlabs.com

Suitability Assessment

G95ZPHB7ZR0M - 2015 Ford F250

Recommended Replacement:

2025 Ram 1500 Ramcharger

Overall	Confidence	Energy*	Economics	Parking
95	100	N/A	100+	88

*Energy Score is not factored in for PHEVs because the battery capacity does not limit the vehicle's range.

Client: La Crosse County
Observation: 11/20/23 - 04/01/24
Days Tracked: 134 days
Trips Tracked: 660 trips
Last Trip: 04/01/24
VIN: 1FTBF2B6XFEB95749
Total Miles: 3,229
Temperature Range: -4°F - 67°F

Estimated Operational Metrics in a 2025 Ram 1500 Ramcharger

This table shows the estimated usage metrics if the trips driven by your 2015 Ford F250 had been driven in a 2025 Ram 1500 Ramcharger.

Annual Vehicle Miles Traveled	GHG Reduction (%)	GHG Reduction (lbs)	Operational Cost Difference*	TCO* (Lifetime)	TCO** (%)	Electric Miles	Average Daily Idling Hours
8,800	86%	234,160	▼ -$48,000-51,000	▼ -$24,000-27,000	▼ -21%	100%	0.4

*Total Cost of Ownership (TCO) Change and Operational Savings reflect the financial savings over the lifetime of the vehicle.
**TCO Change takes into account the purchase price of the recommended vehicle, Operational Savings does not.

Top Parking & Projected Charging Locations

This table shows the **top 5** most frequent locations where your vehicle parked for an extended period of time. These *extended dwell periods* are any parking event that exceeds 9 hours. We observed **101** extended dwell periods for this vehicle.

Address	Dwell Time (Avg Hrs)	Frequency
CR-VP, West Salem, Wisconsin, 54669*	16	88%
N5245-N5299 WI-108, West Salem, Wisconsin, 54669	16	2%
Tilson St E, West Salem, Wisconsin, 54669	16	<1%
CR-BM, West Salem, Wisconsin, 54669	16	<1%
W4175-W4161 Old County Road B, West Salem, Wisconsin, 54669	16	<1%

*This location has been identified as the vehicle's current homebase parking location based on its operations over the past 30 days.
To view results of all **12** parking locations and other detailed information for G95ZPHB7ZR0M, please visit ezEV dashboard.
For the purpose of calculating dwell time (average hours), extended dwell periods are capped at a duration of 16 $hours.

Charge Time & Cost - Average on days used

The charging needs of this 2015 Ford F250 would require an average of **12.1 kWh per day, on days used**, to operate the recommended PHEV using only electric miles. However, **midday charging is not required to operate the vehicle.**

Average Daily Energy Use (kWh)	Max Daily Energy Use (kWh)	Effective Usable Battery Capacity (kWh)*	Level 1 Hrs	Level 2 Hrs	DCFC Hrs	Daily Cost
12.1	30.3	69.9	9.3	1.2	0.3	$1.33

*The Effective Usable Battery Capacity takes into account the usable battery capacity of the vehicle and the charge to/discharge to settings provided by your fleet.

Suitability Assessment

G9T4XAZPURJY - 2022 Ram 1500

Recommended Replacement:

2024 Chevrolet Silverado EV 3WT

Overall	Confidence	Energy	Economics	Parking
94	100	100	100+	77

Client: La Crosse County
Observation: 12/05/23 - 04/01/24
Days Tracked: 119 days
Trips Tracked: 621 trips
Last Trip: 04/01/24
VIN: 3C6RR7KT1NG310486
Total Miles: 10,588
Temperature Range: -6°F - 68°F

Estimated Operational Metrics in a 2024 Chevrolet Silverado EV 3WT

This table shows the estimated usage metrics if the trips driven by your 2022 Ram 1500 had been driven in a 2024 Chevrolet Silverado EV 3WT .

Annual Vehicle Miles Traveled	GHG Reduction (%)	GHG Reduction (lbs)	Operational Cost Difference*	TCO* (Lifetime)	TCO** (%)	Average Daily Idling Hours
32,480	50%	179,540	▼ -$69,000-72,000	▼ -$30,000-33,000	▼ -20%	0.6

*Total Cost of Ownership (TCO) Change and Operational Savings reflect the financial savings over the lifetime of the vehicle.
**TCO Change takes into account the purchase price of the recommended vehicle, Operational Savings does not.

Top Parking & Projected Charging Locations

This table shows the **top 5** most frequent locations where your vehicle parked for an extended period of time. These *extended dwell periods* are any parking event that exceeds 9 hours. We observed **90** extended dwell periods for this vehicle.

Address	Dwell Time (Avg Hrs)	Frequency
N1454 Kirschner Rd, Coon Valley, Wisconsin, 54623*	14	77%
301 Carlson Rd, West Salem, Wisconsin, 54669	15	10%
N120 State Highway 35, Stoddard, Wisconsin, 54658	16	2%
2830 Darling Ct, La Crosse, Wisconsin, 54601	16	1%
Kwik Trip	15	1%

*This location has been identified as the vehicle's current homebase parking location based on its operations over the past 30 days.
To view results of all **13** parking locations and other detailed information for G9T4XAZPURJY, please visit ezEV dashboard.
For the purpose of calculating dwell time (average hours), extended dwell periods are capped at a duration of 16 $hours.

Charge Time & Cost - Average on days used

The charging needs of this 2022 Ram 1500 would require an average of **62.2 kWh per day, on days used**. Based on the observed driving, **midday charging would not be needed.**

Average Daily Energy Use (kWh)	Max Daily Energy Use (kWh)	Effective Usable Battery Capacity (kWh)*	Level 1 Hrs	Level 2 Hrs	DCFC Hrs	Daily Cost
62.2	127.3	148.8	47.7	6.3	1.4	$6.85

*The Effective Usable Battery Capacity takes into account the usable battery capacity of the vehicle and the charge to/discharge to settings provided by your fleet.

SAWATCH LABS
info@sawatchlabs.com | sawatchlabs.com

Suitability Assessment

G9268DT6V085 - 2021 Ram 1500

Recommended Replacement:

2024 Ford F-150 Lightning Pro

Overall	Confidence	Energy	Economics	Parking
94	100	94	100+	87

Client: La Crosse County
Observation: 12/06/23 - 03/31/24
Days Tracked: 117 days
Trips Tracked: 371 trips
Last Trip: 03/28/24
VIN: 3C6RR7KG7MG713874
Total Miles: 4,834
Temperature Range: -6°F - 68°F

Estimated Operational Metrics in a 2024 Ford F-150 Lightning Pro

This table shows the estimated usage metrics if the trips driven by your 2021 Ram 1500 had been driven in a 2024 Ford F-150 Lightning Pro.

Annual Vehicle Miles Traveled	GHG Reduction (%)	GHG Reduction (lbs)	Operational Cost Difference*	TCO* (Lifetime)	TCO** (%)	Average Daily Idling Hours
15,080	37%	61,660	▼ -$30,000-33,000	▼ -$15,000-18,000	▼ -16%	0.3

*Total Cost of Ownership (TCO) Change and Operational Savings reflect the financial savings over the lifetime of the vehicle.
**TCO Change takes into account the purchase price of the recommended vehicle, Operational Savings does not.

Top Parking & Projected Charging Locations

This table shows the **top 5** most frequent locations where your vehicle parked for an extended period of time. These *extended dwell periods* are any parking event that exceeds 9 hours. We observed **86** extended dwell periods for this vehicle.

Address	Dwell Time (Avg Hrs)	Frequency
W7207 Heram Rd, Holmen, Wisconsin, 54636*	15	87%
N6252-N6298 CR-D, Onalaska, Wisconsin, 54650	15	3%
1565-1599 Holmen Dr S, Holmen, Wisconsin, 54636	15	1%
1303 S Main St, Holmen, Wisconsin, 54636	15	1%
W7299-W7201 Heram Rd, Holmen, Wisconsin, 54636	12	1%

*This location has been identified as the vehicle's current homebase parking location based on its operations over the past 30 days.
To view results of all **10** parking locations and other detailed information for G9268DT6V085, please visit ezEV dashboard.
For the purpose of calculating dwell time (average hours), extended dwell periods are capped at a duration of 16 $hours.

Charge Time & Cost - Average on days used

The charging needs of this 2021 Ram 1500 would require an average of **32.1 kWh per day, on days used**. Based on the observed driving, **midday charging would be needed approximately twice per month.**

Average Daily Energy Use (kWh)	Max Daily Energy Use (kWh)	Effective Usable Battery Capacity (kWh)*	Level 1 Hrs	Level 2 Hrs	DCFC Hrs	Daily Cost
32.1	107.4	73.6	24.6	3.2	0.7	$3.53

*The Effective Usable Battery Capacity takes into account the usable battery capacity of the vehicle and the charge to/discharge to settings provided by your fleet.

Suitability Assessment

G9EC2SZ3JE0B - 2017 Ford Explorer

Recommended Replacement:

2024 Chevrolet Blazer EV Pursuit

Overall	Confidence	Energy	Economics	Parking
93	100	99	99	77

Client: La Crosse County
Observation: 11/20/23 - 03/31/24
Days Tracked: 133 days
Trips Tracked: 319 trips
Last Trip: 03/28/24
VIN: 1FM5K8B8XHGC47512
Total Miles: 2,994
Temperature Range: -5°F - 68°F

Estimated Operational Metrics in a 2024 Chevrolet Blazer EV Pursuit

This table shows the estimated usage metrics if the trips driven by your 2017 Ford Explorer had been driven in a 2024 Chevrolet Blazer EV Pursuit.

Annual Vehicle Miles Traveled	GHG Reduction (%)	GHG Reduction (lbs)	Operational Cost Difference*	TCO* (Lifetime)	TCO** (%)	Average Daily Idling Hours
8,220	73%	75,150	▼ -$21,000-24,000	▼ -$6,000-9,000	▼ -8%	0.1

*Total Cost of Ownership (TCO) Change and Operational Savings reflect the financial savings over the lifetime of the vehicle.
**TCO Change takes into account the purchase price of the recommended vehicle, Operational Savings does not.

Top Parking & Projected Charging Locations

This table shows the **3** most frequent locations where your vehicle parked for an extended period of time. These *extended dwell periods* are any parking event that exceeds 9 hours. We observed **107** extended dwell periods for this vehicle.

Address	Dwell Time (Avg Hrs)	Frequency
905 Winchester Ln, Holmen, Wisconsin, 54636*	14	77%
212 6th St N, La Crosse, Wisconsin, 54601	10	21%
N5633 Sunset Dr, Onalaska, Wisconsin, 54650	13	2%

*This location has been identified as the vehicle's current homebase parking location based on its operations over the past 30 days.
To view results of these **3** parking locations and other detailed information for G9EC2SZ3JE0B, please visit ezEV dashboard.
For the purpose of calculating dwell time (average hours), extended dwell periods are capped at a duration of 16 $hours.

Charge Time & Cost - Average on days used

The charging needs of this 2017 Ford Explorer would require an average of **9.2 kWh per day, on days used**. Based on the observed driving, **midday charging would be needed approximately four times per year.**

Average Daily Energy Use (kWh)	Max Daily Energy Use (kWh)	Effective Usable Battery Capacity (kWh)*	Level 1 Hrs	Level 2 Hrs	DCFC Hrs	Daily Cost
9.2	74.4	73.6	7.0	1.5	0.2	$1.01

*The Effective Usable Battery Capacity takes into account the usable battery capacity of the vehicle and the charge to/discharge to settings provided by your fleet.

Suitability Assessment

G9ZVRPCX4YHS - 2016 Ram 1500

Recommended Replacement:

2024 Ford F-150 Lightning Pro

93	100	96	92	91
Overall	Confidence	Energy	Economics	Parking

Client: La Crosse County
Observation: 11/20/23 - 04/01/24
Days Tracked: 134 days
Trips Tracked: 342 trips
Last Trip: 04/01/24
VIN: 1C6RR7KM6GS250838
Total Miles: 4,182
Temperature Range: -8°F - 68°F

Estimated Operational Metrics in a 2024 Ford F-150 Lightning Pro

This table shows the estimated usage metrics if the trips driven by your 2016 Ram 1500 had been driven in a 2024 Ford F-150 Lightning Pro.

Annual Vehicle Miles Traveled	GHG Reduction (%)	GHG Reduction (lbs)	Operational Cost Difference*	TCO* (Lifetime)	TCO** (%)	Average Daily Idling Hours
11,390	22%	17,330	▼ -$15,000-18,000	Cost parity	▼ -2%	0.1

*Total Cost of Ownership (TCO) Change and Operational Savings reflect the financial savings over the lifetime of the vehicle.
**TCO Change takes into account the purchase price of the recommended vehicle, Operational Savings does not.

Top Parking & Projected Charging Locations

This table shows the **top 5** most frequent locations where your vehicle parked for an extended period of time. These *extended dwell periods* are any parking event that exceeds 9 hours. We observed **91** extended dwell periods for this vehicle.

Address	Dwell Time (Avg Hrs)	Frequency
3010 Robin Hood Dr, La Crosse, Wisconsin, 54601*	15	90%
W4175-W4161 Old County Road B, West Salem, Wisconsin, 54669	10	5%
Dish1 Network Sales	14	1%
Baltz Curtis	12	1%
4642-4654 US-14, La Crosse, Wisconsin, 54601	15	1%

*This location has been identified as the vehicle's current homebase parking location based on its operations over the past 30 days.
To view results of all **6** parking locations and other detailed information for G9ZVRPCX4YHS, please visit ezEV dashboard.
For the purpose of calculating dwell time (average hours), extended dwell periods are capped at a duration of 16 $hours.

Charge Time & Cost - Average on days used

The charging needs of this 2016 Ram 1500 would require an average of **19.8 kWh per day, on days used**. Based on the observed driving, **midday charging would be needed approximately once per month.**

Average Daily Energy Use (kWh)	Max Daily Energy Use (kWh)	Effective Usable Battery Capacity (kWh)*	Level 1 Hrs	Level 2 Hrs	DCFC Hrs	Daily Cost
19.8	90.7	73.6	15.2	2.0	0.4	$2.18

*The Effective Usable Battery Capacity takes into account the usable battery capacity of the vehicle and the charge to/discharge to settings provided by your fleet.

Suitability Assessment

G9XBY6X2KTPY - 2019 Dodge Grand Caravan

Recommended Replacement:

2024 Chrysler Pacifica PHEV

93	100	N/A	100	84
Overall	Confidence	Energy*	Economics	Parking

*Energy Score is not factored in for PHEVs because the battery capacity does not limit the vehicle's range.

Client: La Crosse County
Observation: 11/20/23 - 04/01/24
Days Tracked: 134 days
Trips Tracked: 202 trips
Last Trip: 04/01/24
VIN: 2C4RDGBG2KR633719
Total Miles: 7,245
Temperature Range: 18°F - 67°F

Estimated Operational Metrics in a 2024 Chrysler Pacifica PHEV

This table shows the estimated usage metrics if the trips driven by your 2019 Dodge Grand Caravan had been driven in a 2024 Chrysler Pacifica PHEV.

Annual Vehicle Miles Traveled	GHG Reduction (%)	GHG Reduction (lbs)	Operational Cost Difference*	TCO* (Lifetime)	TCO** (%)	Electric Miles	Average Daily Idling Hours
19,740	9%	16,470	▼ -$18,000-21,000	▼ -$9,000-12,000	▼ -10%	17%	0.2

*Total Cost of Ownership (TCO) Change and Operational Savings reflect the financial savings over the lifetime of the vehicle.
**TCO Change takes into account the purchase price of the recommended vehicle, Operational Savings does not.

Top Parking & Projected Charging Locations

This table shows the **4** most frequent locations where your vehicle parked for an extended period of time. These *extended dwell periods* are any parking event that exceeds 9 hours. We observed **55** extended dwell periods for this vehicle.

Address	Dwell Time (Avg Hrs)	Frequency
333 Vine St, La Crosse, Wisconsin, 54601*	16	80%
1333 Rose St, La Crosse, Wisconsin, 54603	15	15%
410 3rd St N, La Crosse, Wisconsin, 54601	16	4%
Kwik Trip	16	2%

*This location has been identified as the vehicle's current homebase parking location based on its operations over the past 30 days.
To view results of these **4** parking locations and other detailed information for G9XBY6X2KTPY, please visit ezEV dashboard.
For the purpose of calculating dwell time (average hours), extended dwell periods are capped at a duration of 16 $hours.

Charge Time & Cost - Average on days used

The charging needs of this 2019 Dodge Grand Caravan would require an average of **49.6 kWh per day, on days used**, to operate the recommended PHEV using only electric miles. However, **midday charging is not required to operate the vehicle.**

Average Daily Energy Use (kWh)	Max Daily Energy Use (kWh)	Effective Usable Battery Capacity (kWh)*	Level 1 Hrs	Level 2 Hrs	DCFC Hrs	Daily Cost
49.6	206.5	11.5	12.3	2.5	0.4	$5.46

*The Effective Usable Battery Capacity takes into account the usable battery capacity of the vehicle and the charge to/discharge to settings provided by your fleet.

Suitability Assessment

G9291R10KHYZ - 2015 Chevrolet Silverado

Recommended Replacement:

2024 Ford F-150 Lightning Pro

91	100	100	89	81
Overall	Confidence	Energy	Economics	Parking

Client: La Crosse County
Observation: 11/20/23 - 04/01/24
Days Tracked: 134 days
Trips Tracked: 324 trips
Last Trip: 04/01/24
VIN: 3GCUKREC5FG336928
Total Miles: 1,881
Temperature Range: -6°F - 67°F

Estimated Operational Metrics in a 2024 Ford F-150 Lightning Pro

This table shows the estimated usage metrics if the trips driven by your 2015 Chevrolet Silverado had been driven in a 2024 Ford F-150 Lightning Pro.

Annual Vehicle Miles Traveled	GHG Reduction (%)	GHG Reduction (lbs)	Operational Cost Difference*	TCO* (Lifetime)	TCO** (%)	Average Daily Idling Hours
5,120	64%	46,230	▼ -$12,000-15,000	Cost parity	▲ 1%	0.2

*Total Cost of Ownership (TCO) Change and Operational Savings reflect the financial savings over the lifetime of the vehicle.
**TCO Change takes into account the purchase price of the recommended vehicle, Operational Savings does not.

Top Parking & Projected Charging Locations

This table shows the **top 5** most frequent locations where your vehicle parked for an extended period of time. These *extended dwell periods* are any parking event that exceeds 9 hours. We observed **91** extended dwell periods for this vehicle.

Address	Dwell Time (Avg Hrs)	Frequency
500 Vine St, La Crosse, Wisconsin, 54601*	16	74%
212 6th St N, La Crosse, Wisconsin, 54601	16	8%
125 W Legion St, Holmen, Wisconsin, 54636	16	4%
741 Oak Ave S, Onalaska, Wisconsin, 54650	16	2%
Lamboy James	16	1%

*This location has been identified as the vehicle's current homebase parking location based on its operations over the past 30 days.
To view results of all **15** parking locations and other detailed information for G9291R10KHYZ, please visit ezEV dashboard.
For the purpose of calculating dwell time (average hours), extended dwell periods are capped at a duration of 16 $hours.

