VILLAGE OF MOUNT HOREB
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SUSTAINABILITY & NATURAL RESOURCES COMMITTEE
Tuesday, March 24, 2026 at 7:00 PM

Municipal Building Board Room
138 E. Main Street
Mount Horeb, WI

1) Call to order
2) Public Comments on Non-Agenda Items*
3) Consent Agenda
   a. Consideration of February 24, 2026 Meeting Minutes
   b. Green Team Update
4) Agenda Items
   a. Energy Plan Implementation Discussion
   b. Group Buy Solar Update
   c. Sustainable Purchasing Plan Discussion
   d. Landscaping Code Update
   e. Bike Friendly Community Update
   f. Possible Earth Day Event at Stewart Park
   g. Bird City Update
5) Future Agenda Items
6) Meeting adjournment.

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Members of the public are invited to speak at meetings of all Mount Horeb Public Bodies. To comment, please complete a Public Comment Form at the Meeting Room entrance and submit it to staff before the meeting begins. Comments are limited to **three minutes**, must be made from the podium, and the speaker must return to the audience after speaking.

- **Non-agenda item comments** are heard at the start of the meeting. Public Body members and staff will not engage in discussion during public comment but may consider topics for future agendas.
- **Agenda item comments** are heard during the relevant item, after the proposers or staff present the item and before Public Body discussion. All public comments on the item will be heard before any discussion by the Public Body.

Members of the public will only be allowed to speak outside these public comment times if they are invited by the meeting chair to share additional information requested by the Public Body. If so invited to speak, the member of the public must do so from the podium.
Written comments are also welcome. Written comments shall include the name and address of the submitter and should be

submitted to the Deputy Treasurer/Governance Coordinator by email at niki.erickson@mounthorebwi.info (subject line: *Public Comment Request-Name of Public Body*) or delivered by to the Village at: 138 E Main Street, Mount Horeb WI, 53572, ATTN *Public Comment Request-Name of Public Body*.

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SUSTAINABILITY & NATURAL RESOURCES COMMITTEE
Tuesday, February 24, 2026 at 7:00 PM

DRAFT MEETING MINUTES

1) Call to order
Chair White called the meeting to order at 7:00. Members Present: White, Saltes, Fendrick, Roethle and Beheler. Members Abesent: Best and Grabe. Also Present: Administrator Owen.

2) Public Comments on Non-Agenda Items*
Mike Healy requested the committee consider connecting trail networks with open spaces outside the village, such as Donald Park. He thanked the SNR Committee for including the native grass plantings in the future park on the Lukken farm for non-playfield areas to reduce mowing.

Kathy Kunz of the Dane County Office of Energy and Climate Change announced the Grant for Affordable EV Charging. They would like to see it go for a multifamily space. The RFP will officially open up March 2nd.

3) Consent Agenda
Motion by Beheler to recommend approval of the consent agenda as presented, seconded by Roethle. Motion carried.

a. Consideration of January 27, 2026 Meeting Minutes

b. Green Team Report

4) Agenda Items

a. Announcement of SolSmart Silver Designation and Press Release
Administrator Owen reported that we were able to achieve Silver SolSmart status and receive our designation plaque while they still had program funding. The Committee briefly reviewed the press release.

b. Review of Landscaping Code Recommendations
Administrator Owen reviewed his discussion with Planner Rohr about the SNR's recommendations. The planner reviewed the recommendations with the landscaping experts at his firm and included those that they felt were relevant for inclusion. All recommendations from the SNR are included in the Plan Commission packet for tomorrow evening and will be brought up to the Commission if they would like to consider

changes. Saltes expressed willingness to speak in support of the remaining items not included in the plan at the Plan Commission Public Hearing.

c. Discussionon Group Buy Solar

White asked Kunz to explain the Dane County Solar Group Buy Program. Kunz reported that Dane County invested in the City of Madison's program through Renew Wisconsin, so the group buy program is available to all Dane County residents. Each spring the program puts out an RFP for solar vendors for the program. Solar vendors generally provide a slight discount to those who participate in the program. Dane County residents can then reach out to the program to learn more about participating. The SNR could partner for an educating event at a festival or host a walking tour for those interested in installing solar and participating in the program.

d. Energy Plan Implementation

Public Comment: Mike Healy said he was happy to see the SNR Committee looking to use the Energy Plan. Noting some of the projects involving electric vehicles, as a member of the Finance and Personnel Committee they have a desire to lower operating costs. He added that he has experience in his business of using Hybrid and Electric Vehicles and would be happy to meet with the departments and let him drive his company vehicles to learn more.

Chair White asked Administrator Owen to address how the committee can budget for these expenses. Administrator Owen noted that, as was stated, the F&P committee is looking towards reducing operating costs, so highlighting projects that do that would be a good way to start and support those long-term cost reductions. Roethle mentioned lighting and thermostat controls were a few of the low-hanging fruit mentioned. Owen said he will be sending the report to the Department heads and informing them they should read the recommendations and be prepared to discuss the sustainable alternatives at budget time. Beheler mentioned the possibility of applying for the next step of the PSC grants for the implementation of some polices. Administrator Owen noted to be cautious when applying for grants for capital items and make sure you are applying for enough to cover the additional costs that often come with grant requirements.

e. Green Tier Status Update

Owen reported that the Village Board approved the application for silver status. He has submitted the paperwork and will make contact with Green Tier Staff to determine the best path forward with the changeover.

f. Update on Sustainability Plan — UniverCity Alliance Meeting

Owen reported that he and Saltes met with a Megan McBride from UniverCity Alliance to discuss the program. The program partners

municipalities with university programs to perform real-world work to help provide answers or research on issues municipalities are facing. The application process involves detailing your projects. Program staff will review the application and determine a budget, generally between $5,000 and $10,000, and determine which UW programs would fit the program best.

With this option, the budget is still the big obstacle. The committee discussed other available options, including working with UW-Extension and the Green Tier program.

g. Bike Friendly Community Update

Roethle reviewed the updated draft safe bike and pedestrian plan and noted he has a meeting coming up with Chief Vierck coming up with the plan. Roethle also noted he spoke with staff at the Madison Regional Planning Office, and they provided great information on bike routes and planning. A main goal was to provide an east-west route that provided access between downtown and the schools, and a north-south route connecting Stewart Park, the pool, downtown and the conservancy area at the south end of the Village. The committee thanked Roethle for his work.

h. Bird City Designation Update

Beheler reported that we were just 1 point shy of high-flyer status, but with the Green Tier membership, that moves us closer to achieving it for next year. She highlighted some other potential areas to improve our points and said the next step is to work on building out our Bird City page. She said she will work with the Green Team and this committee to work on that and on getting the word out on the designation and the page.

5) Future Agenda Items

Future Agenda items include: Potential Trial Connections, Energy Plan Implementation, Sustainability Plan Update,Bike and Bird City Updates, Gireen Tier Program, Solar Group Buy Update, Sustainable Purchasing, and Landscaping Ord update.

6) Meeting adjournment.

Motion by Fendrick to adjourn, seconded by Beheler. Motion carried at 8:27 pm.

Green Team Meeting Notes 3/9/26
Discussion on Consent Items:
Recap of February SNR meeting. Solar group purchase with Kathy Kuntz of Dane County Department of Climate Change Madisun program, updates to zoning code policy suggestions including dark skies and messaging and education materials.
Discussion about putting together literature for residents educating about aspects of health to humans and birds.
Conversation pivoted to challenges with commercial light pollution coming from the interior of tall buildings near residential areas.
Suggestions: have a petition for Duluth. Members have reached out to them, and it was suggested to reach out to the police regarding lights left on inside an unoccupied building off hours.
How to document effects of bird collisions during migration season from Jennifer:
Bring up bird city that / SW Bird Alliance/ do assessments of bird strikes. On iNaturalist
Action item: take inventory on bird strikes during migration season early mornings 7-8 a.m.

Debriefing of “Good Morning Mount Horeb” and making contact with Matt Gieger of the Mount Horeb Mail to submit information for the article.

There is a collaboration opportunity with Garden Club happening April 12 happy hour with other groups, mention of having a quarterly meeting.
Possible Clean Sweep event at plant sale. Tim will contact Jeff Gorman at the village. Can we ride the coat tails for clean sweep?

- Action Item to get more information about drop off for chemicals and possible coordination.

Yard in Every Yard
-240 seed bags done, stickers produced, digital footprint, Eilieen set up a website, Instagram, and gmail account.
- Brochure produced, goes in the seed bag.
- Website is up. Needs reimbursement of $48.00
- April 20th from 6:30-7:30 sustainable garden design on a budget presentation by Katie at the Library.
- Cub scout pack 62 is meeting up with Katie to plant seeds for the plots at Liberty Park.
- May 9th Garden Club plant sale for YEY package pick up
- Historium seed swap
- Isaac’s booth
- Need other places

- Action items: need yardsticks to be installed.
- Reserve table at Farmer’s Market. Several requests have gone out with no reply.
- Banner to be installed on main street
- Contact Mount Horeb

- Data Center Forum event in Juneau discussion: Tim White shared that Mount Horeb isn't suitable at the moment for data centers, criteria weighed in. Charlie Barens is involved.

Compost update: Kathy met with Delaney and has materials from the county including a bucket, kitchen bucket model, vinyl decal with directions, upcycling buckets from Kwik Trip for smaller family units.

QR code on literature.
Getting the word out, share on Facebook pages: Trollway, uncensored Mt. Horeb, etc.
She was able to get $1,000 to build a site. Send blast off with chamber.
Work with the chamber to make sure the program targets residential areas.

Future agenda items.