Charge Time & Cost - Average on days used

The charging needs of this 2015 Chevrolet Silverado would require an average of **9.7 kWh per day, on days used**. Based on the observed driving, **midday charging would not be needed.**

Average Daily Energy Use (kWh)	Max Daily Energy Use (kWh)	Effective Usable Battery Capacity (kWh)*	Level 1 Hrs	Level 2 Hrs	DCFC Hrs	Daily Cost
9.7	43.5	73.6	7.5	1.0	0.2	$1.07

*The Effective Usable Battery Capacity takes into account the usable battery capacity of the vehicle and the charge to/discharge to settings provided by your fleet.

SAWATCH LABS
info@sawatchlabs.com | sawatchlabs.com

Suitability Assessment

G9YBK82FH839 - 2022 Chrysler Pacifica

Recommended Replacement:

2024 Chrysler Pacifica PHEV

Overall	Confidence	Energy*	Economics	Parking
91	100	N/A	90	92

*Energy Score is not factored in for PHEVs because the battery capacity does not limit the vehicle's range.

Client: La Crosse County
Observation: 11/23/23 - 04/01/24
Days Tracked: 131 days
Trips Tracked: 145 trips
Last Trip: 04/01/24
VIN: 2C4RC1CG2NR224347
Total Miles: 1,450
Temperature Range: 16°F - 58°F

Estimated Operational Metrics in a 2024 Chrysler Pacifica PHEV

This table shows the estimated usage metrics if the trips driven by your 2022 Chrysler Pacifica had been driven in a 2024 Chrysler Pacifica PHEV.

Annual Vehicle Miles Traveled	GHG Reduction (%)	GHG Reduction (lbs)	Operational Cost Difference*	TCO* (Lifetime)	TCO** (%)	Electric Miles	Average Daily Idling Hours
4,040	59%	27,890	▼ -$6,000-9,000	Cost parity	0%	85%	0.2

*Total Cost of Ownership (TCO) Change and Operational Savings reflect the financial savings over the lifetime of the vehicle.
**TCO Change takes into account the purchase price of the recommended vehicle, Operational Savings does not.

Top Parking & Projected Charging Locations

This table shows the **3** most frequent locations where your vehicle parked for an extended period of time. These *extended dwell periods* are any parking event that exceeds 9 hours. We observed **53** extended dwell periods for this vehicle.

Address	Dwell Time (Avg Hrs)	Frequency
846-1116 Garland St E, West Salem, Wisconsin, 54669*	16	92%
Kwik Trip	16	6%
1421 Heritage Blvd, West Salem, Wisconsin, 54669	16	2%

*This location has been identified as the vehicle's current homebase parking location based on its operations over the past 30 days.
To view results of these **3** parking locations and other detailed information for G9YBK82FH839, please visit ezEV dashboard.
For the purpose of calculating dwell time (average hours), extended dwell periods are capped at a duration of 16 $hours.

Charge Time & Cost - Average on days used

The charging needs of this 2022 Chrysler Pacifica would require an average of **7.5 kWh per day, on days used**, to operate the recommended PHEV using only electric miles. However, **midday charging is not required to operate the vehicle.**

Average Daily Energy Use (kWh)	Max Daily Energy Use (kWh)	Effective Usable Battery Capacity (kWh)*	Level 1 Hrs	Level 2 Hrs	DCFC Hrs	Daily Cost
7.5	56.5	11.5	5.8	1.2	0.2	$0.83

*The Effective Usable Battery Capacity takes into account the usable battery capacity of the vehicle and the charge to/discharge to settings provided by your fleet.

Suitability Assessment

G9T2SC2HZJMJ - 2023 Ram 2500

Recommended Replacement:

2025 Ram 1500 Ramcharger

Overall	Confidence	Energy*	Economics	Parking
88	100	N/A	90	86

*Energy Score is not factored in for PHEVs because the battery capacity does not limit the vehicle's range.

Client: La Crosse County
Observation: 12/06/23 - 04/01/24
Days Tracked: 118 days
Trips Tracked: 140 trips
Last Trip: 04/01/24
VIN: 3C6MR5AJ6PG502682
Total Miles: 2,787
Temperature Range: -5°F - 65°F

Estimated Operational Metrics in a 2025 Ram 1500 Ramcharger

This table shows the estimated usage metrics if the trips driven by your 2023 Ram 2500 had been driven in a 2025 Ram 1500 Ramcharger.

Annual Vehicle Miles Traveled	GHG Reduction (%)	GHG Reduction (lbs)	Operational Cost Difference*	TCO* (Lifetime)	TCO** (%)	Electric Miles	Average Daily Idling Hours
8,620	63%	86,260	▼ -$24,000-27,000	Cost parity	0%	100%	0.5

*Total Cost of Ownership (TCO) Change and Operational Savings reflect the financial savings over the lifetime of the vehicle.
**TCO Change takes into account the purchase price of the recommended vehicle, Operational Savings does not.

Top Parking & Projected Charging Locations

This table shows the **top 5** most frequent locations where your vehicle parked for an extended period of time. These *extended dwell periods* are any parking event that exceeds 9 hours. We observed **50** extended dwell periods for this vehicle.

Address	Dwell Time (Avg Hrs)	Frequency
W4175-W4161 Old County Road B, West Salem, Wisconsin, 54669	16	56%
301 Carlson Rd, West Salem, Wisconsin, 54669*	16	30%
W3169-W3249 WI-33, La Crosse, Wisconsin, 54601	12	4%
Kwik Trip	16	2%
1432-1460 W City Highway 16, West Salem, Wisconsin, 54669	16	2%

*This location has been identified as the vehicle's current homebase parking location based on its operations over the past 30 days.
To view results of all **8** parking locations and other detailed information for G9T2SC2HZJMJ, please visit ezEV dashboard.
For the purpose of calculating dwell time (average hours), extended dwell periods are capped at a duration of 16 $hours.

Charge Time & Cost - Average on days used

The charging needs of this 2023 Ram 2500 would require an average of **27.3 kWh per day, on days used**, to operate the recommended PHEV using only electric miles. However, **midday charging is not required to operate the vehicle.**

Average Daily Energy Use (kWh)	Max Daily Energy Use (kWh)	Effective Usable Battery Capacity (kWh)*	Level 1 Hrs	Level 2 Hrs	DCFC Hrs	Daily Cost
27.3	87	69.9	20.9	2.8	0.6	$3.01

*The Effective Usable Battery Capacity takes into account the usable battery capacity of the vehicle and the charge to/discharge to settings provided by your fleet.

SAWATCH LABS
info@sawatchlabs.com | sawatchlabs.com

Suitability Assessment

G93HVF3X8WX7 - 2020 Ford Explorer

Recommended Replacement:

No Change*

84	100	100	100+	60
Overall	Confidence	Energy	Economics	Parking

*This vehicle was compared to all available Light Duty EVs, none of which were a good economic and operational fit. These scores are based on the EV that was the best fit: 2024 Chevrolet Blazer EV Pursuit.

Client: La Crosse County
Observation: 11/20/23 - 04/01/24
Days Tracked: 134 days
Trips Tracked: 369 trips
Last Trip: 04/01/24
VIN: 1FM5K8AB5LGC52459
Total Miles: 9,724
Temperature Range: -9°F - 64°F

Estimated Operational Metrics in a 2024 Chevrolet Blazer EV Pursuit

This table shows the estimated usage metrics if the trips driven by your 2020 Ford Explorer had been driven in a 2024 Chevrolet Blazer EV Pursuit.

Annual Vehicle Miles Traveled	GHG Reduction (%)	GHG Reduction (lbs)	Operational Cost Difference*	TCO* (Lifetime)	TCO** (%)	Average Daily Idling Hours
26,490	76%	256,170	▼ -$69,000-72,000	▼ -$54,000-57,000	▼ -38%	3.8

*Total Cost of Ownership (TCO) Change and Operational Savings reflect the financial savings over the lifetime of the vehicle.
**TCO Change takes into account the purchase price of the recommended vehicle, Operational Savings does not.

Top Parking & Projected Charging Locations

This table shows the **top 5** most frequent locations where your vehicle parked for an extended period of time. These *extended dwell periods* are any parking event that exceeds 9 hours. We observed **94** extended dwell periods for this vehicle.

Address	Dwell Time (Avg Hrs)	Frequency
W6262 Valley Pl, Holmen, Wisconsin, 54636	15	60%
N7276 Bice Ave, Holmen, Wisconsin, 54636*	15	31%
Quick Lane	16	2%
Kwik Trip	16	2%
W6100-W6198 Kurt Blvd, Onalaska, Wisconsin, 54650	16	1%

*This location has been identified as the vehicle's current homebase parking location based on its operations over the past 30 days.
To view results of all **9** parking locations and other detailed information for G93HVF3X8WX7, please visit ezEV dashboard.
For the purpose of calculating dwell time (average hours), extended dwell periods are capped at a duration of 16 $hours.

Charge Time & Cost - Average on days used

The charging needs of this 2020 Ford Explorer would require an average of **21.4 kWh per day, on days used**. Based on the observed driving, **midday charging would not be needed.**

Average Daily Energy Use (kWh)	Max Daily Energy Use (kWh)	Effective Usable Battery Capacity (kWh)*	Level 1 Hrs	Level 2 Hrs	DCFC Hrs	Daily Cost
21.4	59.3	73.6	16.4	3.4	0.5	$2.35

*The Effective Usable Battery Capacity takes into account the usable battery capacity of the vehicle and the charge to/discharge to settings provided by your fleet.

SAWATCH LABS
info@sawatchlabs.com | sawatchlabs.com

Suitability Assessment

G9973UNEH5HF - 2023 Ford Explorer

Recommended Replacement:

No Change*

Overall	Confidence	Energy	Economics	Parking
84	2	100	100+	100

*This vehicle was compared to all available Light Duty EVs, none of which were a good economic and operational fit. These scores are based on the EV that was the best fit: 2024 Chevrolet Blazer EV Pursuit.

Client: La Crosse County
Observation: 11/20/23 - 11/21/23
Days Tracked: 2 days
Trips Tracked: 10 trips
Last Trip: 11/21/23
VIN: 1FM5K8AB4PGA34468
Total Miles: 122
Temperature Range: 39°F - 46°F

Estimated Operational Metrics in a 2024 Chevrolet Blazer EV Pursuit

This table shows the estimated usage metrics if the trips driven by your 2023 Ford Explorer had been driven in a 2024 Chevrolet Blazer EV Pursuit.

Annual Vehicle Miles Traveled	GHG Reduction (%)	GHG Reduction (lbs)	Operational Cost Difference*	TCO* (Lifetime)	TCO** (%)	Average Daily Idling Hours
22,250	76%	236,690	▼ -$63,000-66,000	▼ -$48,000-51,000	▼ -36%	1.7

*Total Cost of Ownership (TCO) Change and Operational Savings reflect the financial savings over the lifetime of the vehicle.
**TCO Change takes into account the purchase price of the recommended vehicle, Operational Savings does not.

Top Parking & Projected Charging Locations

This table shows the **1** most frequent locations where your vehicle parked for an extended period of time. These *extended dwell periods* are any parking event that exceeds 9 hours. We observed **1** extended dwell periods for this vehicle.

Address	Dwell Time (Avg Hrs)	Frequency
410 3rd St N, La Crosse, Wisconsin, 54601*	16	100%

*This location has been identified as the vehicle's current homebase parking location based on its operations over the past 30 days.
To view results of this **1** parking location and other detailed information for G9973UNEH5HF, please visit ezEV dashboard.
For the purpose of calculating dwell time (average hours), extended dwell periods are capped at a duration of 16 $hours.

Charge Time & Cost - Average on days used

The charging needs of this 2023 Ford Explorer would require an average of **16.2 kWh per day, on days used**. Based on the observed driving, **midday charging would not be needed.**

Average Daily Energy Use (kWh)	Max Daily Energy Use (kWh)	Effective Usable Battery Capacity (kWh)*	Level 1 Hrs	Level 2 Hrs	DCFC Hrs	Daily Cost
16.2	26	73.6	12.4	2.6	0.4	$1.79

*The Effective Usable Battery Capacity takes into account the usable battery capacity of the vehicle and the charge to/discharge to settings provided by your fleet.

Suitability Assessment

G99MV7M799XS - 2016 Ford Transit

Recommended Replacement:

No Change*

Overall	Confidence	Energy	Economics	Parking
84	100	100	77	93

*This vehicle was compared to all available Light Duty EVs, none of which were a good economic and operational fit. These scores are based on the EV that was the best fit: 2024 Ford eTransit.

Client: La Crosse County
Observation: 11/20/23 - 03/21/24
Days Tracked: 123 days
Trips Tracked: 32 trips
Last Trip: 03/20/24
VIN: 1FBZX2CM7GKA84723
Total Miles: 399
Temperature Range: 17°F - 46°F

Estimated Operational Metrics in a 2024 Ford eTransit

This table shows the estimated usage metrics if the trips driven by your 2016 Ford Transit had been driven in a 2024 Ford eTransit.

Annual Vehicle Miles Traveled	GHG Reduction (%)	GHG Reduction (lbs)	Operational Cost Difference*	TCO* (Lifetime)	TCO** (%)	Average Daily Idling Hours
1,180	67%	12,720	▼ -$3,000-6,000	▲ $6,000-9,000	▲ 15%	0.1

*Total Cost of Ownership (TCO) Change and Operational Savings reflect the financial savings over the lifetime of the vehicle.
**TCO Change takes into account the purchase price of the recommended vehicle, Operational Savings does not.

Top Parking & Projected Charging Locations

This table shows the **3** most frequent locations where your vehicle parked for an extended period of time. These *extended dwell periods* are any parking event that exceeds 9 hours. We observed **14** extended dwell periods for this vehicle.

Address	Dwell Time (Avg Hrs)	Frequency
Village of West Salem, Wisconsin	16	79%
846-1116 Garland St E, West Salem, Wisconsin, 54669	16	14%
354-454 Veterans Memorial Dr, La Crosse, Wisconsin, 54601	16	7%

No homebase parking has yet been identified for this vehicle. This occurs when we do not yet have sufficient driving data for the vehicle or when there are too few parking events that have occurred.
To view results of these **3** parking locations and other detailed information for G99MV7M799XS, please visit ezEV dashboard.
For the purpose of calculating dwell time (average hours), extended dwell periods are capped at a duration of 16 $hours.

Charge Time & Cost - Average on days used

The charging needs of this 2016 Ford Transit would require an average of **11.5 kWh per day, on days used**. Based on the observed driving, **midday charging would not be needed.**

Average Daily Energy Use (kWh)	Max Daily Energy Use (kWh)	Effective Usable Battery Capacity (kWh)*	Level 1 Hrs	Level 2 Hrs	DCFC Hrs	Daily Cost
11.5	30.7	49.6	8.8	1.2	0.3	$1.26

*The Effective Usable Battery Capacity takes into account the usable battery capacity of the vehicle and the charge to/discharge to settings provided by your fleet.

Suitability Assessment

G9AS0VVD73U8 - 2009 Chevrolet Express

Recommended Replacement:

No Change*

Overall	Confidence	Energy	Economics	Parking
84	100	100	73	100

*This vehicle was compared to all available Light Duty EVs, none of which were a good economic and operational fit. These scores are based on the EV that was the best fit: 2024 Ford eTransit.

Client: La Crosse County
Observation: 11/23/23 - 03/21/24
Days Tracked: 120 days
Trips Tracked: 9 trips
Last Trip: 12/12/23
VIN: 1GAHG39K291166041
Total Miles: 116
Temperature Range: 17°F - 42°F

Estimated Operational Metrics in a 2024 Ford eTransit

This table shows the estimated usage metrics if the trips driven by your 2009 Chevrolet Express had been driven in a 2024 Ford eTransit.

Annual Vehicle Miles Traveled	GHG Reduction (%)	GHG Reduction (lbs)	Operational Cost Difference*	TCO* (Lifetime)	TCO** (%)	Average Daily Idling Hours
350	79%	5,840	Cost parity	▲ $9,000-12,000	▲ 21%	0.5

*Total Cost of Ownership (TCO) Change and Operational Savings reflect the financial savings over the lifetime of the vehicle.
**TCO Change takes into account the purchase price of the recommended vehicle, Operational Savings does not.

Top Parking & Projected Charging Locations

This table shows the **1** most frequent locations where your vehicle parked for an extended period of time. These *extended dwell periods* are any parking event that exceeds 9 hours. We observed **3** extended dwell periods for this vehicle.

Address	Dwell Time (Avg Hrs)	Frequency
Lakeview Health Center*	16	100%

*This location has been identified as the vehicle's current homebase parking location based on its operations over the past 30 days.
To view results of this **1** parking location and other detailed information for G9AS0VVD73U8, please visit ezEV dashboard.
For the purpose of calculating dwell time (average hours), extended dwell periods are capped at a duration of 16 $hours.

Charge Time & Cost - Average on days used

The charging needs of this 2009 Chevrolet Express would require an average of **9.1 kWh per day, on days used**. Based on the observed driving, **midday charging would not be needed.**

Average Daily Energy Use (kWh)	Max Daily Energy Use (kWh)	Effective Usable Battery Capacity (kWh)*	Level 1 Hrs	Level 2 Hrs	DCFC Hrs	Daily Cost
9.1	10.9	49.6	7.0	0.9	0.2	$1.00

*The Effective Usable Battery Capacity takes into account the usable battery capacity of the vehicle and the charge to/discharge to settings provided by your fleet.

SAWATCH LABS
info@sawatchlabs.com | sawatchlabs.com

Suitability Assessment

G9BC4Z60R3WB - 2011 Dodge Ram

Recommended Replacement:

No Change*

Overall	Confidence	Energy	Economics	Parking
84	21	100	83	83

*This vehicle was compared to all available Light Duty EVs, none of which were a good economic and operational fit. These scores are based on the EV that was the best fit: 2024 Ford F-150 Lightning Pro.

Client: La Crosse County
Observation: 12/08/23 - 12/26/23
Days Tracked: 19 days
Trips Tracked: 34 trips
Last Trip: 12/26/23
VIN: 1D7RV1GP2BS530839
Total Miles: 173
Temperature Range: 17°F - 51°F

Estimated Operational Metrics in a 2024 Ford F-150 Lightning Pro

This table shows the estimated usage metrics if the trips driven by your 2011 Dodge Ram had been driven in a 2024 Ford F-150 Lightning Pro.

Annual Vehicle Miles Traveled	GHG Reduction (%)	GHG Reduction (lbs)	Operational Cost Difference*	TCO* (Lifetime)	TCO** (%)	Average Daily Idling Hours
3,320	69%	37,890	▼ -$9,000-12,000	▲ $3,000-6,000	▲ 7%	0.2

*Total Cost of Ownership (TCO) Change and Operational Savings reflect the financial savings over the lifetime of the vehicle.
**TCO Change takes into account the purchase price of the recommended vehicle, Operational Savings does not.

Top Parking & Projected Charging Locations

This table shows the **2** most frequent locations where your vehicle parked for an extended period of time. These *extended dwell periods* are any parking event that exceeds 9 hours. We observed **6** extended dwell periods for this vehicle.

Address	Dwell Time (Avg Hrs)	Frequency
500 Vine St, La Crosse, Wisconsin, 54601*	16	83%
3473-3599 WI-16 W, La Crosse, Wisconsin, 54601	16	17%

*This location has been identified as the vehicle's current homebase parking location based on its operations over the past 30 days.
To view results of these **2** parking locations and other detailed information for G9BC4Z60R3WB, please visit ezEV dashboard.
For the purpose of calculating dwell time (average hours), extended dwell periods are capped at a duration of 16 $hours.

Charge Time & Cost - Average on days used

The charging needs of this 2011 Dodge Ram would require an average of **9.8 kWh per day, on days used**. Based on the observed driving, **midday charging would not be needed.**

Average Daily Energy Use (kWh)	Max Daily Energy Use (kWh)	Effective Usable Battery Capacity (kWh)*	Level 1 Hrs	Level 2 Hrs	DCFC Hrs	Daily Cost
9.8	24	73.6	7.5	1.0	0.2	$1.08

*The Effective Usable Battery Capacity takes into account the usable battery capacity of the vehicle and the charge to/discharge to settings provided by your fleet.

Suitability Assessment

G9CR2M97DWEM - 2020 Ford Ranger

Recommended Replacement:

No Change*

*This vehicle was compared to all available Light Duty EVs, none of which were a good economic and operational fit. These scores are based on the EV that was the best fit: 2024 Ford F-150 Lightning Pro.

Client: La Crosse County
Observation: 11/20/23 - 03/28/24
Days Tracked: 130 days
Trips Tracked: 323 trips
Last Trip: 03/27/24
VIN: 1FTER1FHXLLA52074
Total Miles: 621
Temperature Range: -6°F - 67°F

Estimated Operational Metrics in a 2024 Ford F-150 Lightning Pro

This table shows the estimated usage metrics if the trips driven by your 2020 Ford Ranger had been driven in a 2024 Ford F-150 Lightning Pro.

Annual Vehicle Miles Traveled	GHG Reduction (%)	GHG Reduction (lbs)	Operational Cost Difference*	TCO* (Lifetime)	TCO** (%)	Average Daily Idling Hours
1,740	76%	24,700	▼ -$6,000-9,000	▲ $6,000-9,000	▲ 16%	0.9

*Total Cost of Ownership (TCO) Change and Operational Savings reflect the financial savings over the lifetime of the vehicle.
**TCO Change takes into account the purchase price of the recommended vehicle, Operational Savings does not.

Top Parking & Projected Charging Locations

This table shows the **5** most frequent locations where your vehicle parked for an extended period of time. These *extended dwell periods* are any parking event that exceeds 9 hours. We observed **70** extended dwell periods for this vehicle.

Address	Dwell Time (Avg Hrs)	Frequency
Landfill Rd, Onalaska, Wisconsin, 54650*	16	69%
Landfill Rd, Onalaska, Wisconsin, 54650	16	16%
3240 Berlin Dr, La Crosse, Wisconsin, 54601	16	13%
9421 State Road 16, Onalaska, Wisconsin, 54650	16	1%
Onalaska, Wisconsin	15	1%

*This location has been identified as the vehicle's current homebase parking location based on its operations over the past 30 days.
To view results of these **5** parking locations and other detailed information for G9CR2M97DWEM, please visit ezEV dashboard.
For the purpose of calculating dwell time (average hours), extended dwell periods are capped at a duration of 16 $hours.

Charge Time & Cost - Average on days used

The charging needs of this 2020 Ford Ranger would require an average of **3.3 kWh per day, on days used**. Based on the observed driving, **midday charging would not be needed.**

Average Daily Energy Use (kWh)	Max Daily Energy Use (kWh)	Effective Usable Battery Capacity (kWh)*	Level 1 Hrs	Level 2 Hrs	DCFC Hrs	Daily Cost
3.3	18.5	73.6	2.5	0.3	0.1	$0.37

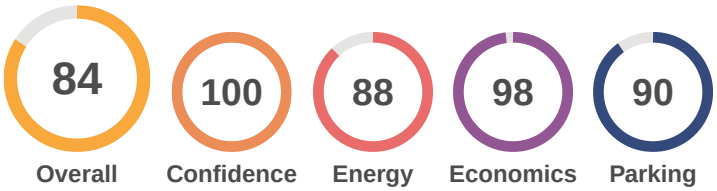
*The Effective Usable Battery Capacity takes into account the usable battery capacity of the vehicle and the charge to/discharge to settings provided by your fleet.

Suitability Assessment

G9FN3JX18ZPK - 2018 Ford F150

Recommended Replacement:

No Change*



*This vehicle was compared to all available Light Duty EVs, none of which were a good economic and operational fit. These scores are based on the EV that was the best fit: 2024 Ford F-150 Lightning Pro.

Client: La Crosse County
Observation: 12/04/23 - 04/01/24
Days Tracked: 120 days
Trips Tracked: 219 trips
Last Trip: 03/27/24
VIN: 1FTEW1E53JKF95673
Total Miles: 3,050
Temperature Range: -6°F - 70°F

Estimated Operational Metrics in a 2024 Ford F-150 Lightning Pro

This table shows the estimated usage metrics if the trips driven by your 2018 Ford F150 had been driven in a 2024 Ford F-150 Lightning Pro.

Annual Vehicle Miles Traveled	GHG Reduction (%)	GHG Reduction (lbs)	Operational Cost Difference*	TCO* (Lifetime)	TCO** (%)	Average Daily Idling Hours
9,280	44%	49,970	▼ -$18,000-21,000	▼ -$3,000-6,000	▼ -7%	0.6

*Total Cost of Ownership (TCO) Change and Operational Savings reflect the financial savings over the lifetime of the vehicle.
**TCO Change takes into account the purchase price of the recommended vehicle, Operational Savings does not.

Top Parking & Projected Charging Locations

This table shows the **top 5** most frequent locations where your vehicle parked for an extended period of time. These *extended dwell periods* are any parking event that exceeds 9 hours. We observed **50** extended dwell periods for this vehicle.

Address	Dwell Time (Avg Hrs)	Frequency
W4175-W4161 Old County Road B, West Salem, Wisconsin, 54669*	16	78%
301 Carlson Rd, West Salem, Wisconsin, 54669	16	12%
2312 University Ave, Madison, Wisconsin, 53726	14	4%
N4901-N4927 Carlson Rd, West Salem, Wisconsin, 54669	16	2%
536 S 7th St, La Crescent, Minnesota, 55947	16	2%

*This location has been identified as the vehicle's current homebase parking location based on its operations over the past 30 days.
To view results of all **6** parking locations and other detailed information for G9FN3JX18ZPK, please visit ezEV dashboard.
For the purpose of calculating dwell time (average hours), extended dwell periods are capped at a duration of 16 $hours.

Charge Time & Cost - Average on days used

The charging needs of this 2018 Ford F150 would require an average of **33.5 kWh per day, on days used**. Based on the observed driving, **midday charging would be needed approximately once per week.**

Average Daily Energy Use (kWh)	Max Daily Energy Use (kWh)	Effective Usable Battery Capacity (kWh)*	Level 1 Hrs	Level 2 Hrs	DCFC Hrs	Daily Cost
33.5	287.7	73.6	25.7	3.4	0.7	$3.69

*The Effective Usable Battery Capacity takes into account the usable battery capacity of the vehicle and the charge to/discharge to settings provided by your fleet.

Suitability Assessment

G9JKFZH2S8SF - 2019 Ford F150

Recommended Replacement:

No Change*

84	100	100	80	100
Overall	Confidence	Energy	Economics	Parking

*This vehicle was compared to all available Light Duty EVs, none of which were a good economic and operational fit. These scores are based on the EV that was the best fit: 2024 Ford F-150 Lightning Pro.

Client: La Crosse County
Observation: 11/20/23 - 04/01/24
Days Tracked: 134 days
Trips Tracked: 84 trips
Last Trip: 04/01/24
VIN: 1FTEW1E58KKD50773
Total Miles: 1,309
Temperature Range: 9°F - 68°F

Estimated Operational Metrics in a 2024 Ford F-150 Lightning Pro

This table shows the estimated usage metrics if the trips driven by your 2019 Ford F150 had been driven in a 2024 Ford F-150 Lightning Pro.

Annual Vehicle Miles Traveled	GHG Reduction (%)	GHG Reduction (lbs)	Operational Cost Difference*	TCO* (Lifetime)	TCO** (%)	Average Daily Idling Hours
3,570	56%	24,830	▼ -$6,000-9,000	▲ $6,000-9,000	▲ 11%	0.4

*Total Cost of Ownership (TCO) Change and Operational Savings reflect the financial savings over the lifetime of the vehicle.
**TCO Change takes into account the purchase price of the recommended vehicle, Operational Savings does not.

Top Parking & Projected Charging Locations

This table shows the **3** most frequent locations where your vehicle parked for an extended period of time. These *extended dwell periods* are any parking event that exceeds 9 hours. We observed **35** extended dwell periods for this vehicle.

Address	Dwell Time (Avg Hrs)	Frequency
W4175-W4161 Old County Road B, West Salem, Wisconsin, 54669*	16	83%
301 Carlson Rd, West Salem, Wisconsin, 54669	16	11%
W4125-W4159 Old County Road B, West Salem, Wisconsin, 54669	16	6%

*This location has been identified as the vehicle's current homebase parking location based on its operations over the past 30 days.
To view results of these **3** parking locations and other detailed information for G9JKFZH2S8SF, please visit ezEV dashboard.
For the purpose of calculating dwell time (average hours), extended dwell periods are capped at a duration of 16 $hours.

Charge Time & Cost - Average on days used

The charging needs of this 2019 Ford F150 would require an average of **14.9 kWh per day, on days used**. Based on the observed driving, **midday charging would not be needed.**

Average Daily Energy Use (kWh)	Max Daily Energy Use (kWh)	Effective Usable Battery Capacity (kWh)*	Level 1 Hrs	Level 2 Hrs	DCFC Hrs	Daily Cost
14.9	72.8	73.6	11.4	1.5	0.3	$1.64

*The Effective Usable Battery Capacity takes into account the usable battery capacity of the vehicle and the charge to/discharge to settings provided by your fleet.

SAWATCH LABS
info@sawatchlabs.com | sawatchlabs.com

Suitability Assessment

G9T1YMNH3V0T - 2019 Ford Ranger

Recommended Replacement:

No Change*

Overall	Confidence	Energy	Economics	Parking
84	100	100	73	95

*This vehicle was compared to all available Light Duty EVs, none of which were a good economic and operational fit. These scores are based on the EV that was the best fit: 2024 Ford F-150 Lightning Pro.

Client: La Crosse County
Observation: 11/23/23 - 03/28/24
Days Tracked: 127 days
Trips Tracked: 221 trips
Last Trip: 03/26/24
VIN: 1FTER4FH1KLA22333
Total Miles: 666
Temperature Range: -6°F - 68°F

Estimated Operational Metrics in a 2024 Ford F-150 Lightning Pro

This table shows the estimated usage metrics if the trips driven by your 2019 Ford Ranger had been driven in a 2024 Ford F-150 Lightning Pro.

Annual Vehicle Miles Traveled	GHG Reduction (%)	GHG Reduction (lbs)	Operational Cost Difference*	TCO* (Lifetime)	TCO** (%)	Average Daily Idling Hours
1,910	49%	10,090	▼ -$3,000-6,000	▲ $9,000-12,000	▲ 21%	0.1

*Total Cost of Ownership (TCO) Change and Operational Savings reflect the financial savings over the lifetime of the vehicle.
**TCO Change takes into account the purchase price of the recommended vehicle, Operational Savings does not.

Top Parking & Projected Charging Locations

This table shows the **top 5** most frequent locations where your vehicle parked for an extended period of time. These *extended dwell periods* are any parking event that exceeds 9 hours. We observed **66** extended dwell periods for this vehicle.

Address	Dwell Time (Avg Hrs)	Frequency
Village of West Salem, Wisconsin*	16	77%
Village of West Salem, Wisconsin	16	14%
846-1116 Garland St E, West Salem, Wisconsin, 54669	16	5%
646 Breezy Point Rd, La Crosse, Wisconsin, 54603	16	2%
4000 Mormon Coulee Rd, La Crosse, Wisconsin, 54601	16	2%

*This location has been identified as the vehicle's current homebase parking location based on its operations over the past 30 days.
To view results of all **6** parking locations and other detailed information for G9T1YMNH3V0T, please visit ezEV dashboard.
For the purpose of calculating dwell time (average hours), extended dwell periods are capped at a duration of 16 $hours.

Charge Time & Cost - Average on days used

The charging needs of this 2019 Ford Ranger would require an average of **4.4 kWh per day, on days used**. Based on the observed driving, **midday charging would not be needed.**

Average Daily Energy Use (kWh)	Max Daily Energy Use (kWh)	Effective Usable Battery Capacity (kWh)*	Level 1 Hrs	Level 2 Hrs	DCFC Hrs	Daily Cost
4.4	29.5	73.6	3.3	0.4	0.1	$0.48

*The Effective Usable Battery Capacity takes into account the usable battery capacity of the vehicle and the charge to/discharge to settings provided by your fleet.

SAWATCH LABS
info@sawatchlabs.com | sawatchlabs.com

Suitability Assessment

G9V5ZR364TS2 - 2013 Chevrolet Silverado

Recommended Replacement:

No Change*

*This vehicle was compared to all available Light Duty EVs, none of which were a good economic and operational fit. These scores are based on the EV that was the best fit: 2024 Ford F-150 Lightning Pro.

Client: La Crosse County
Observation: 11/30/23 - 04/01/24
Days Tracked: 124 days
Trips Tracked: 120 trips
Last Trip: 04/01/24
VIN: 1GCRKPE72DZ249028
Total Miles: 1,465
Temperature Range: -5°F - 67°F

Estimated Operational Metrics in a 2024 Ford F-150 Lightning Pro

This table shows the estimated usage metrics if the trips driven by your 2013 Chevrolet Silverado had been driven in a 2024 Ford F-150 Lightning Pro.

Annual Vehicle Miles Traveled	GHG Reduction (%)	GHG Reduction (lbs)	Operational Cost Difference*	TCO* (Lifetime)	TCO** (%)	Average Daily Idling Hours
4,310	48%	23,580	▼ -$9,000-12,000	▲ $3,000-6,000	▲ 9%	0.1

*Total Cost of Ownership (TCO) Change and Operational Savings reflect the financial savings over the lifetime of the vehicle.
**TCO Change takes into account the purchase price of the recommended vehicle, Operational Savings does not.

Top Parking & Projected Charging Locations

This table shows the **2** most frequent locations where your vehicle parked for an extended period of time. These *extended dwell periods* are any parking event that exceeds 9 hours. We observed **33** extended dwell periods for this vehicle.

Address	Dwell Time (Avg Hrs)	Frequency
212 6th St N, La Crosse, Wisconsin, 54601*	16	97%
W1297 State Road 33, Bangor, Wisconsin, 54614	16	3%

*This location has been identified as the vehicle's current homebase parking location based on its operations over the past 30 days.
To view results of these **2** parking locations and other detailed information for G9V5ZR364TS2, please visit ezEV dashboard.
For the purpose of calculating dwell time (average hours), extended dwell periods are capped at a duration of 16 $hours.

Charge Time & Cost - Average on days used

The charging needs of this 2013 Chevrolet Silverado would require an average of **21 kWh per day, on days used**. Based on the observed driving, **midday charging would not be needed.**

Average Daily Energy Use (kWh)	Max Daily Energy Use (kWh)	Effective Usable Battery Capacity (kWh)*	Level 1 Hrs	Level 2 Hrs	DCFC Hrs	Daily Cost
21	49.4	73.6	16.1	2.1	0.5	$2.31

*The Effective Usable Battery Capacity takes into account the usable battery capacity of the vehicle and the charge to/discharge to settings provided by your fleet.

Suitability Assessment

G9WTSTKH7AMM - 2022 Ram 2500

Recommended Replacement:

No Change*

84	100	N/A	80	91
Overall	Confidence	Energy*	Economics	Parking

*Energy Score is not factored in for PHEVs because the battery capacity does not limit the vehicle's range.

*This vehicle was compared to all available Light Duty EVs, none of which were a good economic and operational fit. These scores are based on the EV that was the best fit: 2025 Ram 1500 Ramcharger.

Client: La Crosse County
Observation: 11/20/23 - 04/01/24
Days Tracked: 134 days
Trips Tracked: 322 trips
Last Trip: 04/01/24
VIN: 3C6MR5AJ9NG237866
Total Miles: 1,320
Temperature Range: 10°F - 63°F

Estimated Operational Metrics in a 2025 Ram 1500 Ramcharger

This table shows the estimated usage metrics if the trips driven by your 2022 Ram 2500 had been driven in a 2025 Ram 1500 Ramcharger.

Annual Vehicle Miles Traveled	GHG Reduction (%)	GHG Reduction (lbs)	Operational Cost Difference*	TCO* (Lifetime)	TCO** (%)	Electric Miles	Average Daily Idling Hours
3,600	81%	75,500	▼ -$15,000-18,000	▲ $6,000-9,000	▲ 11%	100%	0.3

*Total Cost of Ownership (TCO) Change and Operational Savings reflect the financial savings over the lifetime of the vehicle.
**TCO Change takes into account the purchase price of the recommended vehicle, Operational Savings does not.

Top Parking & Projected Charging Locations

This table shows the **top 5** most frequent locations where your vehicle parked for an extended period of time. These *extended dwell periods* are any parking event that exceeds 9 hours. We observed **65** extended dwell periods for this vehicle.

Address	Dwell Time (Avg Hrs)	Frequency
W6418 County Road Gi, Stoddard, Wisconsin, 54658*	16	88%
1745 Miller St, La Crosse, Wisconsin, 54601	16	3%
Town of Shelby, Wisconsin	16	3%
500 Vine St, La Crosse, Wisconsin, 54601	16	2%
750 Monitor St, La Crosse, Wisconsin, 54603	16	2%

*This location has been identified as the vehicle's current homebase parking location based on its operations over the past 30 days.
To view results of all **7** parking locations and other detailed information for G9WTSTKH7AMM, please visit ezEV dashboard.
For the purpose of calculating dwell time (average hours), extended dwell periods are capped at a duration of 16 $hours.

Charge Time & Cost - Average on days used

The charging needs of this 2022 Ram 2500 would require an average of **7.1 kWh per day, on days used**, to operate the recommended PHEV using only electric miles. However, **midday charging is not required to operate the vehicle.**

Average Daily Energy Use (kWh)	Max Daily Energy Use (kWh)	Effective Usable Battery Capacity (kWh)*	Level 1 Hrs	Level 2 Hrs	DCFC Hrs	Daily Cost
7.1	37.4	69.9	5.5	0.7	0.2	$0.78

*The Effective Usable Battery Capacity takes into account the usable battery capacity of the vehicle and the charge to/discharge to settings provided by your fleet.

Suitability Assessment

G944SCM797E5 - 2020 Ford Explorer

Recommended Replacement:

No Change*

82	100	100	87	44
Overall	Confidence	Energy	Economics	Parking

*This vehicle was compared to all available Light Duty EVs, none of which were a good economic and operational fit. These scores are based on the EV that was the best fit: 2024 Chevrolet Blazer EV Pursuit.

Client: La Crosse County
Observation: 11/20/23 - 04/01/24
Days Tracked: 134 days
Trips Tracked: 255 trips
Last Trip: 03/19/24
VIN: 1FM5K8AB1LGA55529
Total Miles: 1,895
Temperature Range: -6°F - 68°F

Estimated Operational Metrics in a 2024 Chevrolet Blazer EV Pursuit

This table shows the estimated usage metrics if the trips driven by your 2020 Ford Explorer had been driven in a 2024 Chevrolet Blazer EV Pursuit.