- The community foundation grant deadline is the end of August. Need to draft proposals for financial support, then funds can be earmarked for individual projects.
- Bird City events

Village of Mount Horeb Municipal Energy Plan

January 16, 2026

Table of Contents

Table of Contents ii

Executive Summary vi

- Energy Baseline vi
- Identifying Energy Saving Opportunities vii
- Renewable Energy Opportunities vii
- Vehicle Fleet Analysis viii
- Community Engagement and Energy Use viii
- Supportive Policies and Programs ix
- Funding Opportunities ix
- Next steps ix

Glossary xi

Introduction xii

- Background xii
- Plan Development Process xii
  - Data Collection to Develop the Energy Baseline xii
  - Data Aggregation and Energy Assessments xiii
  - Analysis of Energy Saving Opportunities xiii
  - Stakeholder Feedback xiv

Baseline Data 1

- Plan Boundary 1
- Municipal Energy Use 1
- Municipal Facilities 3
- Municipal Vehicles 4
- Community Energy Use 4

Community Engagement 7

Recommendation Overview 10

Building and Facility Energy Efficiency Recommendations 12

- Recommendation 1: Continue ongoing benchmarking of building performance 12
- Recommendation 2: Implement Recommended measures for audited buildings 14
- Recommendation 3: Institute standard operating guidelines at all buildings 16

Recommendation 4: Plan for Space and Water Heating Electrification 17
Recommendation 5: Implement monitoring and optimization strategies for Wells and Lift stations ... 18
Establishing performance baseline 19
Optimizing energy use 19
Resources for efficient equipment transitions 19
Solar Recommendations 21
Recommendation 1: Install Solar PV on Optimal Municipal Buildings 21
Recommendation 2: Supplement Rooftop Solar with Purchase of Off-Site Renewable Energy 22
Recommendation 3: Facilitate a Community-Wide Solar Group Buy Program 24
Fleet Recommendations 26
Recommendation 1: Add Two EVs to Municipal Fleet 27
Part 1: Replace two existing vehicles with EVs 27
Part 2: Install EV Charging Systems 29
Recommendation 2: Use estimated total cost of vehicle ownership to guide purchasing 30
Recommendation 3: Lead Community in EV Transition 31
Policy Recommendations 33
Recommendation 1: Implement Sustainable LCCA purchasing policy 33
Recommendation 2: Connect Community with Incentives and Financing 34
Recommendation 3: Join Local Government Sustainability Peer Groups 37
Recommendation 4: Public recognition program for Energy Efficient businesses 38
Funding Opportunities for Recommendations 39
Focus on Energy 39
WPPI Energy 39
Wisconsin Public Service Commission's Office of Energy Innovation 39
Clean Energy Revolving Fund 39
Appendix 1: Building Descriptions and Recommendations 41
Building 1: Village of Mount Horeb municipal building 41
High Priority: Retro-Commissioning 42
High Priority: LED Upgrades 43
High Priority: Lighting Occupancy Controls 43
Medium Priority: Plug Load Management 43
Medium Priority: Improve Building Air Sealing 43

Medium Priority: Condensing Boiler Upgrade 43
Decarbonization Measure: Alternative to Condensing Boiler Upgrade – Air-to-Water Heat Pump Upgrade 44
Decarbonization Measure EOL: Heat Pump Water Heater Upgrade 44
Building 2 Mount Horeb Public Library 45
High Priority: Retro-commissioning 46
High Priority: LED Upgrades 46
High Priority: Occupancy Sensor Controls 47
High Priority: Daylighting Controls 47
Medium Priority: Improve Building Air Sealing 47
Medium Priority: Plug Load Management 47
EOL: Upgrade Roof Insulation 47
EOL/Decarbonization: Heat Pump Water Heater Upgrade 48
Decarbonization Measure: Air-to-Water Heat Pump Upgrade 48
Building 3 Community Center 49
High Priority: Retro-commissioning 50
High Priority: Smart Thermostats Upgrade 51
High Priority: LED Upgrades with Occupancy Sensors 51
Medium Priority: Improve Building Air Sealing 51
EOL: ENERGY STAR Appliances 51
EOL: Windows Replacement 51
EOL: Upgrade Roof Insulation 52
Decarbonization Measure at EOL: Heat Pump Water Heater Upgrade 52
Building 4 Public Safety: Police Station 53
Decarbonization Measure at EOL: Air-to-Water Heat Pump Upgrade 53
Decarbonization Measure at EOL: Heat Pump Water Heater Upgrade 54
Appendix 2: Solar Methodology 55
Appendix 3: Fleet Methodology 57
Appendix 4: Additional References and Resources 58

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Executive Summary

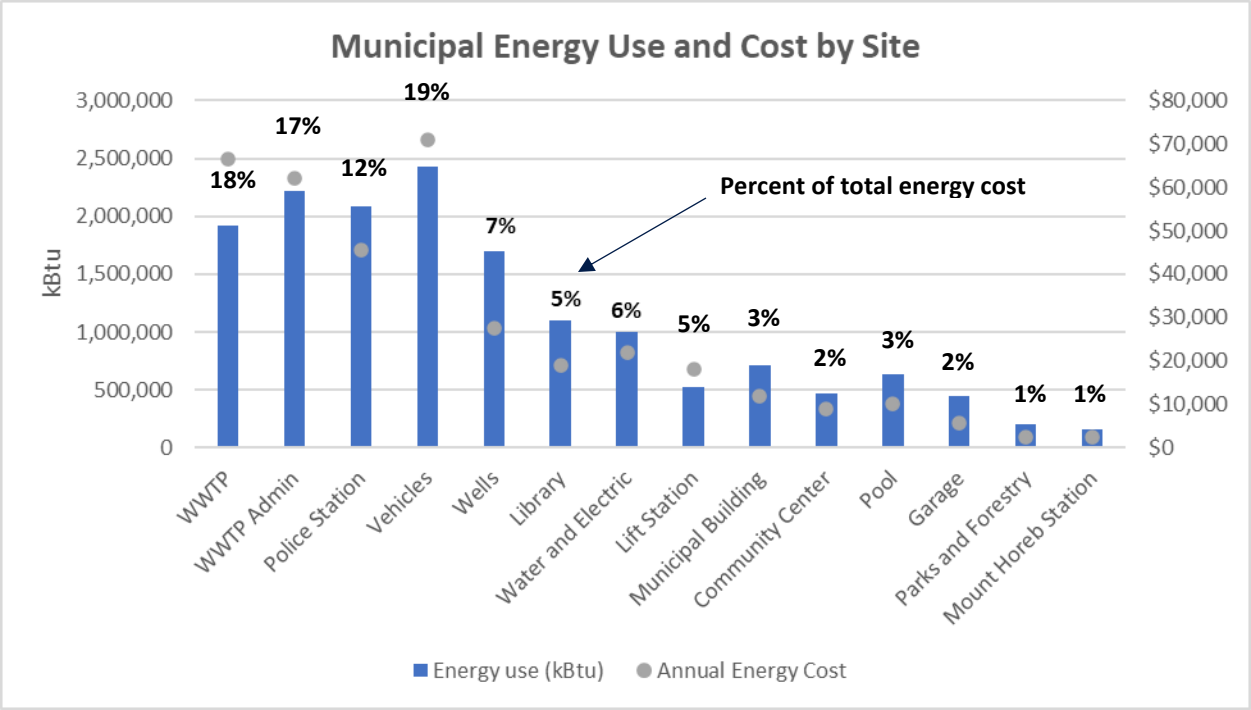
With funding from the Wisconsin Public Service Commission's Office of Energy Innovation, the Village of Mount Horeb partnered with Slipstream and WPPI Energy to develop the Mount Horeb Energy Plan ("Energy Plan"). The Energy Plan is the Village's first comprehensive municipal energy plan, and it will guide Mount Horeb's strategic energy investments over the next 5–10 years. The Energy Plan evaluates the Village's municipal operations, vehicle fleet, and community-wide energy use and identifies actionable strategies to reduce energy costs, advance sustainability, and lower greenhouse gas (GHG) emissions both in municipal operations and throughout the community.

Mount Horeb's goals are driven by its long-standing commitment to environmental stewardship and fiscal responsibility. The Village has already demonstrated leadership through energy-efficient municipal projects, public education initiatives, and the establishment of its Sustainability and Natural Resources (SNR) Committee. This Energy Plan builds on that foundation by prioritizing cost-effective, high-impact actions. The project team used a multi-stage process to understand the energy baseline, identify energy saving opportunities, and recommend improvement strategies. The process included detailed data collection, benchmarking of all municipal facilities, building energy assessments, analysis of vehicle fleet operations, evaluation of community energy use, and extensive engagement with residents, businesses, and the SNR Committee.

ENERGY BASELINE

In the baseline year (2023), the Village of Mount Horeb's municipal operations generated 1,769 metric tons of CO_2e and incurred $373,511 in energy costs. As shown in Figure 1, the largest components of energy costs and emissions were the wastewater treatment plant (WWTP) and the WWTP Administrative building. The police station, wells and lift stations, and the vehicle fleet were also key contributors to baseline energy use and emissions. Benchmarking energy use intensity of each building against national medians showed that several buildings are already more efficient than national medians, but that there continues to be opportunities to improve efficiency at all facilities.

Figure 1. Municipal energy use and cost by source.



IDENTIFYING ENERGY SAVING OPPORTUNITIES

Four buildings—Village Hall, the Library, the Community Center, and the Police Station portion of the Public Safety Building—received onsite energy assessments. The team created digital energy models of each facility, which were used to identify cost-effective near term, medium-term, and end-of-service life energy upgrades. Completing all recommended energy upgrades would reduce utility costs for the buildings by 20-30%.

Near term recommendations focused on improvements that will yield the greatest energy cost savings per dollar of investment. These measures included retro-commissioning, LED upgrades, lighting controls, smart thermostats, and plug-load management. Longer-term decarbonization opportunities include heat pumps, heat-pump water heaters, window replacements, and roof insulation.