Annual Vehicle Miles Traveled	GHG Reduction (%)	GHG Reduction (lbs)	Operational Cost Difference*	TCO* (Lifetime)	TCO** (%)	Average Daily Idling Hours
5,160	76%	45,220	▼ -$12,000-15,000	Cost parity	▲ 3%	0.4

*Total Cost of Ownership (TCO) Change and Operational Savings reflect the financial savings over the lifetime of the vehicle.
**TCO Change takes into account the purchase price of the recommended vehicle, Operational Savings does not.

Top Parking & Projected Charging Locations

This table shows the **top 5** most frequent locations where your vehicle parked for an extended period of time. These *extended dwell periods* are any parking event that exceeds 9 hours. We observed **73** extended dwell periods for this vehicle.

Address	Dwell Time (Avg Hrs)	Frequency
1735 Pine Ridge Dr, Onalaska, Wisconsin, 54650*	14	44%
N5996 Bergum Coulee Rd, West Salem, Wisconsin, 54669	15	29%
333 Vine St, La Crosse, Wisconsin, 54601	14	8%
2332 Wood St, La Crosse, Wisconsin, 54603	16	4%
410 3rd St N, La Crosse, Wisconsin, 54601	16	3%

*This location has been identified as the vehicle's current homebase parking location based on its operations over the past 30 days.
To view results of all **14** parking locations and other detailed information for G944SCM797E5, please visit ezEV dashboard.
For the purpose of calculating dwell time (average hours), extended dwell periods are capped at a duration of 16 $hours.

Charge Time & Cost - Average on days used

The charging needs of this 2020 Ford Explorer would require an average of **5.6 kWh per day, on days used**. Based on the observed driving, **midday charging would not be needed.**

Average Daily Energy Use (kWh)	Max Daily Energy Use (kWh)	Effective Usable Battery Capacity (kWh)*	Level 1 Hrs	Level 2 Hrs	DCFC Hrs	Daily Cost
5.6	14.8	73.6	4.3	0.9	0.1	$0.61

*The Effective Usable Battery Capacity takes into account the usable battery capacity of the vehicle and the charge to/discharge to settings provided by your fleet.

SAWATCH LABS
info@sawatchlabs.com | sawatchlabs.com

Suitability Assessment

G9174KU9UXU0 - 2014 Ford F250

Recommended Replacement:

No Change*

Overall	Confidence	Energy*	Economics	Parking
81	100	N/A	75	90

*Energy Score is not factored in for PHEVs because the battery capacity does not limit the vehicle's range.

*This vehicle was compared to all available Light Duty EVs, none of which were a good economic and operational fit. These scores are based on the EV that was the best fit: 2025 Ram 1500 Ramcharger.

Client: La Crosse County
Observation: 12/05/23 - 03/31/24
Days Tracked: 118 days
Trips Tracked: 215 trips
Last Trip: 04/01/24
VIN: 1FT7X2B62EEB27589
Total Miles: 2,561
Temperature Range: -5°F - 68°F

Estimated Operational Metrics in a 2025 Ram 1500 Ramcharger

This table shows the estimated usage metrics if the trips driven by your 2014 Ford F250 had been driven in a 2025 Ram 1500 Ramcharger.

Annual Vehicle Miles Traveled	GHG Reduction (%)	GHG Reduction (lbs)	Operational Cost Difference*	TCO* (Lifetime)	TCO** (%)	Electric Miles	Average Daily Idling Hours
7,920	25%	16,090	▼ -$12,000-15,000	▲ $12,000-15,000	▲ 17%	100%	1.4

*Total Cost of Ownership (TCO) Change and Operational Savings reflect the financial savings over the lifetime of the vehicle.
**TCO Change takes into account the purchase price of the recommended vehicle, Operational Savings does not.

Top Parking & Projected Charging Locations

This table shows the **top 5** most frequent locations where your vehicle parked for an extended period of time. These *extended dwell periods* are any parking event that exceeds 9 hours. We observed **62** extended dwell periods for this vehicle.

Address	Dwell Time (Avg Hrs)	Frequency
W4175-W4161 Old County Road B, West Salem, Wisconsin, 54669*	16	82%
301 Carlson Rd, West Salem, Wisconsin, 54669	16	8%
N5652 County Road Ot, Onalaska, Wisconsin, 54650	16	3%
N4901-N4927 Carlson Rd, West Salem, Wisconsin, 54669	16	2%
Brooks Tractor	16	2%

*This location has been identified as the vehicle's current homebase parking location based on its operations over the past 30 days.
To view results of all **7** parking locations and other detailed information for G9174KU9UXU0, please visit ezEV dashboard.
For the purpose of calculating dwell time (average hours), extended dwell periods are capped at a duration of 16 $hours.

Charge Time & Cost - Average on days used

The charging needs of this 2014 Ford F250 would require an average of **20 kWh per day, on days used**, to operate the recommended PHEV using only electric miles. However, **midday charging is not required to operate the vehicle.**

Average Daily Energy Use (kWh)	Max Daily Energy Use (kWh)	Effective Usable Battery Capacity (kWh)*	Level 1 Hrs	Level 2 Hrs	DCFC Hrs	Daily Cost
20	75.4	69.9	15.3	2.0	0.4	$2.20

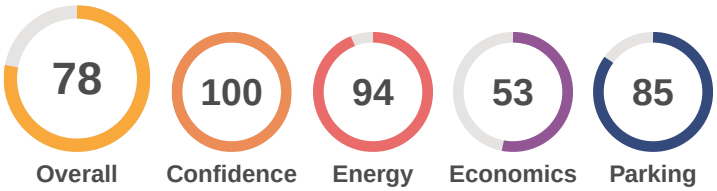
*The Effective Usable Battery Capacity takes into account the usable battery capacity of the vehicle and the charge to/discharge to settings provided by your fleet.

Suitability Assessment

G9XUDY7R29KR - 2019 Ford Transit

Recommended Replacement:

No Change*



*This vehicle was compared to all available Light Duty EVs, none of which were a good economic and operational fit. These scores are based on the EV that was the best fit: 2023 Lightning E-450 Shuttle Bus 120 Range.

Client: La Crosse County
Observation: 11/20/23 - 04/01/24
Days Tracked: 134 days
Trips Tracked: 253 trips
Last Trip: 04/01/24
VIN: 1FDES8PM8KKA99239
Total Miles: 9,036
Temperature Range: -11°F - 62°F

Estimated Operational Metrics in a 2023 Lightning E-450 Shuttle Bus 120 Range

This table shows the estimated usage metrics if the trips driven by your 2019 Ford Transit had been driven in a 2023 Lightning E-450 Shuttle Bus 120 Range.

Annual Vehicle Miles Traveled	GHG Reduction (%)	GHG Reduction (lbs)	Operational Cost Difference*	TCO* (Lifetime)	TCO** (%)	Average Daily Idling Hours
24,610	65%	242,720	▼ -$69,000-72,000	▲ $90,000-93,000	▲ 60%	0.2

*Total Cost of Ownership (TCO) Change and Operational Savings reflect the financial savings over the lifetime of the vehicle.
**TCO Change takes into account the purchase price of the recommended vehicle, Operational Savings does not.

Top Parking & Projected Charging Locations

This table shows the **top 5** most frequent locations where your vehicle parked for an extended period of time. These *extended dwell periods* are any parking event that exceeds 9 hours. We observed **100** extended dwell periods for this vehicle.

Address	Dwell Time (Avg Hrs)	Frequency
518 E Decker St, Viroqua, Wisconsin, 54665*	15	82%
Kwik Trip	12	3%
Baumgartner Jerry DDS	11	2%
1720-1722 State St, La Crosse, Wisconsin, 54601	16	2%
1301 N Main St, Viroqua, Wisconsin, 54665	13	2%

*This location has been identified as the vehicle's current homebase parking location based on its operations over the past 30 days.
To view results of all **13** parking locations and other detailed information for G9XUDY7R29KR, please visit ezEV dashboard.
For the purpose of calculating dwell time (average hours), extended dwell periods are capped at a duration of 16 $hours.

Charge Time & Cost - Average on days used

The charging needs of this 2019 Ford Transit would require an average of **38.3 kWh per day, on days used**. Based on the observed driving, **midday charging would be needed approximately twice per month.**

Average Daily Energy Use (kWh)	Max Daily Energy Use (kWh)	Effective Usable Battery Capacity (kWh)*	Level 1 Hrs	Level 2 Hrs	DCFC Hrs	Daily Cost
38.3	132.9	92.8	29.4	2.1	0.9	$4.21

*The Effective Usable Battery Capacity takes into account the usable battery capacity of the vehicle and the charge to/discharge to settings provided by your fleet.

Suitability Assessment

G9MY4304D2TN - 2019 Ford F250

Recommended Replacement:

No Change*

Overall	Confidence	Energy*	Economics	Parking
74	100	N/A	64	89

*Energy Score is not factored in for PHEVs because the battery capacity does not limit the vehicle's range.

*This vehicle was compared to all available Light Duty EVs, none of which were a good economic and operational fit. These scores are based on the EV that was the best fit: 2025 Ram 1500 Ramcharger.

Client: La Crosse County
Observation: 11/20/23 - 03/28/24
Days Tracked: 130 days
Trips Tracked: 206 trips
Last Trip: 03/28/24
VIN: 1FT7W2B65KEE57936
Total Miles: 701
Temperature Range: -8°F - 60°F

Estimated Operational Metrics in a 2025 Ram 1500 Ramcharger

This table shows the estimated usage metrics if the trips driven by your 2019 Ford F250 had been driven in a 2025 Ram 1500 Ramcharger.

Annual Vehicle Miles Traveled	GHG Reduction (%)	GHG Reduction (lbs)	Operational Cost Difference*	TCO* (Lifetime)	TCO** (%)	Electric Miles	Average Daily Idling Hours
1,970	56%	12,190	▼ -$3,000-6,000	▲ $21,000-24,000	▲ 35%	100%	0.5

*Total Cost of Ownership (TCO) Change and Operational Savings reflect the financial savings over the lifetime of the vehicle.
**TCO Change takes into account the purchase price of the recommended vehicle, Operational Savings does not.

Top Parking & Projected Charging Locations

This table shows the **top 5** most frequent locations where your vehicle parked for an extended period of time. These *extended dwell periods* are any parking event that exceeds 9 hours. We observed **70** extended dwell periods for this vehicle.

Address	Dwell Time (Avg Hrs)	Frequency
3240 Berlin Dr, La Crosse, Wisconsin, 54601*	16	83%
Landfill Rd, Onalaska, Wisconsin, 54650	16	6%
E1998 County Road Uu, De Soto, Wisconsin, 54624	13	3%
Onalaska, Wisconsin	16	1%
Dahl Automotive Onalaska	16	1%

*This location has been identified as the vehicle's current homebase parking location based on its operations over the past 30 days.
To view results of all **9** parking locations and other detailed information for G9MY4304D2TN, please visit ezEV dashboard.
For the purpose of calculating dwell time (average hours), extended dwell periods are capped at a duration of 16 $hours.

Charge Time & Cost - Average on days used

The charging needs of this 2019 Ford F250 would require an average of **3.8 kWh per day, on days used**, to operate the recommended PHEV using only electric miles. However, **midday charging is not required to operate the vehicle.**

Average Daily Energy Use (kWh)	Max Daily Energy Use (kWh)	Effective Usable Battery Capacity (kWh)*	Level 1 Hrs	Level 2 Hrs	DCFC Hrs	Daily Cost
3.8	15.6	69.9	2.9	0.4	0.1	$0.42

*The Effective Usable Battery Capacity takes into account the usable battery capacity of the vehicle and the charge to/discharge to settings provided by your fleet.

SAWATCH LABS
info@sawatchlabs.com | sawatchlabs.com

Suitability Assessment

G9JA576W3Y6A - 2004 Ford E-350

Recommended Replacement:

No Change*

Overall	Confidence	Energy	Economics	Parking
63	19	100	71	0

*This vehicle was compared to all available Light Duty EVs, none of which were a good economic and operational fit. These scores are based on the EV that was the best fit: 2024 Ford eTransit.

Client: La Crosse County
Observation: 11/23/23 - 12/09/23
Days Tracked: 17 days
Trips Tracked: 1 trips
Last Trip: 11/23/23
VIN: 1FBSS31L14HA21321
Total Miles: 12
Temperature Range: 37°F - 37°F

Estimated Operational Metrics in a 2024 Ford eTransit

This table shows the estimated usage metrics if the trips driven by your 2004 Ford E-350 had been driven in a 2024 Ford eTransit.

Annual Vehicle Miles Traveled	GHG Reduction (%)	GHG Reduction (lbs)	Operational Cost Difference*	TCO* (Lifetime)	TCO** (%)	Average Daily Idling Hours
270	37%	840	Cost parity	▲ $9,000-12,000	▲ 23%	-

*Total Cost of Ownership (TCO) Change and Operational Savings reflect the financial savings over the lifetime of the vehicle.
**TCO Change takes into account the purchase price of the recommended vehicle, Operational Savings does not.

Top Parking & Projected Charging Locations

There are no extended period parking locations to display for this vehicle.

Charge Time & Cost - Average on days used

The charging needs of this 2004 Ford E-350 would require an average of **5.3 kWh per day, on days used**. Based on the observed driving, **midday charging would not be needed.**

Average Daily Energy Use (kWh)	Max Daily Energy Use (kWh)	Effective Usable Battery Capacity (kWh)*	Level 1 Hrs	Level 2 Hrs	DCFC Hrs	Daily Cost
5.3	5.3	49.6	4.0	0.5	0.1	$0.58

*The Effective Usable Battery Capacity takes into account the usable battery capacity of the vehicle and the charge to/discharge to settings provided by your fleet.

SAWATCH LABS
info@sawatchlabs.com | sawatchlabs.com

Suitability Assessment

G9BA9FKUFJCE - 2019 Ford Transit

Recommended Replacement:

No Change*

Overall	Confidence	Energy	Economics	Parking
51	100	36	60	68

*This vehicle was compared to all available Light Duty EVs, none of which were a good economic and operational fit. These scores are based on the EV that was the best fit: 2023 Lightning E-450 Shuttle Bus 120 Range.

Client: La Crosse County
Observation: 11/27/23 - 04/01/24
Days Tracked: 127 days
Trips Tracked: 286 trips
Last Trip: 04/01/24
VIN: 1FDES8PM4KKA95401
Total Miles: 12,077
Temperature Range: 0°F - 70°F

Estimated Operational Metrics in a 2023 Lightning E-450 Shuttle Bus 120 Range

This table shows the estimated usage metrics if the trips driven by your 2019 Ford Transit had been driven in a 2023 Lightning E-450 Shuttle Bus 120 Range.

Annual Vehicle Miles Traveled	GHG Reduction (%)	GHG Reduction (lbs)	Operational Cost Difference*	TCO* (Lifetime)	TCO** (%)	Average Daily Idling Hours
34,710	50%	235,470	▼ -$84,000-87,000	▲ $75,000-78,000	▲ 42%	0.4

*Total Cost of Ownership (TCO) Change and Operational Savings reflect the financial savings over the lifetime of the vehicle.
**TCO Change takes into account the purchase price of the recommended vehicle, Operational Savings does not.

Top Parking & Projected Charging Locations

This table shows the **top 5** most frequent locations where your vehicle parked for an extended period of time. These *extended dwell periods* are any parking event that exceeds 9 hours. We observed **50** extended dwell periods for this vehicle.

Address	Dwell Time (Avg Hrs)	Frequency
Wonder Lube	15	54%
24700-24998 Foley Ave, Tomah, Wisconsin, 54660*	13	14%
Kwik Trip	16	14%
Kimpton Truck Service Inc	13	4%
1717-1799 S Marquette Rd, Prairie Du Chien, Wisconsin, 53821	16	4%

*This location has been identified as the vehicle's current homebase parking location based on its operations over the past 30 days.
To view results of all **10** parking locations and other detailed information for G9BA9FKUFJCE, please visit ezEV dashboard.
For the purpose of calculating dwell time (average hours), extended dwell periods are capped at a duration of 16 $hours.

Charge Time & Cost - Average on days used

The charging needs of this 2019 Ford Transit would require an average of **124.8 kWh per day, on days used**. Based on the observed driving, **midday charging would be needed on most days.**

Average Daily Energy Use (kWh)	Max Daily Energy Use (kWh)	Effective Usable Battery Capacity (kWh)*	Level 1 Hrs	Level 2 Hrs	DCFC Hrs	Daily Cost
124.8	240.4	92.8	95.6	6.9	2.8	$13.72

*The Effective Usable Battery Capacity takes into account the usable battery capacity of the vehicle and the charge to/discharge to settings provided by your fleet.

Suitability Assessment

G9THBKRB2051 - 2019 Ford F-550

Recommended Replacement:

No Change*

49	100	18	68	81
Overall	Confidence	Energy	Economics	Parking

*This vehicle was compared to all available Medium and Heavy Duty EVs, none of which were a good economic and operational fit. These scores are based on the EV that was the best fit: 2024 Lightning eMotors 48 F-550 Cab Chassis.

Client: La Crosse County
Observation: 11/21/23 - 04/01/24
Days Tracked: 133 days
Trips Tracked: 449 trips
Last Trip: 04/01/24
VIN: 1FDAF5GT1KEC16537
Total Miles: 19,376
Temperature Range: -2°F - 69°F

Estimated Operational Metrics in a 2024 Lightning eMotors 48 F-550 Cab Chassis

This table shows the estimated usage metrics if the trips driven by your 2019 Ford F-550 had been driven in a 2024 Lightning eMotors 48 F-550 Cab Chassis.

Annual Vehicle Miles Traveled	GHG Reduction (%)	GHG Reduction (lbs)	Operational Cost Difference*	TCO* (Lifetime)	TCO** (%)	Average Daily Idling Hours
53,170	29%	165,990	▼ More than -$100,000	▲ $69,000-72,000	▲ 28%	0.7

*Total Cost of Ownership (TCO) Change and Operational Savings reflect the financial savings over the lifetime of the vehicle.
**TCO Change takes into account the purchase price of the recommended vehicle, Operational Savings does not.

Top Parking & Projected Charging Locations

This table shows the **top 5** most frequent locations where your vehicle parked for an extended period of time. These *extended dwell periods* are any parking event that exceeds 9 hours. We observed **95** extended dwell periods for this vehicle.

Address	Dwell Time (Avg Hrs)	Frequency
518 E Decker St, Viroqua, Wisconsin, 54665*	13	74%
Kwik Trip	12	7%
152-160 Vernon Pkwy, Viroqua, Wisconsin, 54665	16	4%
411 Willow St, Viroqua, Wisconsin, 54665	15	4%
1301 N Main St, Viroqua, Wisconsin, 54665	12	2%

*This location has been identified as the vehicle's current homebase parking location based on its operations over the past 30 days.
To view results of all **12** parking locations and other detailed information for G9THBKRB2051, please visit ezEV dashboard.
For the purpose of calculating dwell time (average hours), extended dwell periods are capped at a duration of 16 $hours.

Charge Time & Cost - Average on days used

The charging needs of this 2019 Ford F-550 would require an average of **154.9 kWh per day, on days used**. Based on the observed driving, **midday charging would be needed on most days.**

Average Daily Energy Use (kWh)	Max Daily Energy Use (kWh)	Effective Usable Battery Capacity (kWh)*	Level 2 Hrs	DCFC Hrs	Daily Cost
154.9	298.6	92.8	24.6	3.4	$17.04

*The Effective Usable Battery Capacity takes into account the usable battery capacity of the vehicle and the charge to/discharge to settings provided by your fleet.

SAWATCH LABS
info@sawatchlabs.com | sawatchlabs.com

Suitability Assessment

G9SCS0C2F85C - 2019 Ford F-550

Recommended Replacement:

No Change*

Overall	Confidence	Energy	Economics	Parking
47	100	14	77	68

*This vehicle was compared to all available Medium and Heavy Duty EVs, none of which were a good economic and operational fit. These scores are based on the EV that was the best fit: 2024 Lightning eMotors 48 F-550 Cab Chassis.

Client: La Crosse County
Observation: 11/20/23 - 04/01/24
Days Tracked: 134 days
Trips Tracked: 580 trips
Last Trip: 03/30/24
VIN: 1FDAF5GT0KDA07134
Total Miles: 26,472
Temperature Range: -11°F - 68°F

Estimated Operational Metrics in a 2024 Lightning eMotors 48 F-550 Cab Chassis

This table shows the estimated usage metrics if the trips driven by your 2019 Ford F-550 had been driven in a 2024 Lightning eMotors 48 F-550 Cab Chassis.

Annual Vehicle Miles Traveled	GHG Reduction (%)	GHG Reduction (lbs)	Operational Cost Difference*	TCO* (Lifetime)	TCO** (%)	Average Daily Idling Hours
72,110	21%	150,230	▼ More than -$100,000	▲ $45,000-48,000	▲ 16%	1.4

*Total Cost of Ownership (TCO) Change and Operational Savings reflect the financial savings over the lifetime of the vehicle.
**TCO Change takes into account the purchase price of the recommended vehicle, Operational Savings does not.

Top Parking & Projected Charging Locations

This table shows the **top 5** most frequent locations where your vehicle parked for an extended period of time. These *extended dwell periods* are any parking event that exceeds 9 hours. We observed **120** extended dwell periods for this vehicle.

Address	Dwell Time (Avg Hrs)	Frequency
Kimpton Truck Service Inc	13	33%
24700-24998 Foley Ave, Tomah, Wisconsin, 54660*	12	23%
310-310 E McCoy Blvd, Tomah, Wisconsin, 54660	15	11%
1100-1190 E McCoy Blvd, Tomah, Wisconsin, 54660	12	8%
Wonder Lube	12	7%

*This location has been identified as the vehicle's current homebase parking location based on its operations over the past 30 days.
To view results of all **14** parking locations and other detailed information for G9SCS0C2F85C, please visit ezEV dashboard.
For the purpose of calculating dwell time (average hours), extended dwell periods are capped at a duration of 16 $hours.

Charge Time & Cost - Average on days used

The charging needs of this 2019 Ford F-550 would require an average of **169.9 kWh per day, on days used**. Based on the observed driving, **midday charging would be needed on most days.**

Average Daily Energy Use (kWh)	Max Daily Energy Use (kWh)	Effective Usable Battery Capacity (kWh)*	Level 2 Hrs	DCFC Hrs	Daily Cost
169.9	345.2	92.8	27.0	3.8	$18.69

*The Effective Usable Battery Capacity takes into account the usable battery capacity of the vehicle and the charge to/discharge to settings provided by your fleet.

Suitability Assessment

G902T63H88UB - 2023 Ford Explorer

Recommended Replacement:

No Data

No data provided on this vehicle. Please reach out to your account manager.

Client: La Crosse County

Observation: -

Days Tracked: 0 days

Trips Tracked: 0 trips

Last Trip: -

VIN: 1FM5K8ABXPGA34118

Total Miles: 0

Temperature Range: No Data

SAWATCH LABS

info@sawatchlabs.com | sawatchlabs.com

Suitability Assessment
G9UD01FN7P2U - 2020 Ford Fusion

Recommended Replacement:
No Candidates in Class

You do not have any EV candidates selected in the same class as this 2020 Ford Fusion.
If you are an administrator in this Sawatch Labs dashboard, you can update your candidate selection directly in the dashboard. Otherwise, please contact your administrator.

Client: La Crosse County
Observation: 11/21/23 - 03/31/24
Days Tracked: 132 days
Trips Tracked: 242 trips
Last Trip: 03/29/24
VIN: 3FA6P0HD1LR214616
Total Miles: 3,298
Temperature Range: -8°F - 68°F

Estimated Operational Metrics
There must be an EV candidate in the same vehicle class as this 2020 Ford Fusion to view the estimated operational metrics.

Top Parking & Projected Charging Locations
This table shows the **top 5** most frequent locations where your vehicle parked for an extended period of time. These *extended dwell periods* are any parking event that exceeds 9 hours. We observed **81** extended dwell periods for this vehicle.

Address	Dwell Time (Avg Hrs)	Frequency
N1590 Deer Ct, Stoddard, Wisconsin, 54658*	14	80%
410 3rd St N, La Crosse, Wisconsin, 54601	10	6%
500 Vine St, La Crosse, Wisconsin, 54601	11	4%
2019-2235 Meadow Ln, Pewaukee, Wisconsin, 53072	14	2%
1608 James St, Bangor, Wisconsin, 54614	11	1%

*This location has been identified as the vehicle's current homebase parking location based on its operations over the past 30 days.
To view results of all **10** parking locations and other detailed information for G9UD01FN7P2U, please visit ezEV dashboard.
For the purpose of calculating dwell time (average hours), extended dwell periods are capped at a duration of 16 $hours.

Charge Time & Cost - Average on days used
There must be an EV candidate in the same vehicle class as this 2020 Ford Fusion to view the charge time & cost metrics.

Suitability Assessment
Custom Assumptions

Fleet Input

These values are the custom inputs provided by the fleet. Some vehicles may have vehicle-specific custom inputs which can be found on the individual vehicle summary page in the ezEV dashboard.

- **Gas Price:** $4.00 per gallon
- **GHG Emissions from Electricity Generation:** 502 g/kWh
- **Social Cost of Carbon:** $0.00 per ton
- **Insurance:** $1,029 per year
- **ICE Maintenance Cost:** $915 per 15,000 miles
- **EV Maintenance Cost:** $465 per 15,000 miles
- **Vehicle Lifecycle:** 10 years

Vehicles Selected

The following tables list the details for each vehicle considered in the analysis, seperated by the internal combustion engine (ICE), battery electric vehicles (BEVs), plug-in hybrid electric vehicles (PHEVs).

Internal Combustion Vehicles		
Model	Class	Price
2022 Ford T-350 Cargo Van	Class 3 Van	$37,620

Suitability Assessment
Custom Assumptions

Electricity Rates
If none of the below rates apply for a given time period, your fleet's default kWh rate of $0.11 is used.

Rate Name	Rate	Date Duration	Active Days	Active Times
Winter Off-Peak Weekend	$0.0594	October 1 - December 31	Sat, Sun	00:00:00 - 23:59:00
Winter On-Peak Weekday	$0.0881	October 1 - December 31	Mon, Tue, Wed, Thu, Fri	07:00:00 - 20:59:00
Winter Off-Peak Weekday Night	$0.0594	October 1 - December 31	Mon, Tue, Wed, Thu, Fri	21:00:00 - 23:59:00
Winter On-Peak Weekday	$0.0881	January 1 - May 31	Mon, Tue, Wed, Thu, Fri	07:00:00 - 20:59:00
Winter Off-Peak Weekday Morning	$0.0594	January 1 - May 31	Mon, Tue, Wed, Thu, Fri	00:00:00 - 06:59:00
Winter Off-Peak Weekday Morning	$0.0594	October 1 - December 31	Mon, Tue, Wed, Thu, Fri	00:00:00 - 06:59:00
Summer Off-Peak Weekend	$0.0594	June 1 - September 30	Sat, Sun	00:00:00 - 23:59:00
Summer Off-Peak Weekday Night	$0.0594	June 1 - September 30	Mon, Tue, Wed, Thu, Fri	21:00:00 - 23:59:00
Winter Off-Peak Weekday Night	$0.0594	January 1 - May 31	Mon, Tue, Wed, Thu, Fri	21:00:00 - 23:59:00
Winter Off-Peak Weekend	$0.0594	January 1 - May 31	Sat, Sun	00:00:00 - 23:59:00
Summer Off-Peak Weekday Morning	$0.0594	June 1 - September 30	Mon, Tue, Wed, Thu, Fri	00:00:00 - 06:59:00
Summer On-Peak Weekday	$0.0982	June 1 - September 30	Mon, Tue, Wed, Thu, Fri	07:00:00 - 20:59:00

Appendix G:

2023 Sawatch Labs Recommended EV Charging Location Table

Location ID	Location	Number of Vehicles Charging	Total charging hours (avg per day)	L2 Port count	Peak kW Usage	EV Recommended count
83	500 Vine St, La Crosse, Wisconsin, 54601	1	1.6	1	11	1
74	Lakeview Health Center	2	1.7	2	10	2
109	W000005596 Deerfield Rd, La Crosse, Wisconsin, 54601	1	1.4	1	11	1
92	3010 Robin Hood Dr, La Crosse, Wisconsin, 54601	1	2.7	1	10	1
90	W6262 Valley Pl, Holmen, Wisconsin, 54636	1	4.8	2	7	1
14	W4281 Ceresa Dr, West Salem, Wisconsin, 54669	1	0.7	1	7	1
29	410 3rd St N, La Crosse, Wisconsin, 54601	4	4.9	2	7	4
2	333 Vine St, La Crosse, Wisconsin, 54601	3	4.6	2	7	3
28	W22999-W22701 Prairie Wood Dr, Trempealeau, Wisconsin, 54661	1	6.9	2	11	1
26	W4175-W4161 Old County Road B, West Salem, Wisconsin, 54669	7	5.3	4	41	7
47	3240 Berlin Dr, La Crosse, Wisconsin, 54601	1	0.5	1	10	1
56	CR-VP, West Salem, Wisconsin, 54669	1	1.6	2	11	1
57	905 Winchester Ln, Holmen, Wisconsin, 54636	1	1.7	1	6	1
105	1001-1099 Branding Iron Rd, West Salem, Wisconsin, 54669	1	2.5	2	7	1
66	846-1116 Garland St E, West Salem, Wisconsin, 54669	2	1.7	3	13	2
70	4009 Beverly Dr, Onalaska, Wisconsin, 54650	1	5.3	2	7	1
336	N1454 Kirschner Rd, Coon Valley, Wisconsin, 54623	1	7.4	2	11	1
388	W7207 Heram Rd, Holmen, Wisconsin, 54636	1	3.9	2	11	1

Recommended charging locations including # of vehicles that would be using each charger, average duration charger would be in use, peak wattage, and # of level 2 ports recommended for each site. Table data is assuming an EV replacement of 20 fleet vehicles out of the 40 included in the study.

Appendix H:

County Facilities Within Flood Hazard Areas Table

Building Type	Department	Flood Zone	Address	Parcel ID
Ball Field Building	Health	100 yr	2851 33rd Street South, La Crosse	17-50310-30
Ball Field Building	Health	100 yr	2851 33rd Street South, La Crosse	17-50310-30
Highway Department	Highway	500 yr	1700 Fairgrounds Road, West Salem	16-1340-0
Highway Department	Highway	500 yr	1700 Fairgrounds Road, West Salem	16-1340-0
Highway Department	Highway	500 yr	1700 Fairgrounds Road, West Salem	16-1340-0
Highway Department	Highway	500 yr	1700 Fairgrounds Road, West Salem	16-1340-0
Highway Department	Highway	500 yr	1700 Fairgrounds Road, West Salem	16-1340-0
Highway Department	Highway	500 yr	1700 Fairgrounds Road, West Salem	16-1340-0
Highway Department	Highway	500 yr	1700 Fairgrounds Road, West Salem	16-1340-0
Highway Department	Highway	500 yr	1700 Fairgrounds Road, West Salem	16-1340-0
Highway Department	Highway	500 yr	1700 Fairgrounds Road, West Salem	16-1340-0
Highway Department	Highway	500 yr	1700 Fairgrounds Road, West Salem	16-1340-0
Neshonoc Campground	Facilities	100 yr	Neshonoc Campground, Hamilton	7-1225-0
Veteran's Park, Shelter No. 1	Facilities	500 yr	County Road VP, West Salem	7-121-0
Veteran's Park, Shed	Facilities	100 yr	County Road VP, West Salem	7-133-0
Veteran's Park, Shelter	Facilities	500 yr	County Road VP, West Salem	7-132-0
Veteran's Park, Shelter	Facilities	500 yr	County Road VP, West Salem	7-133-0
Veteran's Park, Shelter	Facilities	100 yr	County Road VP, West Salem	7-133-0
Veteran's Park, Shed	Facilities	100 yr	County Road VP, West Salem	7-134-0
Veteran's Park, Shed	Facilities	100 yr	County Road VP, West Salem	7-134-0
Veteran's Park, Shed	Facilities	100 yr	County Road VP, West Salem	7-134-0
Veteran's Park, Shed	Facilities	100 yr	County Road VP, West Salem	7-134-0
Veteran's Park, Shed	Facilities	500 yr	W3848 County Road DE, Mindoro	5-932-0

Appendix I:

Regional Solid Waste Facilities Map

Figure 9 - Regional Solid Waste Facility Map

Minnesota Facility Locations

Private Landfills

Public landfills
A) Olmsted County - Kalmar Landfill

C/D Landfill (public or private)
A) Red Wing Land Disposal Facility
B) Wanamingo Demolition Landfill
C) Mickow Demolition Landfill
D) Olmsted County - Kalmar Landfill
E) Chester Woods Park Disaster Demolition
F) Wodele Demolition Landfill

Ash Landfill
A) Red Wing Land Disposal Facility
B) NSP - Red Wing Ash Disposal Facility

Waste to Energy
A) Xcel Energy - Red Wing Generating Plant
B) Olmsted Waste-to-Energy Facility

Material Recovery Facility
A) Goodhue County Materials Recovery Facility PBR
B) AMG Alliance LLC - Red Wing PBR
C) Red Wing Integrated Solid Waste Management Campus
D) Houston County Recycling Center PBR
E) ADS (Veolia Environmental Services - Midwest PBR)
F) MAC Global Inc PBR
G) Olmsted County - Kalmar Landfill
H) SKB Stewartville Recycling & Transfer
I) Winona Transfer Station
J) Matejka Recycling Inc dba Red Box

Composting Facility
A) Integrated Solid Waste Management Campus
B) PBR/Red Wing Recycling & Transfer
C) Lake City Compost Site PBR
D) Ries Farms PBR
E) Red Wing Integrated Solid Waste Management Campus
F) Rochester Compost Site PBR
G) Olmsted Waste-to-Energy Facility
H) Plainview Compost Site PBR
I) Wabasha Compost Site PBR

Transfer Station
A) Fillmore County Resource Recovery
B) Integrated Solid Waste Mgmt Campus PBR/
C) Red Wing Recycling & Transfer
D) Red Wing Integrated Solid Waste Management Campus
E) Richard's Sanitation PBR
F) Veit Disposal Systems
G) Winona Transfer Station
H) Waste Management – Rochester
I) SKB Stewartville Recycling & Transfer
J) Danckwart Feed & Grain Inc PBR
K) Lake City Recycling/Transfer
L) Matejka Transfer Center

Wisconsin Facility Locations

Private Landfills
1) Advanced Disp Serv Seven Mile Creek LF LLC

Public Landfills
1) La Crosse County LF MSW & Ash Monofill
2) Monroe County Ridgeville II San LF
3) Vernon County Solid Waste/Recycling Facility

C/D Landfill (public or private)
1) La Crosse County LF
2) Alma Cty Small Demo LF & WBS
3) Tri-City Sanitation Inc Demo LF Site ##2

Ash Landfill
1) La Crosse County LF Ash Monofill
2) Dairyland Power Coop Phase IV - Belvidere

Waste to Energy
1) Xcel Energy French Island Facility

Material Recovery Facility (Self-Certified)
1) Green Circle Recycling LLC
2) Hilltopper Refuse & Recycling Services Inc.
3) Waste Management La Crosse
4) County of Buffalo
5) The Pro Vyro Recycling Center LLC
6) County of Jackson
7) Osseo Area Recycling Center
8) S. Trempealeau Cnty Solid Waste Commission
9) TRI-R Project
10) Village of Strum
11) Arcadia/Alma Recycling
12) County of Vernon

Composting Facility
1) Green Earth Compost Products
2) La Crosse Co MSW & Ash Monofill
3) La Crosse City
4) West Salem Village Yard Waste Facility
5) Alma City Compost Site
6) Advanced Disposal Serv Seven Mile Creek LF LLC
7) Earthbound Environmental Solutions
8) Hillcrest Estates
9) Viroqua City Compost/WBS

Transfer Station
1) Hartters Trash & Recycling Inc
2) Harters Trash & Recycling Inc
3) W M W I - La Crosse
4) Waste Management Nelson Transfer Facility
5) Advanced Disposal Services SW Midwest LLC
6) Boxx Sanitation Recycling & Transfer Station
7) US Army Fort McCoy Transfer Station
8) Black River Falls City Transfer Station
9) Arcadia City Transfer/WBS
10) Tri-City Sanitation Service Inc

Legend

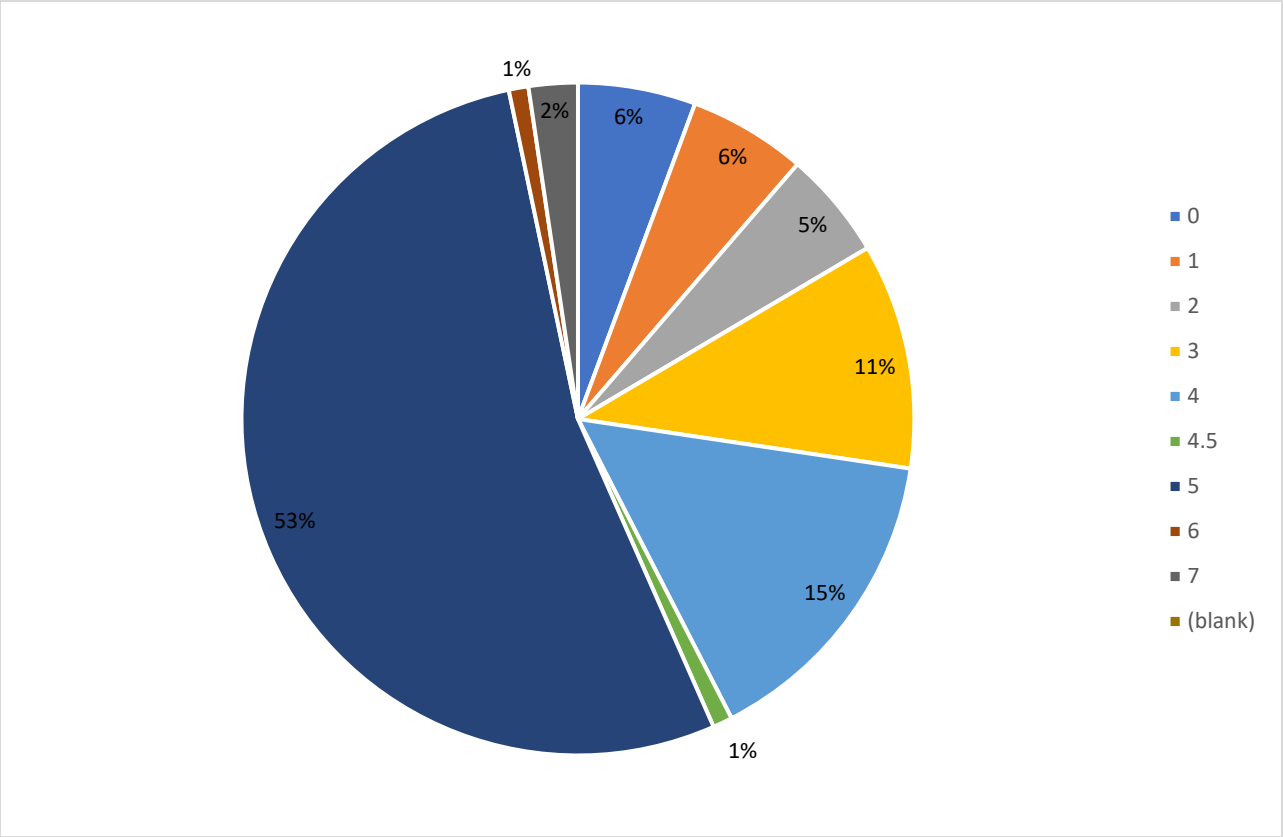
System Boundary
Private Landfills
Public Landfills
C & D Landfill (public or private)
Ash Landfill (public or private)
Waste to Energy
Material Recovery Facilities
Composting Facility
Transfer Stations