RENEWABLE ENERGY OPPORTUNITIES

Freely available renewable energy from the sun and the wind offers valuable cost saving and emissions reduction opportunities for Mount Horeb. Survey responses, guidance from the SNR, and feedback at the Community Forum all showed high levels of public support for increasing the use of renewable energy for municipal buildings and among residents and businesses. Consequently, the Energy Plan assessed opportunities for the Village to use both on-site and off-site renewable energy to power its municipal buildings and also recommended ways that the Village can help community members increase the share of the energy that they use that is generated from renewable resources. Key renewable energy recommendations included:

- **Install Solar PV on Municipal Buildings**. The analysis identified opportunities to install 583 kW-DC at municipal facilities, which would reduce the Village's energy costs by approximately $100,000 per year.

- **Supplement Solar with Off-Site Renewable Energy**. Space constraints at municipal facilities would prevent the Village from installing sufficient on-site solar capacity to offset 100 percent of its energy use. To reflect this limitation and to optimize cost-effectiveness, the Energy Plan provides guidance for the Village in supplementing on-site PV with procurement of off-site renewable energy.
- Facilitate a Solar Group Buy Program. This low-cost program would reduce informational, financial, and technical barriers to broader adoption of rooftop solar at homes and businesses in the community.

VEHICLE FLEET ANALYSIS

The Village's fleet of 30-municipal vehicles consumed over 19,000 gallons of fuel in the baseline year and operated at an overall fuel economy of 12.5 MPG. In 2023, combined fuel costs for all vehicles exceeded the energy costs of all municipal facilities except the WWTP and the WWTP Administrative building.

- SUVs, primarily operated by the Police Department, consumed the most fuel and generated the most CO2e. (8,844 gallons consumed | 75 MT CO2e).
- Large trucks, many of which are used by the Public Works department, consumed the second highest amount of fuel (5,065 gallons consumed | 52 MT CO2e).
- The Energy Plan recommends strategies to reduce fuel costs and vehicle emissions by incorporating electric vehicles (EVs) into its operations. The evolving EV market presents cost-competitive replacements for several categories of vehicles that the Village operates. Key vehicle recommendations include:
- Implement a phased transition by beginning with two initial EV purchases. Train staff to operate and maintain a limited number of EVs before adding more EVs to the fleet.
- Future-proof EV charging needs by installing the level of electrical infrastructure that will be needed to meet future vehicle charging requirement when planning for the initial EV charging stations.

COMMUNITY ENGAGEMENT AND ENERGY USE

The people who live and work in Mount Horeb are key stakeholders for the Village's Energy Plan. Additionally, community-wide residential and commercial emissions far exceed municipal emissions and therefore working with the community will be essential to reduce energy use and emissions. The planning process engaged the community in three primary ways.

- Periodic presentations to, and guidance from, the SNR Committee.
- Survey feedback from 473 residents and 34 businesses.
- Presentation of preliminary energy plan recommendations at a community forum at which attendees offered feedback on each recommended strategy.
- Several top themes emerged from the community engagement.
    - Residents strongly value renewable energy and energy efficiency but cite cost, information gaps, and contractor uncertainty as barriers.
    - Businesses report modest improvements but express interest in support, recognition, and financing programs.

- Community support is strong for solar group buys, improving efficiency of municipal buildings, especially by adding smart building controls.
- Some skepticism exists about EV fleet expansion due to concerns about grid capacity and the future policy environment.

SUPPORTIVE POLICIES AND PROGRAMS

Mount Horeb can sustain and amplify the impact of its energy efficiency initiatives by instituting aligned internal operational policies, as well as public-facing policies.

The Energy Plan recommends four types of policies to achieve the Village's objectives:

- Enact a Lifecycle Cost Analysis purchasing policy for equipment and vehicles.
- Introduce program and services to connect residents and businesses to incentives and financing, especially Focus on Energy rebates.
- Join state and regional sustainability collaboratives (e.g., WLGCC) to sustain the Village's engagement with sustainability and to access additional learning and grant opportunities.
- Create a Green Business Recognition Program to encourage leadership and visibility.

FUNDING OPPORTUNITIES

Significant financial investments will be required to implement the recommended energy upgrades to municipal facilities and to homes and businesses. Federal policy changes have reduced opportunities to use tax credits to fund purchases of EVs and installation of solar arrays. However, valuable funding opportunities remain for all municipal stakeholders:

- **Focus on Energy**. The Energy Plan recommends that the Village coordinate with its Focus on Energy Advisor on all energy improvements to municipal buildings. The Energy Advisor can provide helpful technical guidance and can also assist the municipality in accessing financial incentives for these upgrades. We also recommend that the Village support outreach activities to help residents and businesses access Focus incentives.
- **WPPI Energy**. Mount Horeb Utilities is a member of WPPI Energy, which has been a key partner in the development of this Energy Plan. We recommend that the Village continue to engage with WPPI Energy to identify any additional funding opportunities that may be available.
- **WI Public Services Commission (PSC) Office of Energy Innovation (OEI).** This Energy Plan was developed through a Rural Energy Startup grant from OEI. OEI periodically offers additional funding opportunities, which the Village may be able to access to obtain funding for energy upgrades.
- **Clean Energy Revolving Fund.** The Village can quantify the value of the energy cost savings that the energy upgrades generate and deposit these cost savings into a revolving fund. As the Village continues to make energy upgrades, funds in this account can be used to fill funding gaps for future projects.

NEXT STEPS

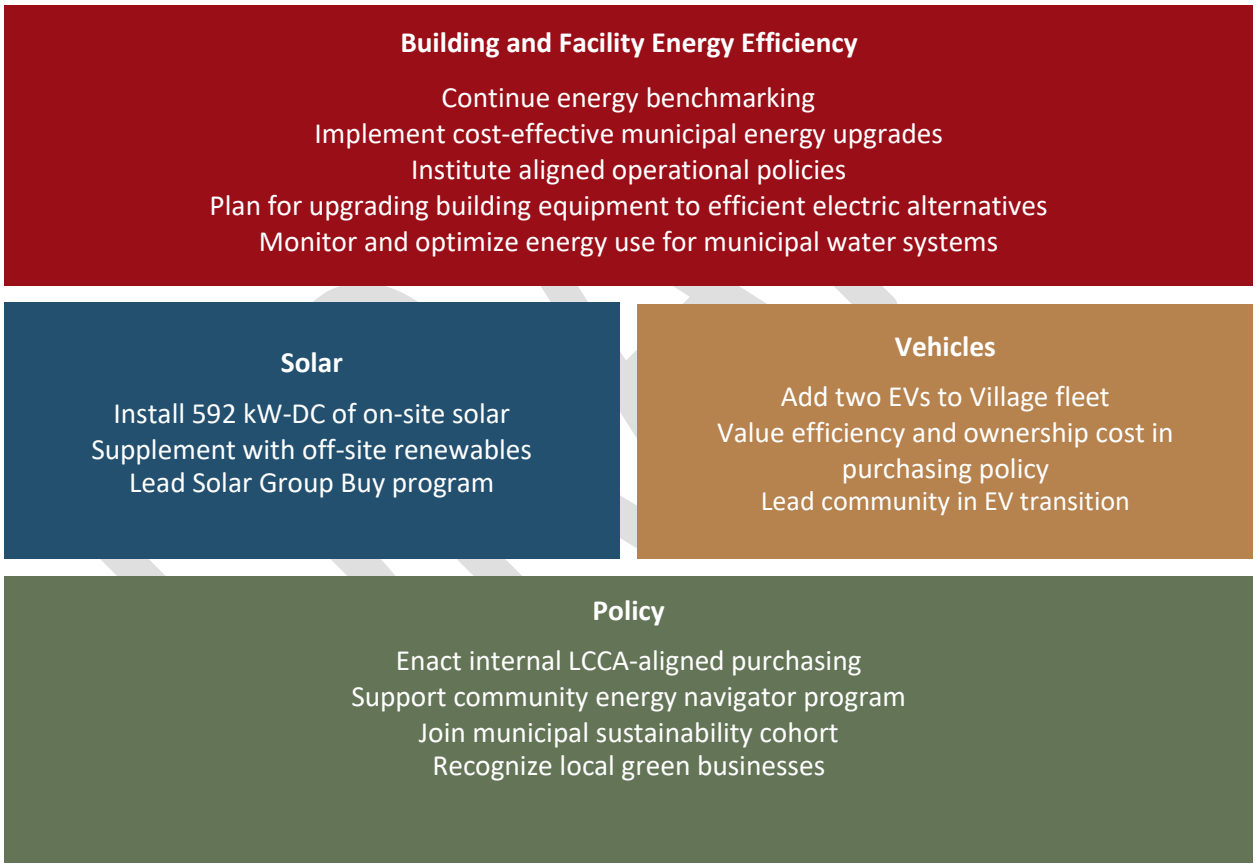
The Mount Horeb Municipal Energy Plan provides a clear, actionable roadmap for reducing energy costs, cutting emissions, and enhancing sustainability across Village operations and the broader community. By

prioritizing high-impact building upgrades, embracing solar energy, modernizing the vehicle fleet, and enabling residents and businesses to participate in energy-saving initiatives, the Village can advance fiscal responsibility, environmental stewardship, and community well-being.

The Plan's success will depend on continued monitoring, strategic investment, and strong collaboration between municipal leadership, Village staff, community members, and regional partners. Mount Horeb is positioned to lead by example and create a model for small communities pursuing a resilient, cost-effective, and sustainable energy future.

Figure 2 provides an overview of the recommendations by category. The recommendations serve as initial items for consideration to save energy and reduce municipal CO_2 emissions. Funding is available through local utility rebates, federal funding, and state funding to implement these recommendations. Funding options for the recommendations are detailed in the full report.