La Crosse Disposal System
A Responsible Resource

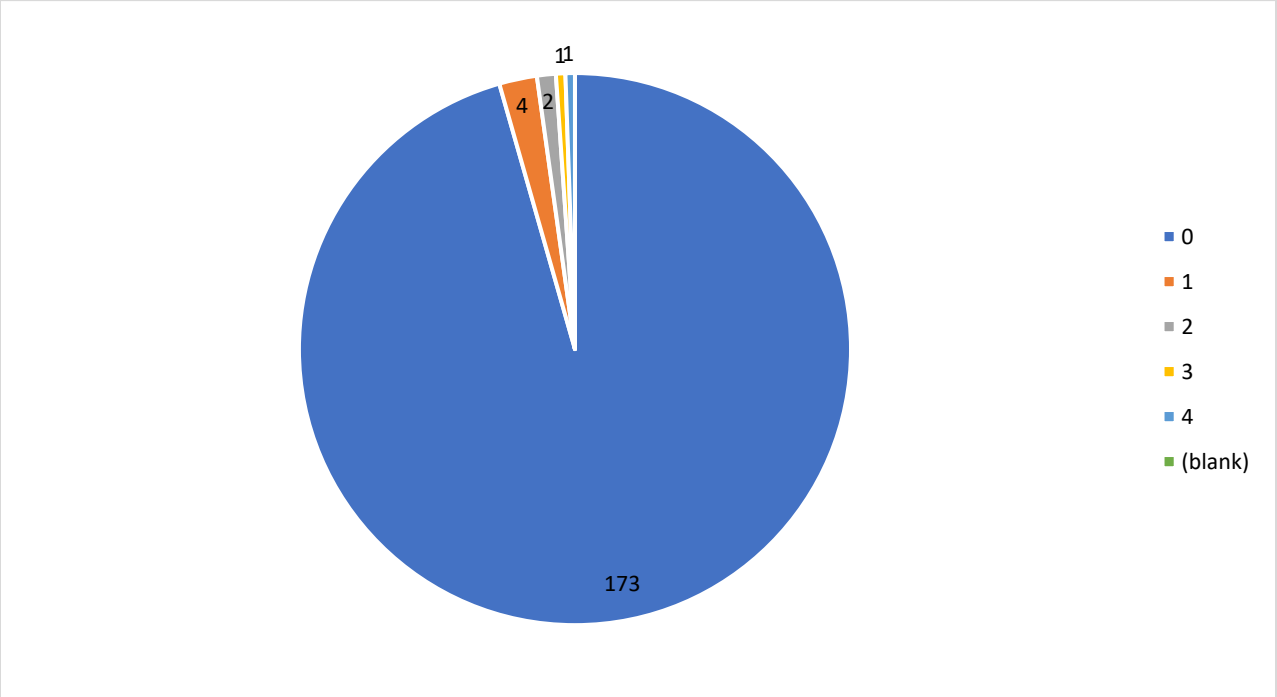
Appendix J:

Employee Commuter Survey Results

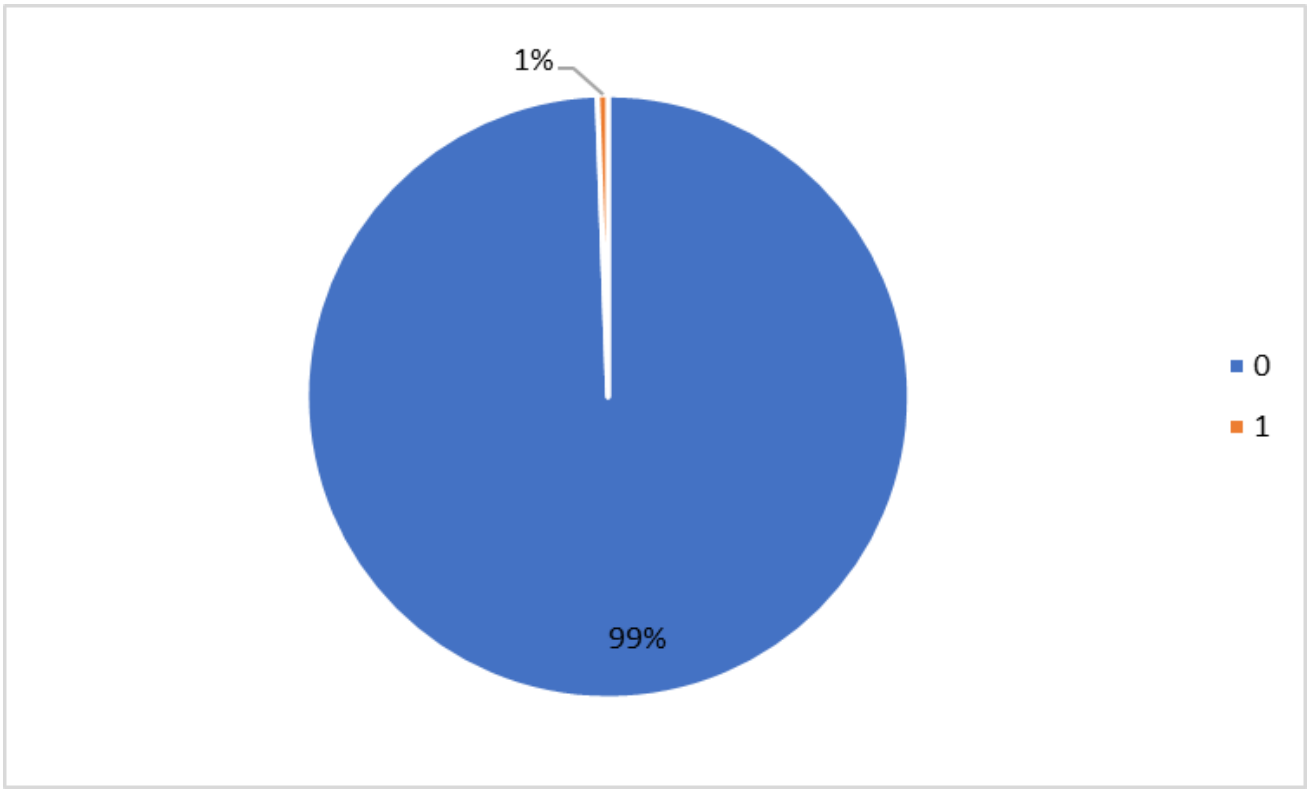
How many days a week do you drive alone?



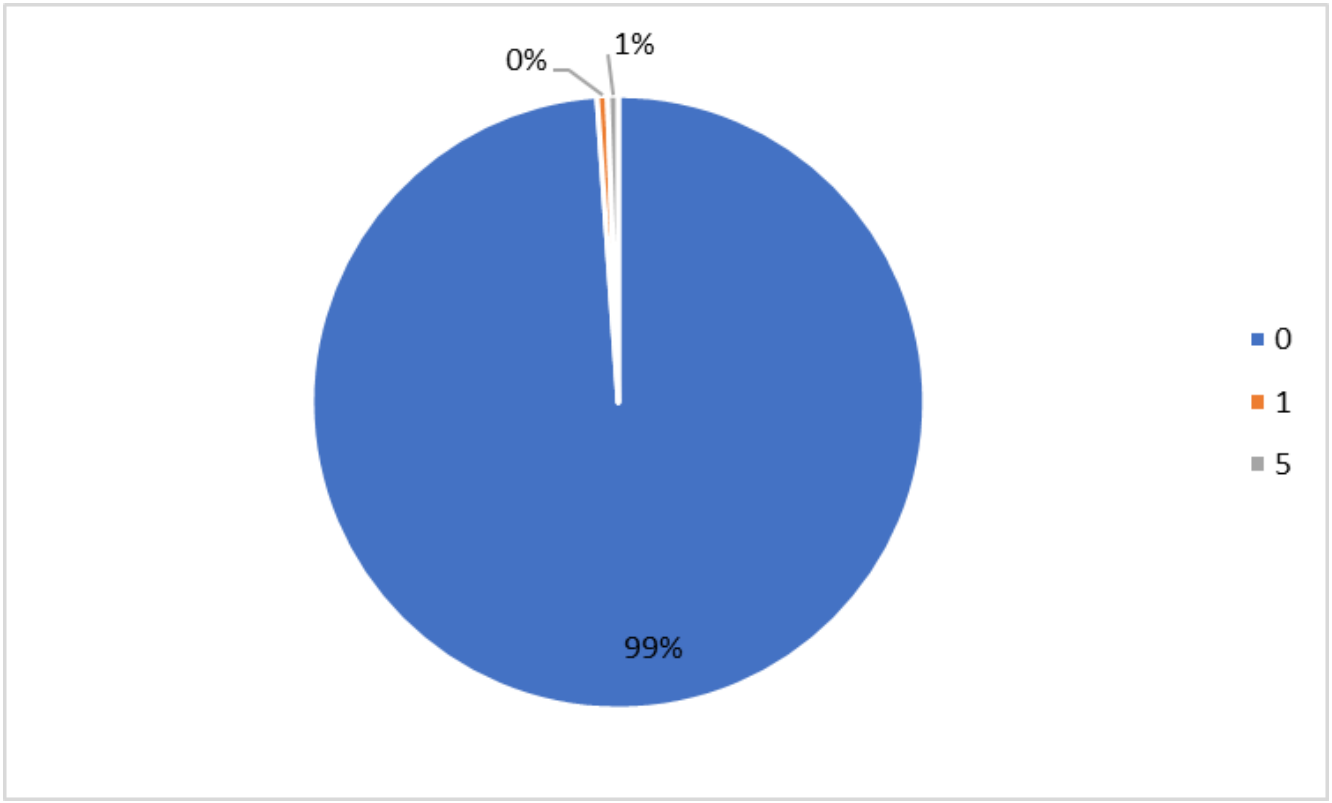
Carpool?



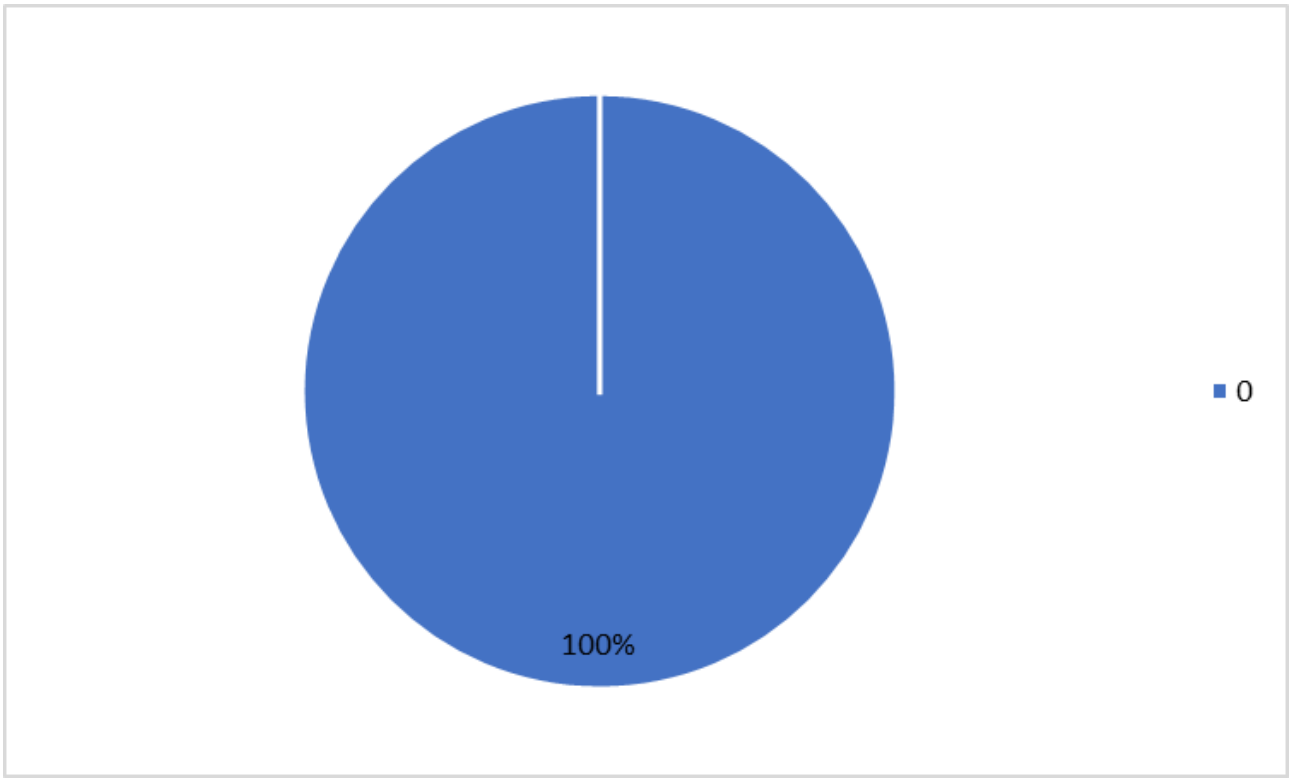
Ride hailing apps? (Uber, Lyft, Taxi, etc.)



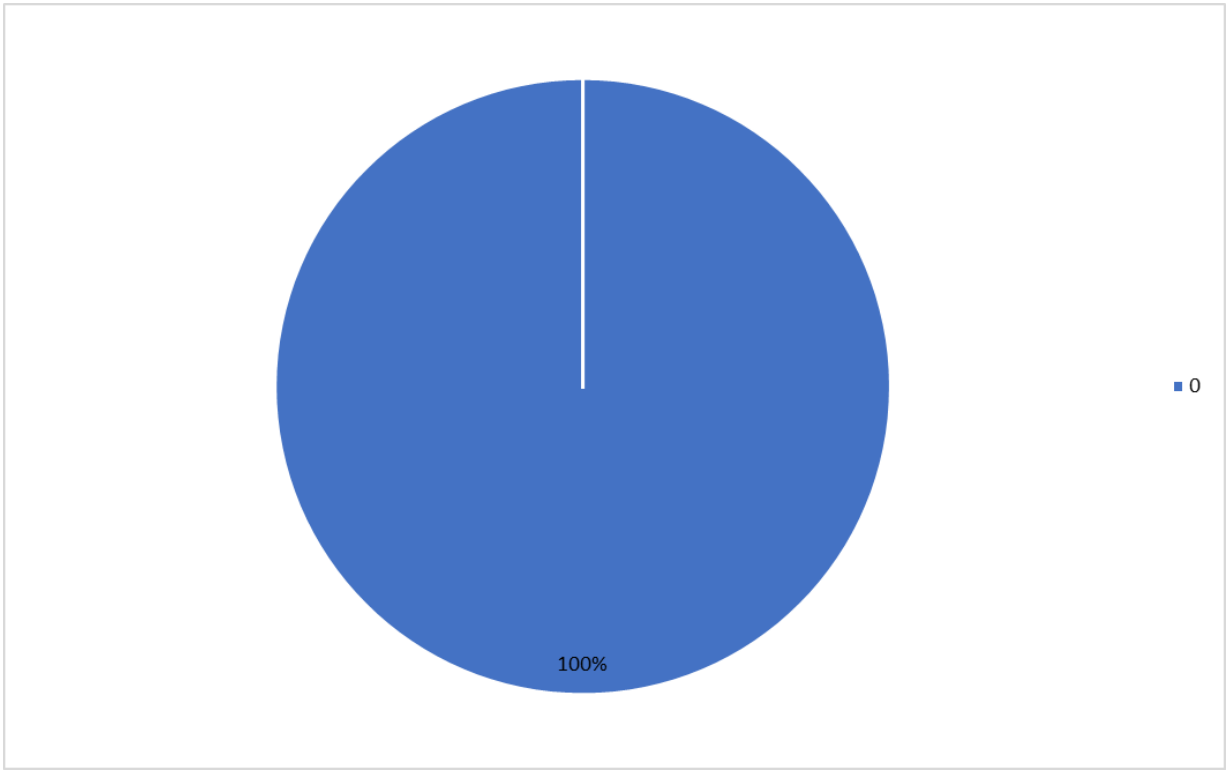
MTU Bus?



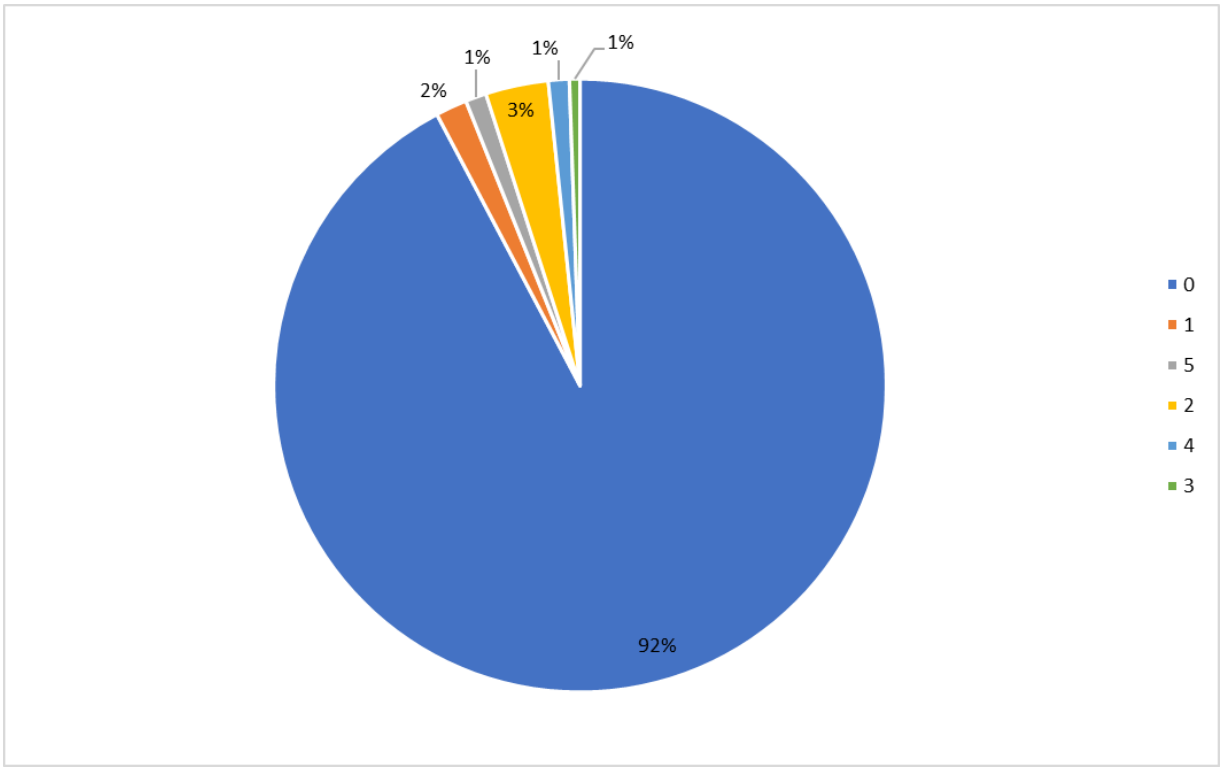
SMRT Bus?