Figure 2. Recommended Mount Horeb energy actions



Glossary

Decarbonization: A process of replacing equipment and systems that generate heat and/or power by combusting fossil fuels with alternatives that are powered solely, or primarily, by electricity or renewable fuels. Fuel switching measures may be complemented by installation of on-site renewable energy systems. These building improvements are designed to achieve near-term and long-term emissions reductions by leveraging trends toward reduced emissions intensity of the electrical grid.

Energy assessment: An on-site inspection paired with energy modeling that analyzes how a building currently uses energy and identifies opportunities to reduce the building's energy consumption.

Electric vehicle (EV): Cars, trucks, buses, and other vehicle types that are propelled using electricity that is stored in a battery.

Energy use intensity (EUI): Total energy used by a building from all fuel types (e.g. electricity, natural gas, and delivered fuels) and converted to British thermal units divided by the total square feet of the building. Normalizes energy use across buildings of different sizes.

Focus on Energy: Wisconsin's statewide program to increase energy efficiency and renewable energy use among residents, businesses, and local governments.

Heat pump: Single heat pump replaces both furnace and an air conditioner; fueled by electricity and highly energy efficient in comparison to furnaces, boilers, and air conditioners.

Internal combustion engine (ICE) vehicle: Conventional vehicle in which gasoline, diesel, or other fuel is consumed to generate the power that propels the vehicle.

Net metering: Billing mechanism that credits solar energy owners for electricity added to grid

PV (Photovoltaic): Conversion of solar energy to electricity

Renewable energy: Energy that is generated from a naturally replenishing resource that does not release carbon dioxide into the atmosphere. Examples include solar energy, wind energy, or geothermal energy.

Weather-normalized site EUI: The energy use a building would have consumed during 30-year average weather conditions. It can be helpful to use this weather normalized value to understand changes in energy when accounting for changes in weather. Energy use is divided by square feet.

Wisconsin Local Government Climate Coalition (WLGCC): Coalition of local governments in Wisconsin committed to accelerating local climate change solutions.

Introduction

BACKGROUND

To guide its next steps toward investing in energy savings, the Village of Mount Horeb collaborated with Slipstream, a Madison-based non-profit organization, and WPPI to apply for funding to develop a community energy plan. In August 2024, the Village signed a grant agreement through the Wisconsin Public Service Commission's Office of Energy Innovation's (OEI) Rural Energy Start-up Program (RESP). Mount Horeb used the RESP funding to partner with Slipstream to develop this Mount Horeb Energy Plan ("Plan"). The Plan recommends steps that the Village can take within the next 5-10 years to strategically invest in reducing the amount of energy used by its municipal buildings and vehicles, as well as the ways that it can make best use of renewable energy. Beyond municipal operations, the Plan recommends policies and programs that the Village can implement to help residents and businesses in the community save money and reduce negative environmental impacts by saving energy.

The Village of Mount Horeb is committed to using energy efficiently and responsibly and to working to improve the environmental and financial sustainability of its operations. It has a track record of pursuing energy efficiency, including leveraging resources from WPPI Energy and Focus on Energy to reduce energy consumption when constructing the Driftless Historium and when retrofitting the Wastewater Treatment Plant.

In addition to addressing energy efficiency within municipal operations, the Village has worked with residents and businesses to save money, and live and work more sustainably by reducing their energy use. For example, in 2022 it engaged the community to reduce energy consumption through the Save to Give Challenge. In November of the same year, the Village demonstrated its ability to institutionalize energy savings opportunities by passing Resolution 2022-15 to create the Village of Mount Horeb Sustainability & Natural Resources Committee.

The Village's efforts are succeeding in facilitating environmental responsibility in the community. In the fall of 2023, Mount Horeb High School was selected to participate in the Focus on Energy Renew Our Schools program. This five-week initiative encourages students and staff to adopt behavioral changes to enhance energy efficiency within their school buildings. Mount Horeb High School demonstrated exceptional commitment by completing every available activity in the program and was awarded $2,500 to use for future energy efficiency projects.

PLAN DEVELOPMENT PROCESS

Developing the Mount Horeb Energy Plan consisted of four primary activities: data collection to develop the baseline, building energy assessments, analysis of energy saving opportunities, and gathering of stakeholder feedback to finalize results (Figure 3).

Data Collection to Develop the Energy Baseline

To enable the Project Team to understand both the municipality's, and the community's current energy use, the first step was to collect data on energy use in the Village's buildings and vehicles. To establish baseline energy use in the community, the team obtained aggregated residential and business energy

consumption data. The team used resident and business surveys to understand current energy consumption practices, behaviors and perspectives among community stakeholders.

Using the data collected, the team established baseline energy use for the Village's buildings and fleet vehicles, which informed insights on the current efficiency performance of each building. Because buildings serve different functions, each with distinct uses, occupancy patterns, and energy-intensive processes, the team compared energy use in Mount Horeb's buildings against two relevant benchmarks. First, we used the site energy use intensity (EUI)[1] of each Mount Horeb building, which is calculated as the amount of energy consumed per square foot. The EUIs were compared to national median site EUI values of other buildings of the same type, using a publicly available dataset[2]. This comparison provided insights on which buildings may currently be under performing in their energy use, and which may therefore present the greatest opportunities for energy savings. Second, the site EUI of municipal buildings was compared against the best practice site EUI target for existing buildings as recommended by the ASHRAE 100 – 2024 Energy and Emissions Buildings Performance Standard for Existing Buildings[3]. The ASHRAE 100 metric provides a target level of energy performance for each building that the Village can seek to achieve through completing the recommended energy improvements.

Data Aggregation and Energy Assessments

Village leadership worked with Slipstream to use the benchmarked energy performance, along with known building improvement needs, to identify the four buildings for which it would be most helpful to complete walk through energy assessments. During the assessments, Slipstream's engineers reviewed HVAC equipment, lighting systems, building automation systems (if present), and other building components. The team also spoke with staff who used and operated each building to identify concerns and functional issues. Finally, the team evaluated roof areas to determine their suitability for solar PV panel installation.

Analysis of Energy Saving Opportunities

For each building, Slipstream created virtual energy models using the on-site data collected with historical energy consumption data and blueprints (when available). The energy model was then used to

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[1] Calculation of Site EUI converts the electricity, natural gas, and other energy used at the site into a common unit (kBtu) which is divided by building size (square feet). Source EUI, which accounts for total energy used to produce off-site generated fuels (ex. Electricity), as well as the energy that is lost in transmission, can also be a valuable metric. For purposes of assessing current building performance, we find that site EUI, which is used throughout the Mount Horeb Energy Plan is the more relevant metric to consider.

[2] U.S. Energy Information Administration (EIA) Commercial Building Energy Consumption Survey (CBECS). https://www.eia.gov/consumption/commercial/

[3] https://www.ashrae.org/file%20library/technical%20resources/standards%20and%20guidelines/standards%20addenda/100_2018_e_20230831.pdf

forecast the energy savings potential of multiple energy upgrade scenarios. These became the basis for the development of energy upgrade roadmaps aligned with the most cost-effective upgrade pathways.

In parallel with analyzing energy efficiency and renewable energy improvement pathways for municipal buildings, the team assessed the types of vehicles in the Village's municipal fleet, as well as their fuel consumption and mileage. The team investigated cost-effective strategies for the Village to reduce fuel costs and vehicle emissions by transitioning to hybrid and electric vehicles (EVs) during planned vehicle replacements.

The team also evaluated supportive policy and programs. This included internal policies that can help the Village sustain energy efficiency efforts over time, as well as public-facing policies and programs informed by survey responses and aggregated residential and business energy data. These recommendations outline ways that the Village could help community members reduce their energy use and shift from conventional electricity usage to renewable energy.

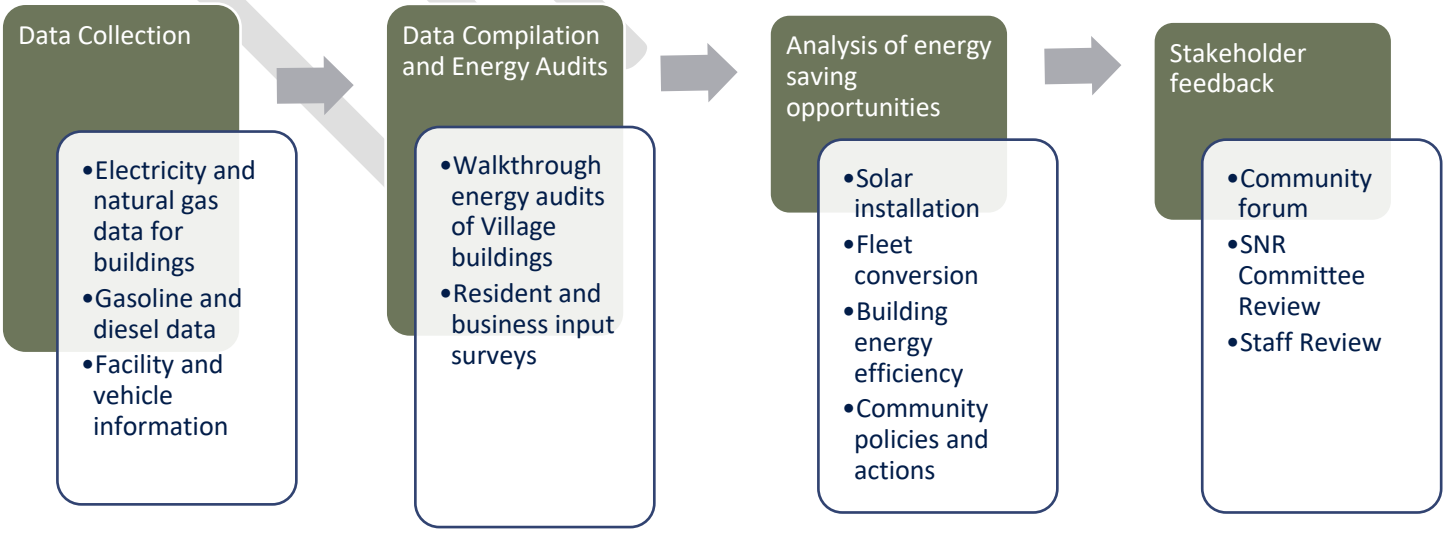
Stakeholder Feedback

The team compiled the strategies identified for energy savings in municipal buildings, municipal vehicles, and community-wide energy used into a preliminary set of recommendations. Because the draft recommendations were informed by community survey responses and by guidance from the Village's SNR committee, it was essential to share them with the SNR and the broader community to confirm that the preliminary roadmap accurately reflected stakeholder priorities.

Community members were invited to a forum where draft recommendations were presented. Participants used dot voting to indicate their level of support or opposition for each recommendation. Attendees also provided insights and feedback by placing sticky notes with comments on posters corresponding to each recommendation. Additional feedback was gathered through comments from Village staff and SNR Committee members.

This final version of the Mount Horeb Energy Plan incorporates feedback from municipal staff, from SNR Committee members, and from residents at the community forum.

Figure 3. Overview of planning process



Baseline Data

PLAN BOUNDARY

The project team aggregated electricity, natural gas, gasoline, vehicle, and facility data to establish the energy baseline for the Mount Horeb Energy Plan. The recommendations that the Plan describes use the information in the baseline to create a roadmap for the Village to achieve significant energy savings in comparison to the baseline.

To align with the objectives and requirements of the grant funding that the Village used to develop the plan, the Energy Plan focuses on municipal facilities and vehicles, as well as community-wide energy reduction strategies. The Mount Horeb Area School District is structured as a separate entity from the Village and is responsible for maintaining and improving all of the school buildings in Mount Horeb. Similarly, the Mount Horeb Area Joint Fire Department and Emergency Medical Service, which operates and maintains the Fire Department portion of the Public Safety building is a separate jurisdiction from the Village. Because the School District and the Fire Department are separate governmental entities from the Village, the facilities and vehicles that they use were not included in the Village's baseline, or in the recommendations that the Energy Plan outlines. As a next step, the Village may seek to engage with these two partners to collaborate on clean energy initiatives.

MUNICIPAL ENERGY USE

Mount Horeb has 11 primary municipal facilities, as well as service garages, storage sites, wells, and lift stations. It also has 30[4] vehicles and numerous pieces of off-road equipment in its Village fleet. The project team analyzed energy data from each source for both 2023 and 2024 (where available)[5]. Table 1 and Table 2 reflect the energy use and costs, as well as the relative level of emissions from each source for 2023, which is the most recent year for which energy data for all sources was received.

The second column in Table 1 shows the total energy use for each source. To allow for accurate conversions of energy values to energy costs and GHG emissions, the values in this column have not been weather normalized to account for the positive or negative effects of colder winter temperatures or hotter summer temperatures on energy consumption in buildings. However, consumption values for buildings were weather normalized when calculating site EUI so that the EUI could be meaningfully compared to median EUI and to the ASHRAE 100 Standard target for high performing site EUI.

[4] Data for 2023 fleet vehicle baseline analysis.

[5] To account for data availability, building energy data reported for "2023" refers to activity from 11/1/2022 – 10/31/2023. Building energy data reported for 2024 refers to the period from 11/1/2023 – 10/31/2024.

Table 1. Annual energy use and costs by source (2023 data)

Source	Energy use (kBtu)	Site EUI[6]	Annual Energy Cost	Percent of Total Cost
WWTP	1,921,580	N/A	$66,508	18%
WWTP Admin	2,221,510	491.3[7]	$62,255	18%
Vehicles	2,430,024	N/A	$70,895	19%
Police Station	2,080,739	79.5	$45,488	12%
Wells	1,701,747	N/A	$27,633	7%
Water and Electric	1,001,029	81.3	$22,059	6%
Library	1,105,416	68.3	$18,901	5%
Lift Station	520,210	N/A	$18,250	5%
Municipal Building	713,607	56	$11,805	3%
Pool	631,518	N/A	$10,273	3%
Community Center	466,727	48.3	$9,094	2%
Garage	450,979	37.6	$5,623	2%
Mount Horeb Station	159,773	79.9	$2,360	1%
Parks and Forestry	203,344	16.9	$2,367	1%
Total	**15,608,203**		**$373,511**	

Table 2. Annual CO_2 emissions and costs by source (2023 data)

Source	CO_2 Emissions (metric tons)	Percent of Total CO_2 Emissions
WWTP	334.73	19%
WWTP Admin	319.2	18%
Police Station	240.76	14%
Vehicles	174.91	10%
Wells	151.16	9%
Library	126.47	7%
Water and Electric	115.95	7%
Lift Station	91.87	5%
Municipal Building	64.56	4%
Community Center	48.5	3%
Pool	42.03	2%
Garage	32.06	2%
Parks and Forestry	13.69	1%
Mount Horeb Station	13.1	1%
Total	1,768.99	

[6] Weather-normalized site EUI

[7] Site EUI for the WWTP Admin building significantly exceeds normal ranges. It is likely that the high EUI indicates that a portion of the energy process load for the primary WWTP facility is being allocated to the WWTP Admin account.

MUNICIPAL FACILITIES

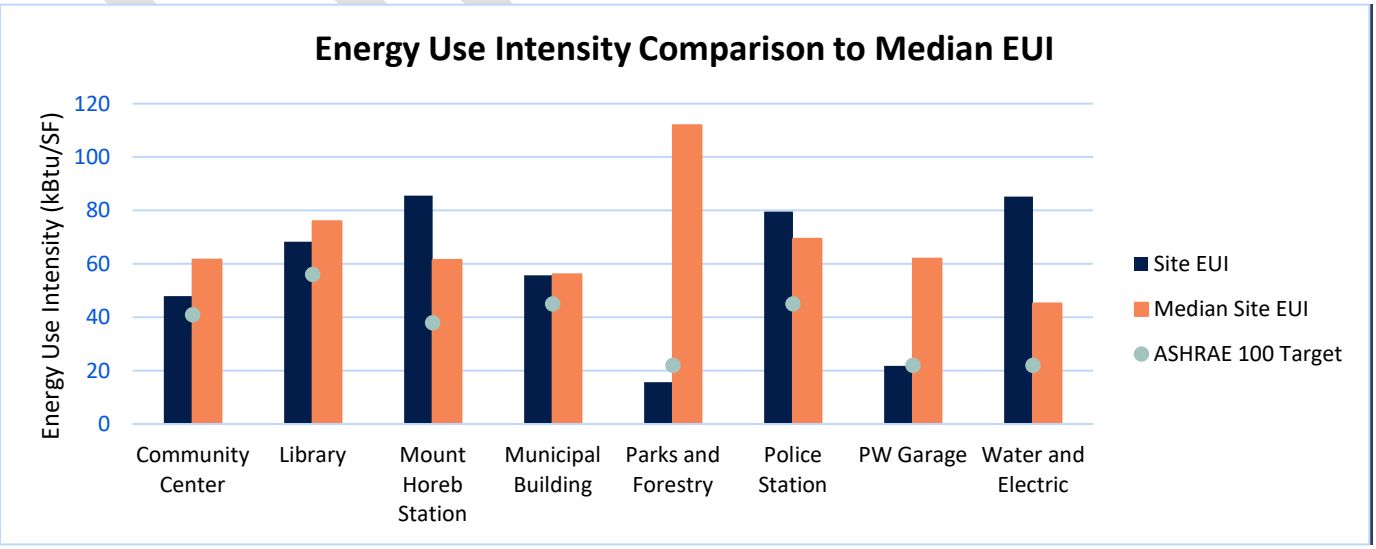
To inform long term energy planning, as shown in Table 3, the project team examined current electricity and natural gas consumption in each facility.

Table 3. Municipal Facility Energy Use

Facility	Annual Electricity (kWh)	Electricity cost	Annual natural gas (therms)	Natural gas cost	Total cost
WWTP	513,689	$65,341	1,389	$1,167	$66,508
WWTP Admin	445,684	$56,691	6,624	$5,564	$62,255
Police Station	285,611	$33,735	13,944	$11,713	$45,488
Wells	141,068	$17,944	11,535	$9,689	$27,633
Library	148,589	$18,901	4,956	$4,163	$23,064
Water and Electric	140,859	$17,917	4,931	$4,142	$22,059
Lift Station	140,859	$17,917	396	$333	$18,250
Municipal Building	60,361	$7,678	4,913	$4,127	$11,805
Pool	50,416	$6,413	4,595	$3,860	$10,273
Community Center	53,921	$6,859	2,662	$2,236	$9,095
Garage	20,949	$2,665	3,522	$2,958	$5,623
Parks and Forestry	7,644	$972	1,660	$1,394	$2,367
Mount Horeb Station	10,910	$1,388	1,158	$973	$2,360
Total	2,020,558	$254,421	62,286	$52,320	$306,780

Figure 4 shows the site EUI for each of the Village of Mount Horeb's municipal facilities as the darker bar, as well as the national median EUI for that building type as the lighter bar. The dot indicates the target EUI set by ASHRAE standard 100-2024.

Figure 4. Municipal Facility Site EUI



MUNICIPAL VEHICLES

Opportunities to replace existing gasoline and diesel vehicles with more efficient hybrids and EVs depend to the category and use of each vehicle. Table 4 segments the energy use and GHG emissions from the Village's vehicles by vehicle category. As shown in the table, SUVs and large trucks consume the most fuel and generate the most emissions.