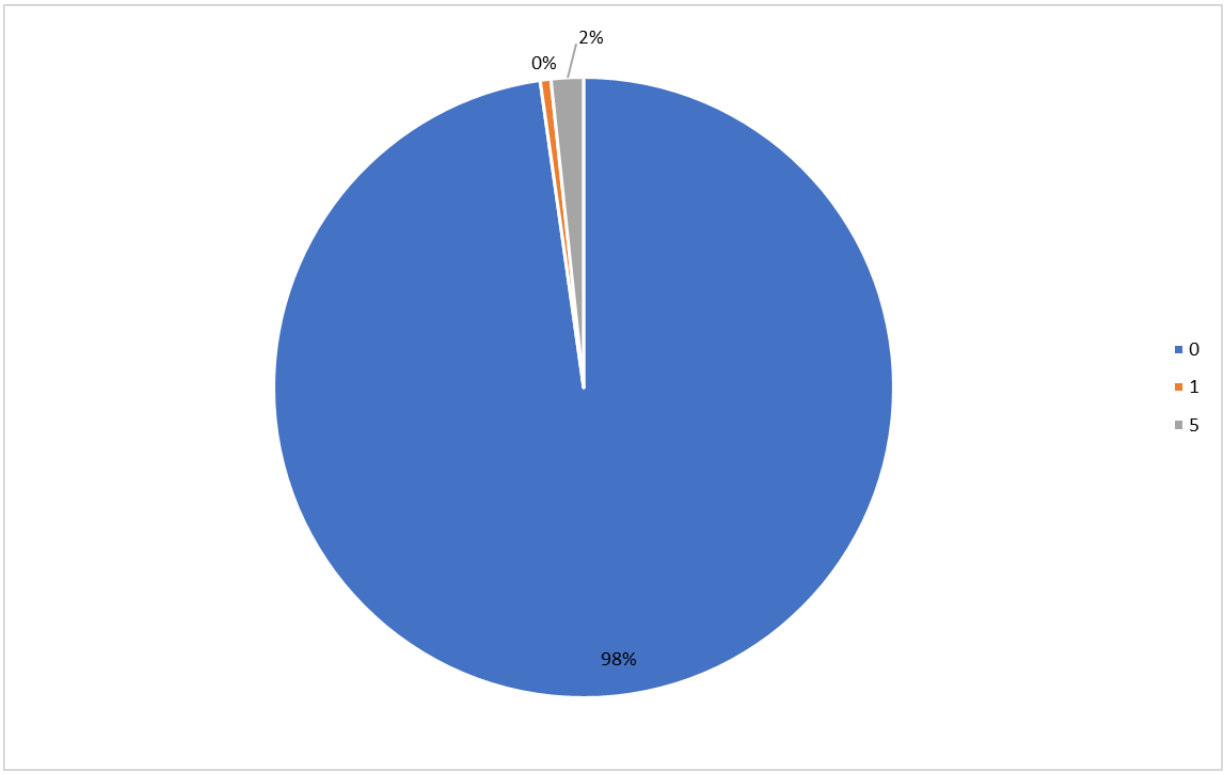
Amtrak?



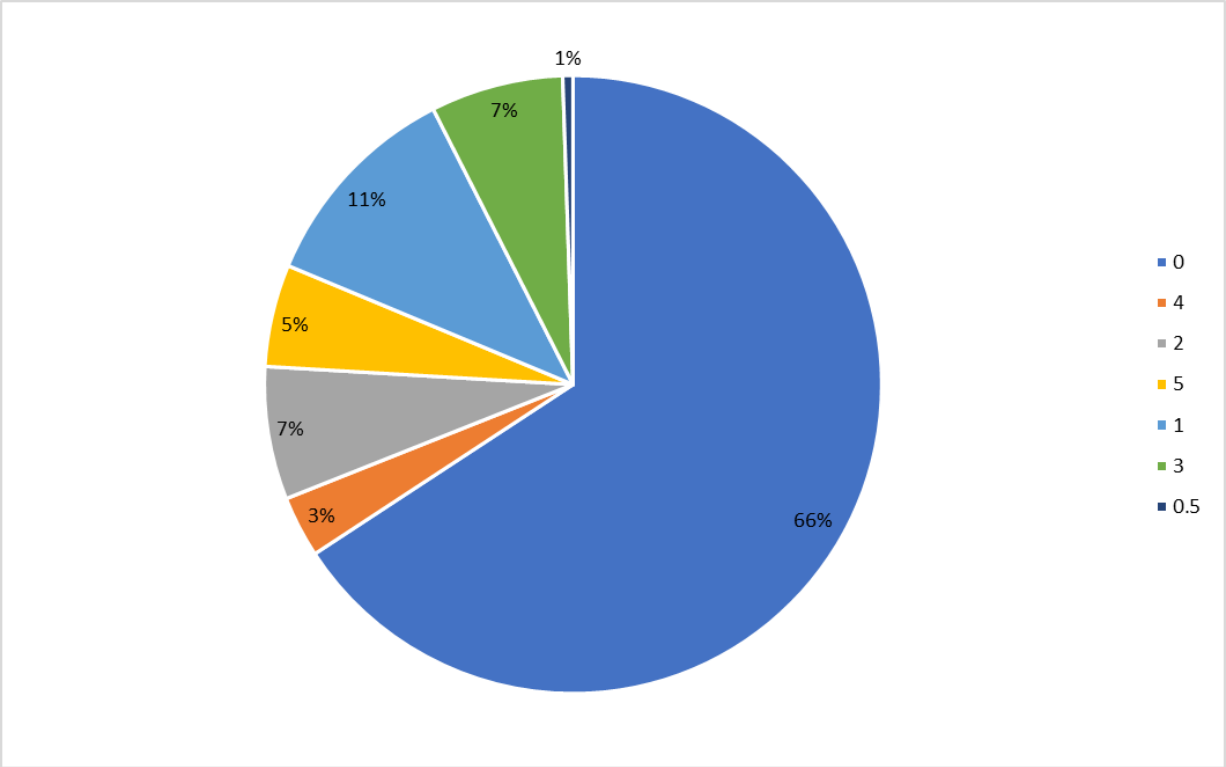
Bicycle?



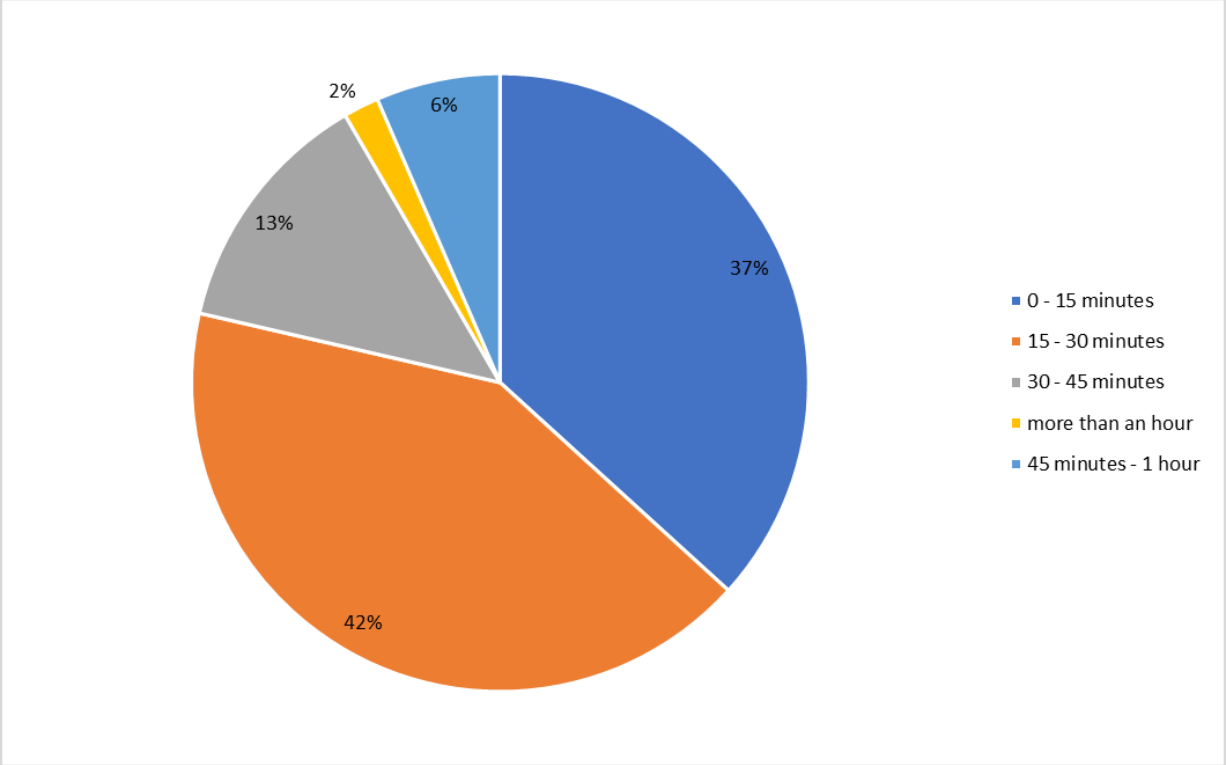
Walk?



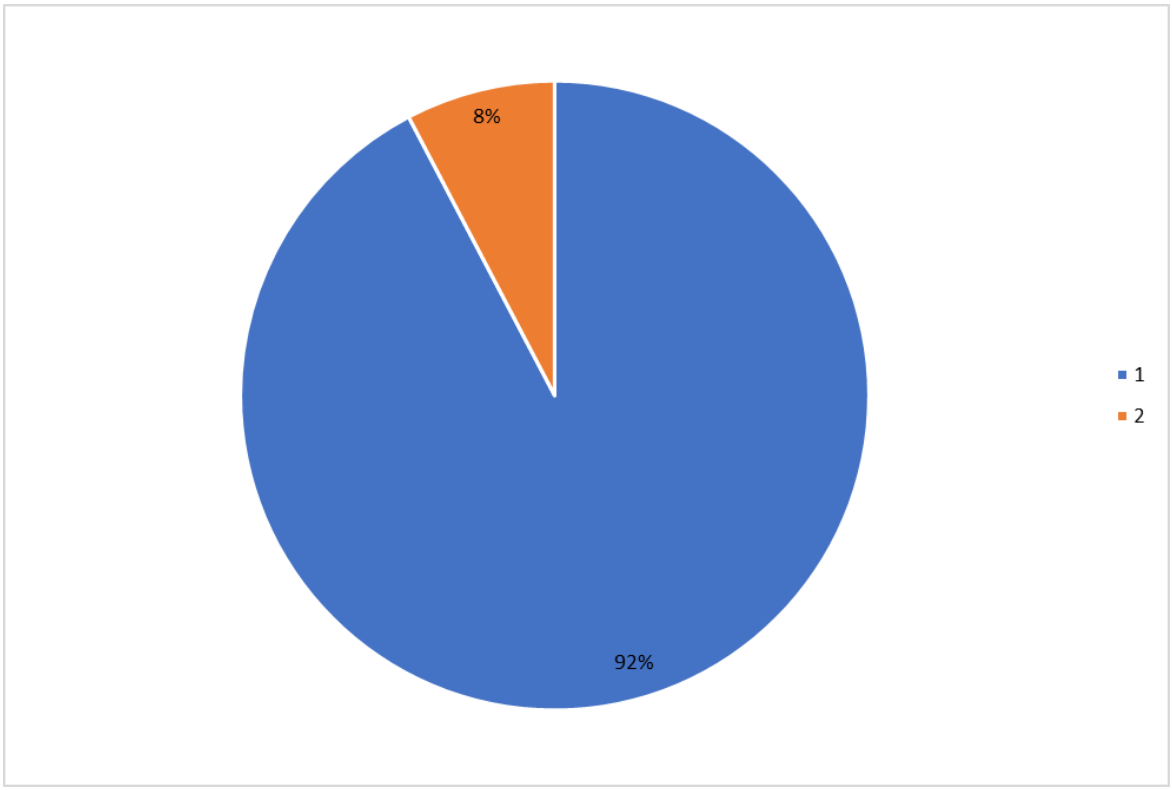
Telecommute/Work from home?



How long is your one-way travel time to get to and from work, on average? (In hours and minutes)

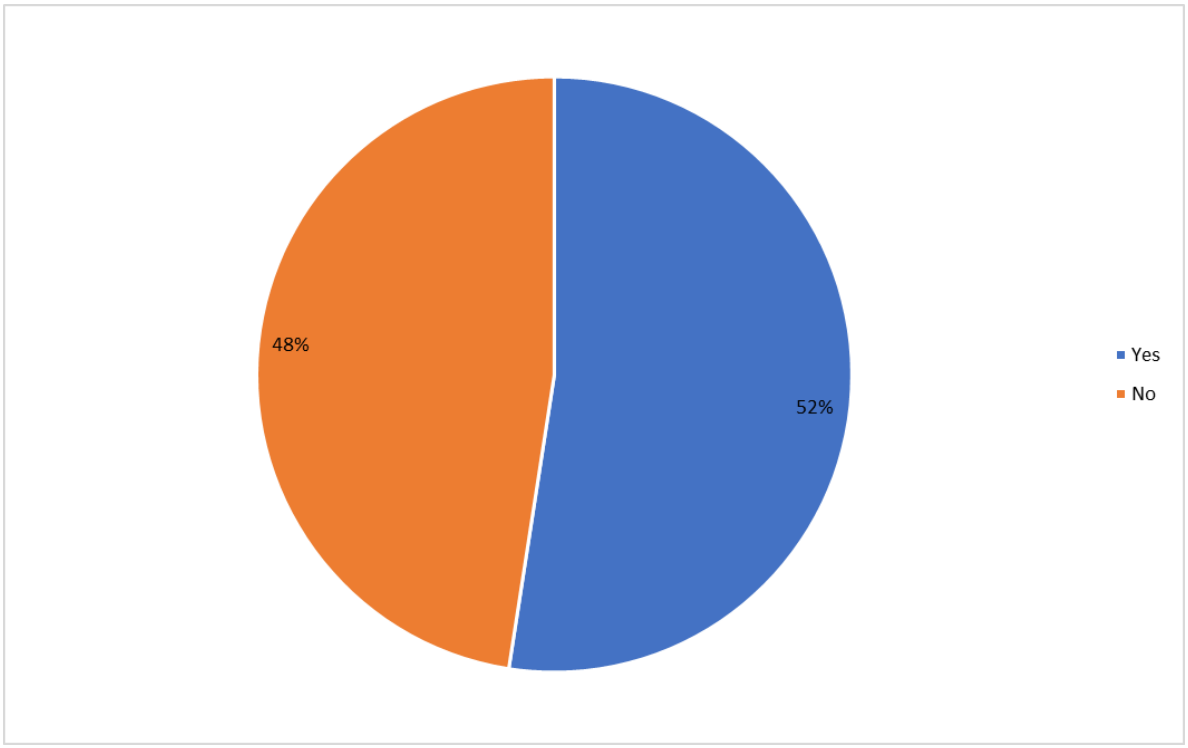


If you carpool, how many other people do you hare the ride with, typically?

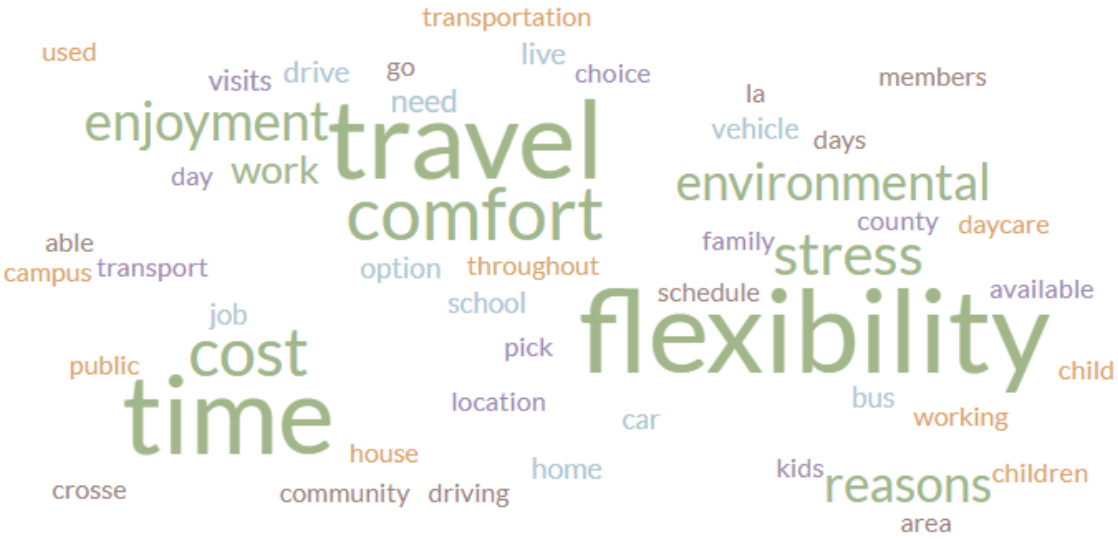


Commuting preferences

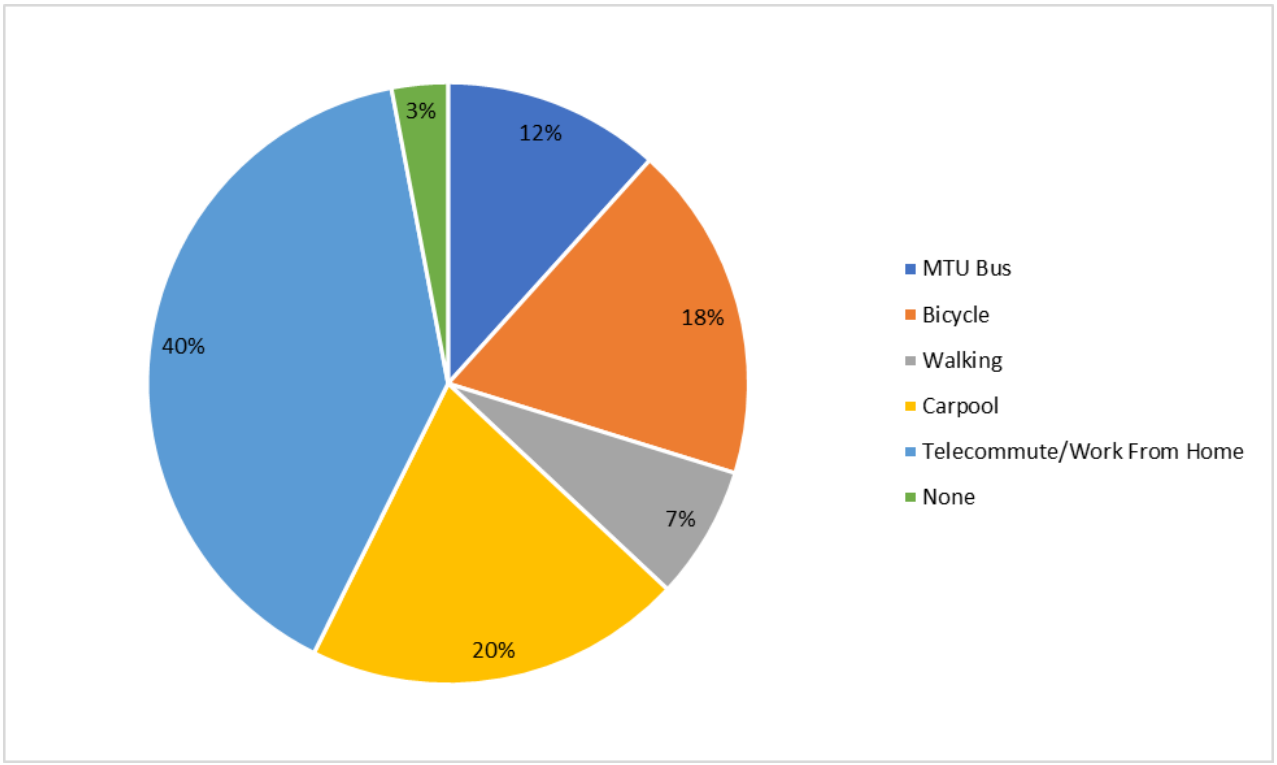
If you drive alone, would you consider an alternate commuting method where feasible?