Table 4. Municipal Vehicle Use

Vehicle category	Annual Gallons	Annual miles	Avg. Fuel Economy[8]	Fuel Cost	Emissions (MT CO2e)
Pickup 1/2 ton or smaller	1,861	60,571	10.8	$6,659	15.82
Large pickup	3,371	47,832	8.9	$12,185	29.60
SUV	8,844	91,293	13.2	$31,639	75.03
Large Truck	5,065	32,713	27.0	$19,410	52.09
Van	280	10,620	10.4	$1,002	2.38
Total	19,421	243,029	12.5	$70,895	**174.91**

COMMUNITY ENERGY USE

Energy use by Mount Horeb residents and businesses, as well as the perspectives of stakeholders on their current energy use, are important components of the community's energy baseline. Figure 5 shows community electricity use and Figure 6 shows community-wide natural gas use among residents and businesses.

The project team surveyed residents and organizations in Mount Horeb to understand the views of community members and stakeholders on energy topics. In May – June 2025, 473 residents as well as representatives from 34 businesses completed surveys through which they identified their views, priorities and challenges related to energy use. The Community Engagement section of the Energy Plan describes key findings that the surveys revealed.

[8] Quality concerns were identified regarding annual miles driven data for some vehicles. To minimize the effects of data input errors by vehicle users. Outliers were removed from the calculation of average MPG. Therefore, the average MPG for each vehicle type may not equal the miles driven divided by the gallons of fuel used.

Figure 5 Mount Horeb community electricity use

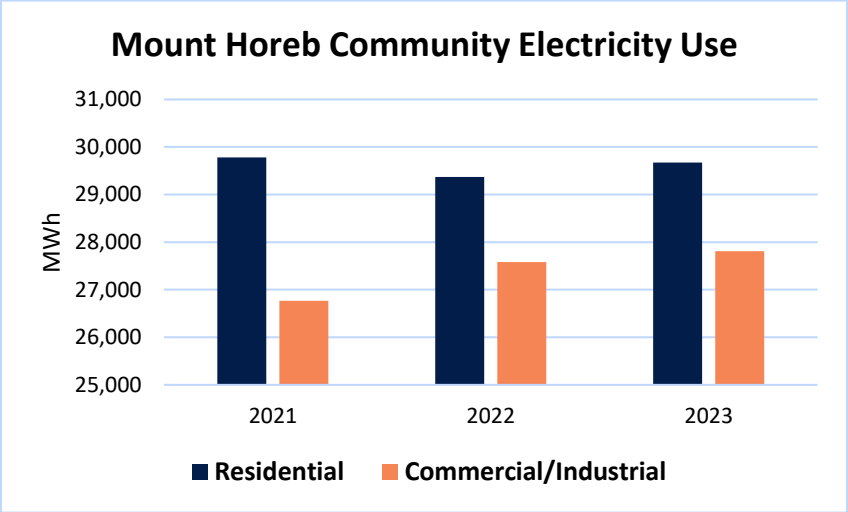
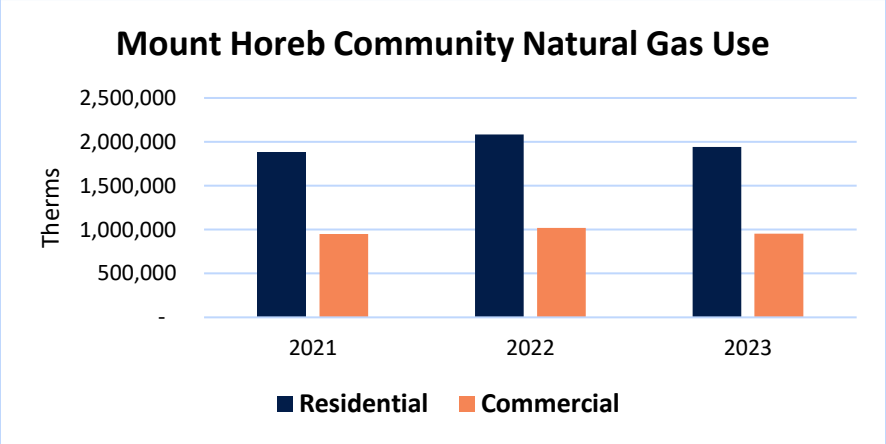
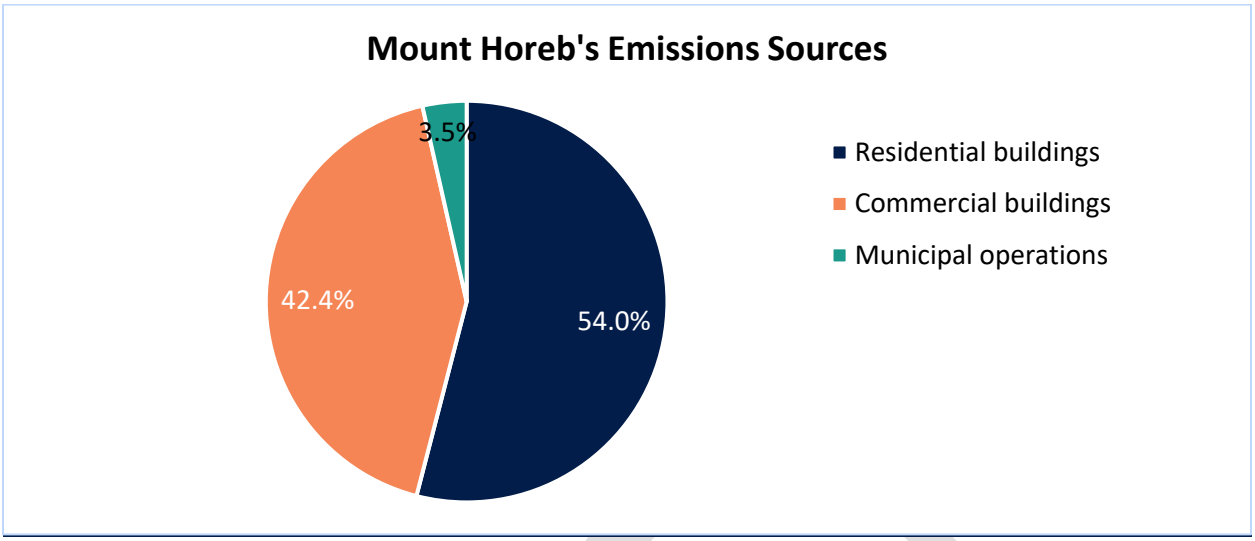


Figure 6. Mount Horeb Community Natural Gas Use



As shown in Figure 7 emissions from residential and commercial buildings greatly exceed emissions generated by municipal operations. Within this context, the Village, residents, and businesses will need to work together to reduce community-wide energy use and emissions.

Figure 7. Mount Horeb Community GHG Emissions by Source



Community Engagement

The people who live, work, and run businesses and organizations in Mount Horeb are key stakeholders for the Mount Horeb Energy Plan. These stakeholders are in Mount Horeb for many reasons, but all have interests in ensuring that the Village is fiscally responsible, economically vibrant, healthy, and environmentally sustainable. Additionally, as shown in Figure , energy use and emissions from homes and places of business in Mount Horeb is much greater than energy and emissions related to municipal operations and facilities.

To ensure that the recommendations in the Energy Plan align with the priorities of community stakeholders, the project team engaged the community in the planning process in three ways.

1. **Village Sustainability and Natural Resources (SNR) Committee**. Mount Horeb established the SNR Committee in 2022 as a resident advisory body that would guide the Village's environmental sustainability initiatives. Within this charter, the SNR is ideally positioned to provide feedback on the Energy Plan from the perspective of residents.

   In July, 2024, after receiving funding approval for the project from the Wisconsin Public Service Commission (PSC), but prior to the start of work, the project team presented the project plan to the SNR and requested feedback from committee members on the SNR's objectives for the project. In April 2025, the project team presented its findings on the Village's energy baseline to the SNR, as well as its initial plans for the facilities on which energy assessments would be completed. At the April meeting, the team also discussed both the content of the community wide survey that would be deployed and distribution channels for the survey that would be most effective.

   After completing energy assessments and using energy models to identify cost effective improvements, the project team presented its preliminary recommendations for energy upgrades to Village facilities to the SNR. At this meeting, the team also shared results of the community surveys and discussed plans for a community forum event. In November and December 2025, the team shared a draft version of the Energy Plan with the SNR Committee to seek feedback on the recommendations that are described in the document.

2. **Resident and Business Surveys**. One survey for residents and a separate survey for businesses were developed and deployed to collect broad input from community stakeholders on five key topics.
   - Concerns and challenges related to energy and climate
   - Values and actions related to energy or sustainability that the respondent household or business has taken
   - Challenges and barriers to saving energy or using renewable energy
   - Ways in which the Village can help the respondent save energy or use renewable energy
   - Input on ways that the Village can save energy.

   Both surveys were distributed both online and in paper formats. Mount Horeb Utilities distributed surveys through its customer communications platform and the SNR supported distribution of the surveys at events and through community outreach channels. As a result of broad distribution through these channels, 473 residents and 34 businesses responded to the survey. Response levels to both surveys were significantly higher than standard survey response rates.

Key findings from the residential survey are shown in Table 5 and findings from the business survey are shown in Table 6.

Table 5. Resident survey key findings

Topic	Results
Demographics	• 73% own and occupy a single-family home. • 71% are 31 – 65 years old. • 56% have household income over $100,000.
Energy actions completed	• 70% - 80% report having installed LEDs, scheduling HVAC setpoints, and/or turning off lights/appliances to save energy. • 64% completed at least 4 energy saving actions.
Level of agreement with energy statements (percent who strongly or somewhat agree)	• "Saving energy is important to our household" - 95% • "It can be hard to afford our energy bills" - 35% • "Using renewable energy is important to our household" - 73% • "Our household has made changes to our home or lifestyle to reduce our energy use" - 78% • "Minimizing the amount of gasoline and/or diesel fuel that we use is a priority for our household" 61%
Perceptions of barriers	Statements with high levels of **agreement** • "Home improvements that save energy are too expensive." • "Renewable energy systems are too expensive." • "I am interested in energy efficiency and/or renewable energy, but I need to prioritize other goals." Statements with high levels of **disagreement** • "I do not know how to save energy in my home." • "I am not interested in saving energy." • "I am not interested in renewable energy." • "Nothing holds me back! I am saving energy and have transitioned to using renewable energy." (moderate disagreement)
Requests for Village support for residents in saving energy	Top tier • Education on low-cost, cost-effective home improvements • Help identifying opportunities to use Focus on Energy incentives Second tier • Village to purchase offsite renewable energy • Encourage residents to purchase offsite renewable energy • 53% support developing additional bicycle/ped friendly infrastructure • Assistance with vetting solar contractors
Hopes for municipal energy plan	• Investigate geothermal for heating and cooling • Efficiency improvements and heat pumps for municipal buildings

Topic	Results
	• Reducing vehicle sizes and improving efficiency in municipal fleet vehicles
Interest in ongoing engagement	• 182 may be interested in participating in a forum. • 118 willing to participate in a focus group.