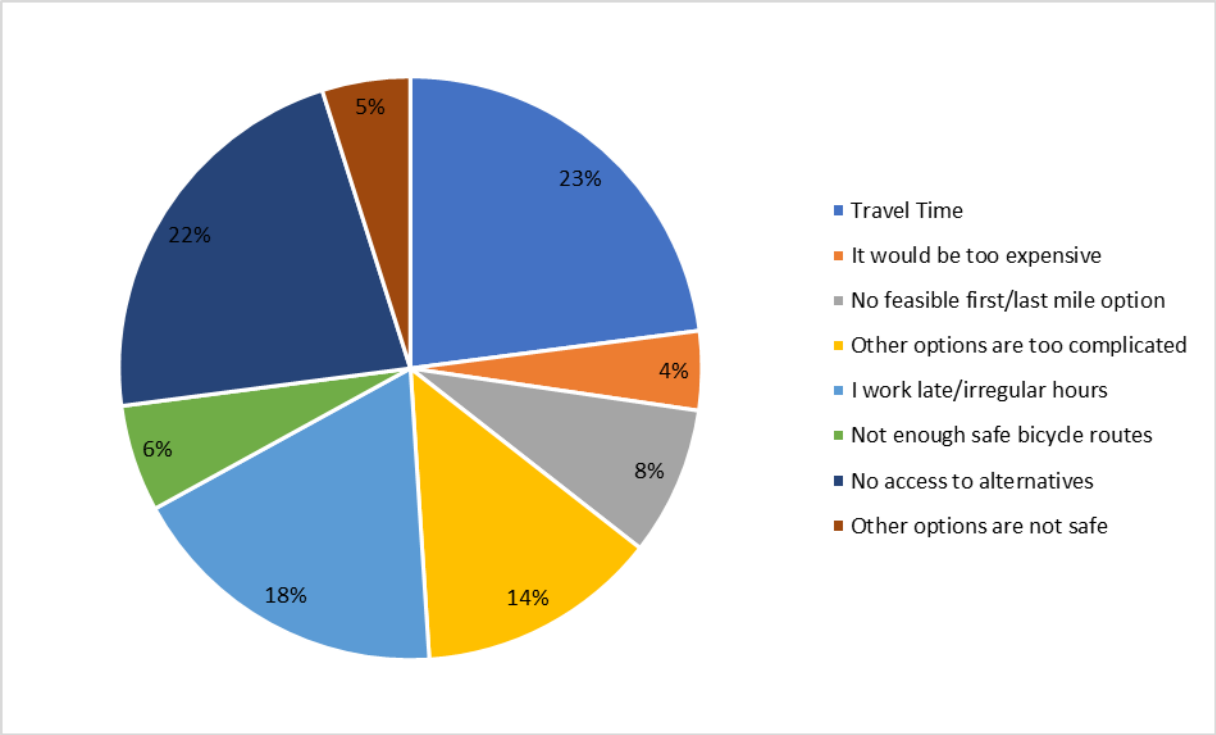
What informs your commute choice decision?



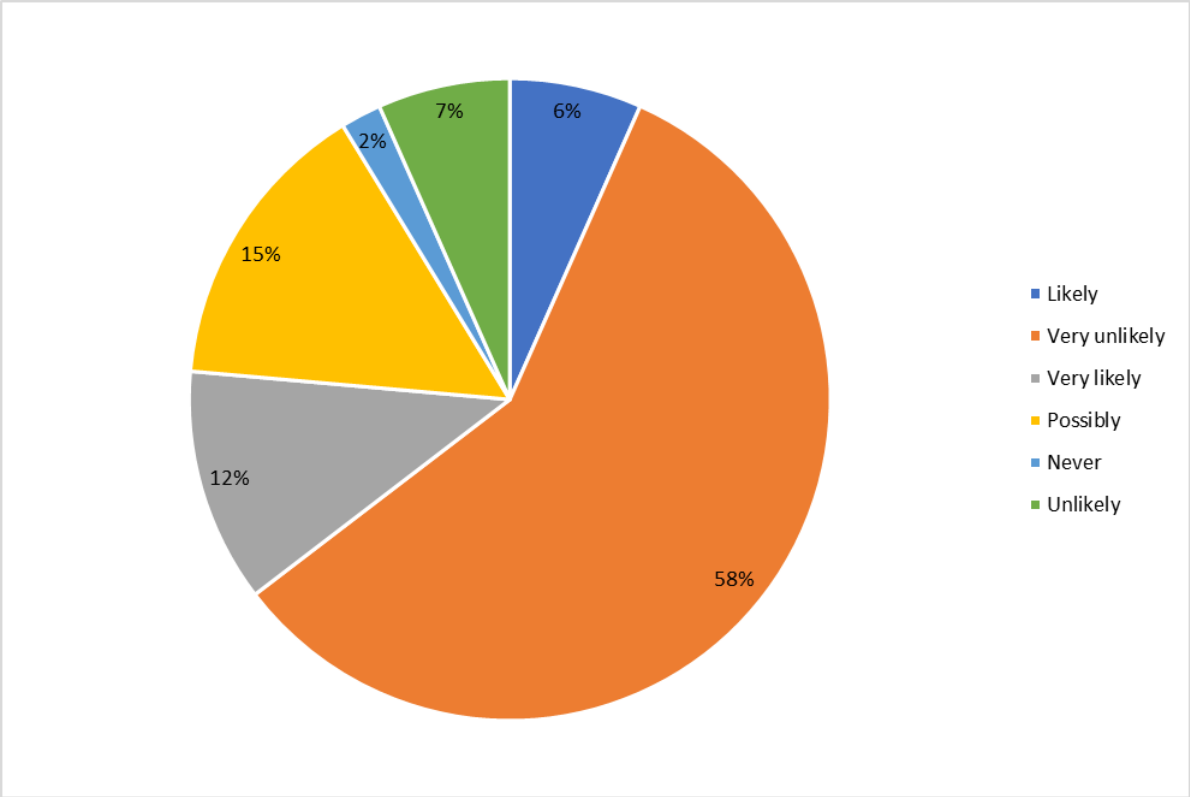
What forms of alternative commuting would you consider?



What are your obstacles to using alternative transportation modes?

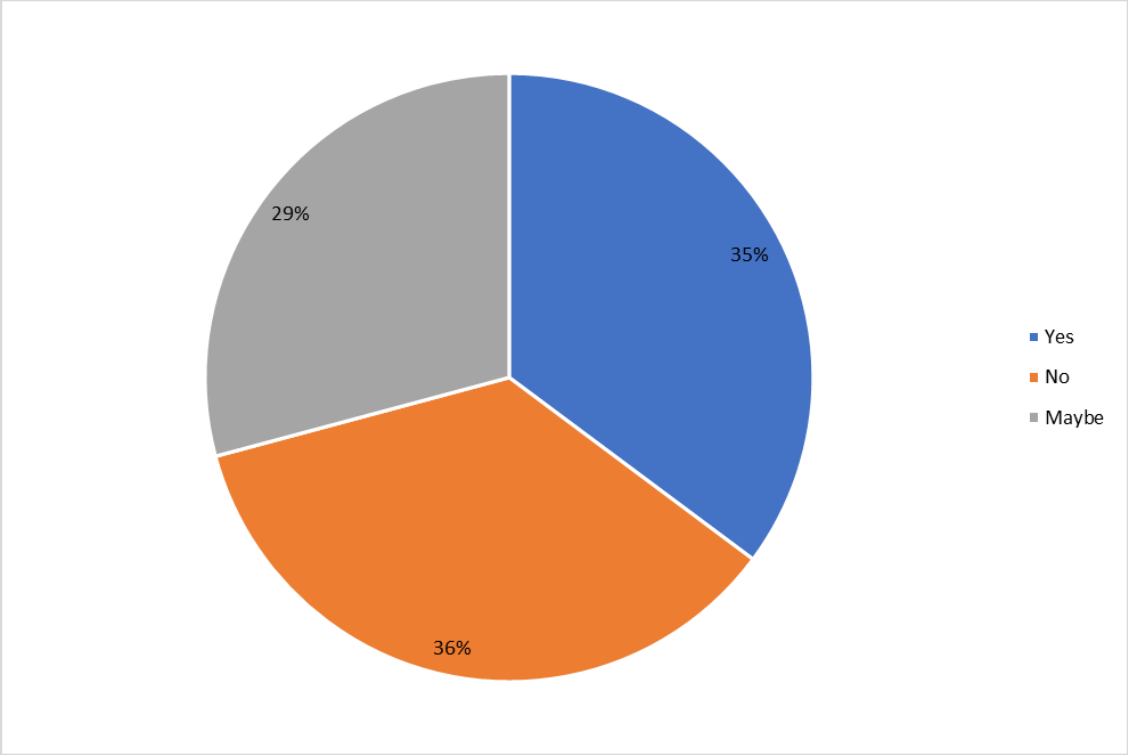


What is the likelihood that you would commute to work by bicycle, at least occasionally, if secure indoor or outdoor bike locker storage were provided at County buildings?

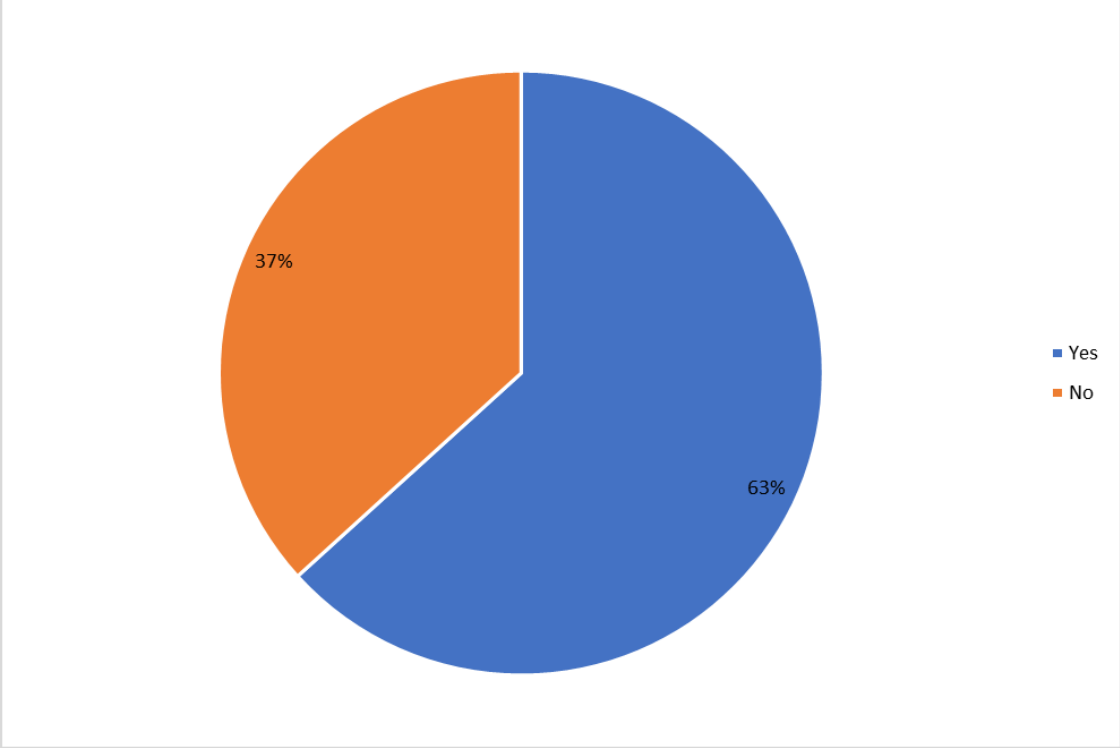


Electric vehicles

Would you consider purchasing an electric vehicle?



Would you like to see more electric vehicle chargers at County offices and facilities?



Appendix K:

La Crosse County Owned Energy Meters Table

Portfolio Manager Property ID	Property Name	Year Ending	Address 1	City	Postal Code	Number of Active Energy Meters	Electricity Use - Grid Purchase (kWh) 2023	Natural Gas Use (therms) 2023
28866544	Lakeview Health Center	5/31/2023	962 Garland Street East	West Salem	54669	2	1145044	54442.7
28873183	Administrative Center	2/29/2024	212 6th Street North	La Crosse	54601	2	349260.6	7647.2
29267512	MTC Buildings	2/29/2024	W4149 Vet Memorial Park Rd	West Salem	54669	1	6633.7	Not Available
29267513	Shelter #1	2/29/2024	W4149 Vet Memorial Park Rd	West Salem	54669	1	1412.4	Not Available
29267514	Neshonoc Storage	2/29/2024	914 E Garland St	West Salem	54669	1	16223	Not Available
29267515	Neshonoc Park	2/29/2024	121 State Rd 108	West Salem	54669	1	178	Not Available
29267516	Parks and Prop, Law Enforcement	2/29/2024	333 Vine St	La Crosse	54601	2	2591858.3	98664.9
29267517	City Shop	2/29/2024	W2679 State Rd 33	La Crosse	54601	1	2986.1	Not Available
29267518	Shelter #3	2/29/2024	W4149 Vet Memorial Park Rd	West Salem	54669	1	593.4	Not Available
29267519	Shelter #4	2/29/2024	W4149 Vet Memorial Park Rd	West Salem	54669	1	675.3	Not Available
29267520	Campground Site 32	2/29/2024	W4149 Vet Memorial Park Rd	West Salem	54669	1	20499.8	Not Available
29267521	Parks and Prop, Human Health Services	10/31/2023	300 4th St N	La Crosse	54601	2	883066.1	21418.9
29267522	Highway Dept, Storage Garage	2/29/2024	3505 Park Lane Dr	La Crosse	54601	2	10162.2	1805.7

29267523	Parks and Prop, Goose Island	1/31/2024	100 State Rd 35	La Crosse	54601	1	363162.5	Not Available
29267524	Shelter #2	2/29/2024	W4149 Vet Memorial Park Rd	West Salem	54669	1	39392	Not Available
29267525	Campground Site 38	2/29/2024	W4149 Vet Memorial Park Rd	West Salem	54669	1	34317	Not Available
29267526	Parks and Prop, Hillview Maintenance	2/29/2024	3503 Park Lane Dr	La Crosse	54601	2	262787.2	4971.4
29267527	Campground Site 49	2/29/2024	W4149 Vet Memorial Park Rd	West Salem	54669	1	39864.1	Not Available
29267528	Southwest Site Veteran's Park	2/29/2024	W4149 Vet Memorial Park Rd	West Salem	54669	1	30381.5	Not Available
29267529	Fire Pump	2/29/2024	333 Vine St	La Crosse	54601	1	490	Not Available
29267530	VT Pond	2/29/2024	N4668 County Rd VP	West Salem	54669	1	2627.2	Not Available
29770161	3240 Berlin Dr	2/29/2024	3240 Berlin Dr	La Crosse	54601	2	30373.2	326.1
29770162	HHM	1/31/2024	3202 Berlin Dr	La Crosse	54601	2	38790	3784.5
29770163	Landfill	1/31/2024	3200 Berlin Dr	La Crosse	54601	2	20279.2	1074.5
29770164	#2 3200 Berlin Dr	1/31/2024	#2 3200 Berlin Dr 2	La Crosse	54601	1	24197.1	Not Available
29770165	Ash Monofill	1/31/2024	3200 5th Ave Site 1	La Crosse	54601	1	5901.6	Not Available
29770166	G2E	1/31/2024	3200 Berlin Dr Site 3	La Crosse	54601	1	186723.4	Not Available

29770167	Main Pump BLDG	1/31/2024	3200 Berlin Dr Site 4	La Crosse	54601	1	3299.1	Not Available
29770168	Monitoring Well	1/31/2024	3200 Berlin Dr	La Crosse	54601	1	611.4	Not Available
29770169	Office	1/31/2024	3200 Berlin Dr	La Crosse	54601	1	12680.2	Not Available
29770170	Phase 4	1/31/2024	3200 Berlin Dr	La Crosse	54601	1	25442.7	Not Available
29770171	SED Basin Pump	1/31/2024	3200 Berlin Dr	La Crosse	54601	1	337	Not Available
29770172	St Joes Electric	1/31/2024	3200 Berlin Dr Unit Office	La Crosse	54601	1	29215.1	Not Available
29818530	Hillview	1/31/2024	3501 Park Ln Dr	La Crosse	54601	2	841224.9	67101.7
29910620	Midway Sandpit	2/29/2024	N5652 County Road OT	Onalaska	54650	2	3501.3	1990.6
29910621	Waterloo Shop 1	9/30/2023	301 Carlson Road	West Salem	54669	3 (2 gas meters)	250947	Not Available
29910623	Road SS	1/31/2024	1400 County Road SS	La Crosse	54601	1	2073.5	Not Available
29910624	CTH OT Sandpit	10/31/2023	N5652 County Road OT	Onalaska	54650	1	10000.3	Not Available
29910625	County ST	2/29/2024	N8296 Church St	Mindoro	54644	1	5259.2	Not Available
29910626	N4940 Carlson Rd	9/30/2023	N4940 Carlson Rd	West Salem	54669	1	11969.9	Not Available
29910627	W3259 State Road 33	7/31/2023	W3259 State Road 33	La Crosse	54601	2	77049.6	17694.6
29910628	305 Carlson Rd	2/29/2024	305 Carlson Road	West Salem	54669	1	572.3	Not Available

29910629	301 Carlson Rd BLDG Salt	10/23/2023	301 Carlson Road	West Salem	54669	2	2899.8	Not Available
30238533	Monarch Manor	5/31/2023	848 Garland Street East	West Salem	54669	2	42863.2	1845.5
30238534	Regent Manor	5/31/2023	856 Garland Street East	West Salem	54669	2	55349.3	747.1

45 County-owned properties represented in EnergyStar Portfolio Manager. Dates reflect the latest recorded energy bill for each property. Electricity meters are up to date as of February 2024. Meters that say they are current as of 2023 are select gas meters that are not eligible for automatic uploads within EnergyStar and are in the process of being manually uploaded.