Table 6. Business survey key findings

Topic	Results
Characteristics of respondents	• 48% have 10 or fewer staff and an additional 33% have 11 – 25 staff. • 48% occupy buildings smaller than 5,000 sf. Additional 28% occupy buildings 5,000 sf – 10,000 sf. • Respondents represent at least 12 different business sectors
Relevance of energy use to business operations (percent who strongly or somewhat agree)	• Managing energy use is important to the financial success of the organization: 76% • Reducing energy use is a priority for the organization: 76% • The organization has worked hard to reduce its energy consumption: 64% • Using renewable energy is important to the organization: 68%
Energy actions completed	• Few reported upgrading to LED lighting. • Many have installed efficient windows and/or added insulation. • Generally low numbers of energy saving actions reported.
Ways the Village can help businesses save energy	• Provide information about available financing and incentives for efficiency and renewable energy. • Publicly recognize organizations that are making progress toward saving energy.
Interest in ongoing engagement	• 11 may be willing to participate in a focus group.

3. **Community Forum**. On September 30, 2025, the Village, the SNR, and the project team collaborated to offer an evening community forum event at the Mount Horeb Community Center. At the forum, large format posters offered high-level descriptions of the preliminary energy recommendations related to municipal facilities, renewable energy, municipal vehicles, and policies, which had been developed for the Energy Plan. Attendees used green and red stickers to indicate their support for, or opposition to, each recommendation. Community members were also asked to write additional feedback on each element of the draft Energy Plan on Post-it notes and adhere the papers to the applicable poster. After the event, the project team recorded the number of sticker votes supporting and opposing each recommendation and supplemented that data by recording the additional viewpoints that were provided on Post-it notes.

   Notable themes from feedback shared at the Forum are outlined below.

   - Recommendations receiving greatest support were for the Village to facilitate a solar group buy program and for using smart control technology to improve energy efficiency at municipal buildings.

- Recommendations for energy upgrades at all municipal facilities and for adding on-site solar arrays at municipal buildings earned the next greatest level of support.
- Strategies related to incorporating EVs into the municipal vehicle fleet were the only category of recommendations that received opposing votes. Comments on these recommendations identified concerns about pursuing electrification during a time when data centers are increasing demand on the electricity grid. Comments on this topic also wondered whether changes in [Federal] policies may create problems for EVs in the future and also encouraged the Village to consider renewable diesel fuel alternatives.

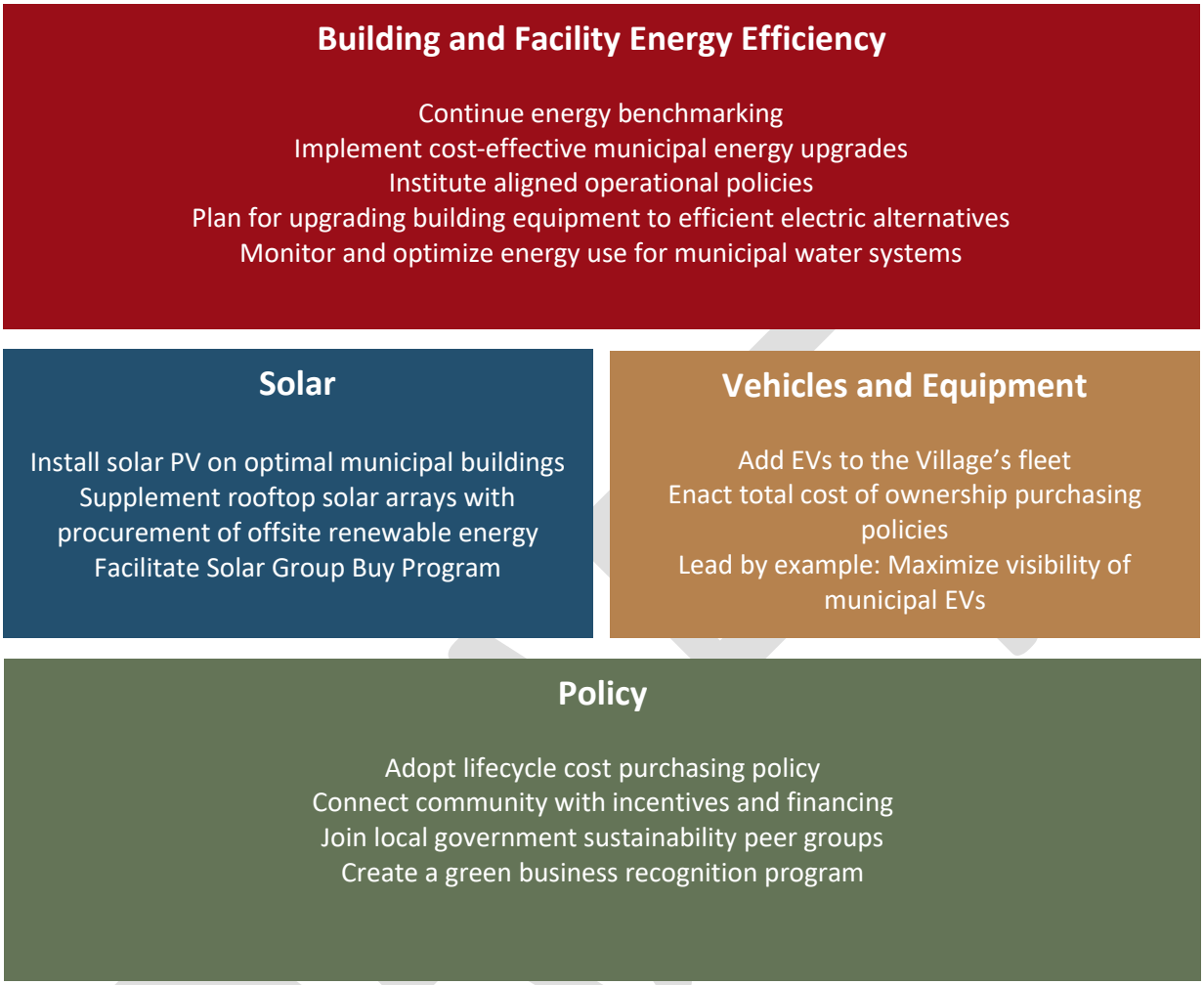
Feedback received from the Forum has been incorporated throughout the Mount Horeb Energy Plan.

Recommendation Overview

The project team identified priorities for specific building upgrades, solar installations, and low-carbon fleet alternatives for the Village to implement, as well as recommendations for policies that institutionalize progress and encourage community-wide energy and emissions reductions.

Figure 8 provides an overview of recommendations by category and the following sections of the report explore each set of recommendations in more detail. We present funding opportunities for these recommendations within each of these sections and also provide a complete overview of funding options at the end of the report.

Figure 8. Mount Horeb energy recommendation summary



This energy plan is intended to guide the Village's investments in energy efficiency and renewable energy projects for the next 5-10 years. The descriptions of the municipal building energy efficiency recommendations estimate the relative level of cost and effort that completing each improvement will require. Using this guidance, we recommend that the Village cross-reference these recommendations with its plans for capital improvements during the next decade to establish a timeline for completing the recommended upgrades.

The project team created quantitative energy models of the buildings that the Village selected for energy assessments. The outputs of the models identified the most cost-effective, and the highest impact, energy efficiency improvements that can be made at each building. The team also assessed the financial and energy benefits of installing solar arrays at each municipal facility.

Building and Facility Energy Efficiency Recommendations

Recommendations

1. Benchmark building energy use .
2. Implement recommended measures buildings to reach over 20% utility cost savings in each building.
3. Adopt standard operating procedures across buildings.
4. Plan for decarbonizing buildings through efficient electrification of HVAC and DHW systems
5. Conduct an evaluation of pumps, lifts, and wastewater treatment plant to identify energy savings.

We recommend that the Village of Mount Horeb commit to ongoing and continuous engagement to reduce energy expenses for its municipal facilities. Recommendations 1, 3, and 4 provide operational and policy guidance that will help the Village move toward ongoing improvements in energy efficiency, while recommendation two outlines a strategy for completing the specific energy upgrades that are described in Appendix 1. The fifth recommendation outlines steps that the Village can follow to reduce energy used in its wells, pumps, and lift stations.

RECOMMENDATION 1: CONTINUE ONGOING BENCHMARKING OF BUILDING PERFORMANCE

The energy performance of buildings can be tracked by examining their energy use intensity over time and in comparison, to other buildings through a process called benchmarking. Energy use intensity (EUI) is a metric that shows the building's total energy use divided by the gross square feet of the building, thus normalizing the level of energy use for the size of the building. How a building is used directly affects the amount of energy that it consumes. For example, a hospital that operates 24 hours per day and which requires high levels of mechanical ventilation will consume more energy per square foot in a given year than an office building that does not house specialized equipment, and which has limited hours of operation each week. To enable effective evaluation of a commercial building's level of efficiency, its EUI is benchmarked against other buildings that have similar types of uses, and which are in the same climate zone.

Error! Reference source not found. Figure 9 shows the EUI of all Mount Horeb municipal facilities over time and compared to the national median EUI for that building type. The EUIs for the Library, Community Center, Garage, Parks and Forestry buildings all show EUIs lower than the median. However, the project team has identified strategies through which the Village can further reduce energy costs and emissions. The ASHRAE 100 standard for existing buildings offers target EUI thresholds for high performance buildings. We recommend that the Village work toward reducing energy use to the ASHRAE 100 targets shown in the figure through a continuous improvement process of tracking energy use, identifying opportunities to save energy, and monitoring the savings that the improvements generate. The Mount Horeb Station has a higher EUI than national median. Recommendations in this section highlight specific items to consider for each building.

The Municipal Building (Village Hall) has a similar EUI compared to national median, which suggests that this is a building to prioritize with initial upgrades. The Public Safety building consists of the Police and Fire Department. The Fire Department operates as a separate entity from the Village and was therefore not evaluated for this report. The reported EUI is for the police station only.

The Public Safety building receives natural gas and electricity through common meters that serve both portions of the building. The Village and the Fire Department have agreed that the Village will pay 58% of the cost of the energy use for the building, which is intended to reflect the portion of the building's energy that is

used by the Police Department. The Fire Department pays for the remaining 42% of the cost. To reflect this arrangement, this report assumes that the building's energy use is divided between the Police Department and the Fire Department in the same proportion as the costs for energy have been assigned. While assuming that the Police Department uses 58 percent of the energy that is delivered to the facility applies the best information available regarding distribution of energy use, the actual amount of energy used by the Police Department is unknown. Therefore, the actual EUI for the Police Station may be lower or higher than the EUI that was calculated for this report.

Continuing to track each facility's EUI in comparison to relevant benchmarks is a key strategy for identifying unexpected changes in energy use, as well as maintenance and repairs needed to optimize energy use and to measure progress toward energy saving goals.

ENERGY STAR Portfolio Manager is a free tool that provides an online platform for tracking energy use over time in all municipal facilities. To help the Village measure its progress toward achieving energy saving targets and standards, Portfolio Manager offers the ability to benchmark energy use against a sample of similar buildings in the same use type. Slipstream has created profiles in ENERGY STAR Portfolio Manager of all municipal facilities and has entered each building's energy data for 2023 and 2024 into the platform. The project team recommends that the Village assign a staff person to track energy use for all facilities in Portfolio Manager and utilize the platform's analytical tools to provide regular reports to Village staff and leadership on the Village's energy performance. Slipstream will transfer management of the facilities in Portfolio Manager to the Village's selected point of contact.

RECOMMENDATION 2: IMPLEMENT RECOMMENDED MEASURES FOR AUDITED BUILDINGS

The project team performed energy assessment walkthroughs at four buildings, Village Hall, the Library, the Community Center, and the Police Station section of the Public Safety Building.

The assessments included reviewing current heating and cooling systems, lighting equipment, and appliances and discussing comfort and operations with building staff. The team then developed digital energy models of each building to identify and quantify opportunities for energy savings. Slipstream's engineers applied the equipment that is in use in each building, as well as the condition of the facility, building energy code requirements at the time of construction, and weather data to create the model of each building.

The project team did not create an energy model for the Public Safety Building, as it is a recently built, well-performing building with energy efficient measures already in place. Therefore, rather than focusing on identifying energy efficiency improvement opportunities for the building, this report recommends measures to cost-effectively further reduce emissions from the building by combining on-site renewable energy systems and replacing natural gas fueled space and water heating equipment with electrically powered equipment.

Appendix 1 describes the recommended energy upgrades for the Village's buildings. In these recommendations, measure costs were based on secondary research, industry reference materials, and past project experience. These estimates intend to inform prioritizing improvement measures. Actual energy savings from the recommended improvements will be highly dependent on weather and actual building operation. Further engineering and final pricing of all recommended measures will be required prior to implementation.

Table 7 summarizes the recommended measures for assessed buildings. The measures are organized by high priority, medium priority, and end-of-life.

> **High Priority**. Measures that offer high returns on investment (ROI) and short financial payback periods because they generate significant energy savings in comparison to their installed cost. This category also includes measures that will achieve important comfort upgrades.
>
> **Medium Priority**. Measures that are important to install in order to achieve energy saving goals, but for which the financial payback period is longer, due to higher initial costs and/or lower total energy savings than the High Priority measures.
>
> **End-of-life (EOL)**. Energy efficiency improvements that the Village can implement when the corresponding existing equipment or building system has reached the end of its functional life and must be replaced or repaired.

In addition to measures in the three categories above, the table identifies Decarbonization strategies for each building. Decarbonization measures are italicized and can be most cost-effectively implemented when the corresponding fossil fuel powered space heating or water heating equipment that the measure will replace reaches the end of its service life. Appendix 1 provides additional explanation of the recommendations that are summarized in the table.

Table 7. Overview of recommended measures

	Village Hall	Library	Community Center	Public Safety
High Priority	Retro-commissioning LED Retrofit Lighting Occupancy Controls	Retro-commissioning LED Retrofit Lighting Occupancy Controls Daylighting Controls	Retro-commissioning LED retrofit w/ Occupancy Sensors Smart Thermostat	-
Medium Priority	Plug Load Management Air Sealing Condensing Boiler	Plug Load Management Air Sealing	Air Sealing	-
End of Life and *Decarbonization*	*Heat Pump Water Heater* *Air-To-Water Heat Pump* -	Roof Insulation Heat Pump Water Heater *Air-To-Water Heat Pump*	ENERGY STAR Appliances Window Replacement Roof Insulation *Heat Pump Water Heater*	*Heat Pump Water Heater* *Air-to-Water Heat Pump*

Table 8 estimates upfront cost, annual cost savings, payback period, and annual CO_2 savings for the High Priority, Medium Priority, and End of Life measures. Payback period is calculated as total initial cost divided by annual energy cost savings. The initial cost listed does not account for incentives, and it is recommended that the Village work with its Focus on Energy Representative to understand all incentives that are available for the recommended improvements. The payback for EOL measures is calculated based on the incremental cost of the energy efficient measures compared to a 'business as usual' replacement option. The annual energy cost savings and upfront costs shown in the table are rounded to either the nearest ten or the nearest hundred, depending on the size of the initial value. The Village can reduce its energy costs for each building by approximately 20% - 30% percent if it implements all of the recommended measures.

Appendix 1: Building Descriptions provides a full description of building analysis.

Table 8. Cost and CO_2 savings from recommended measures

	Upfront Cost ($)	Annual Energy Cost Savings ($)	Percent Cost Savings	Annual CO_2 Savings (MT)	Percent CO_2 Savings	Average Payback (yrs)
Village Hall	**$17,100**	**$2,050**	**19.8%**	**17.8**	**27%**	**-**
High Priority	$7,600	$1,600	16.4%	14.1	21.7%	5.9
Medium Priority	$9,500	$450	3.3%	3.7	5.7%	36.1
Library	**$63,700**	**$4,790**	**29.8%**	**28.6**	**27.4%**	**-**
High Priority	$11,600	$3,600	22.6%	18.7	18.0%	3
Medium Priority	$2,100	$190	1.2%	2.0	2.0%	11.2
EOL Measures	$50,000	$1,000	6.0%	7.8	7.5%	>50
Community Center	**$48,500**	**$1,630**	**20.0%**	**9.3**	**19.5%**	**-**
High Priority	$8,300	$1,200	14.9%	6.3	13.6%	7.6
Medium Priority	$1,400	$50	0.7%	0.7	1.5%	28.3
EOL Measures	$38,800	$380	4.3%	2.1	4.4%	>50

RECOMMENDATION 3: INSTITUTE STANDARD OPERATING GUIDELINES AT ALL BUILDINGS

The operation of a building and the behavior of building occupants has a significant impact on building energy use. Operational guidelines can save energy without significant investment and have the potential to positively impact occupant comfort and productivity. We recommend that the Village of Mount Horeb develop a policy that defines clear guidelines for the energy efficient operation of municipal buildings. The policy should provide guidance that applies to all buildings, as well as differentiated guidelines for specific buildings, as needed. The differentiated guidelines should address the unique characteristics functional requirements of individual buildings. All guidelines should seek to balance efficient energy use with assurance of comfort for the staff and visitors that use the building. To ensure that the guidelines are effectively implement and that they align with the functional and occupant wellbeing needs of the building, the Village should establish communications channels so that building occupants can provide ongoing feedback that can be used to adapt the policy, as needed.

Table 9Table provides a full list of items to consider for an operating policy. The operating policy covers ongoing maintenance, HVAC system operation, plug load management, and lighting. The Village of Mount Horeb already implements several of these recommendations, such as establishing setpoints and setbacks. However, it is important to develop a policy to institutionalize current norms and habits.

Table 9. Operating policy examples

Operational Policies	
Maintenance	Include changing air filters as directed by manufacturer specifications in monthly work plans.
	Enter into service contract with HVAC provider that includes regularly monitoring and maintaining refrigerant charge on air conditioning units.
	Establish permissible temperature setpoint ranges and setbacks for occupied and unoccupied times. Guidelines should address both heating season and cooling season operations.
Heating, Ventilation, and Air	Maintain and clearly display a list of operating parameters for all HVAC and water heating equipment. The posted information should include the temperature set points, operating schedules, and maintenance requirements for each piece of equipment.

Operational Policies	
Conditioning (HVAC) Systems	Post guidance on when operable windows can be opened based on room thermostat setpoints. For example, assuming thermostats are set from 70 degrees to 75 degrees, the guidance would state that building users may open windows between 68-77 degrees outdoor temperature.
	Create communication channels for building occupants to provide feedback on comfort or operational issues. A regularly administered survey can be useful to gather additional feedback on occupant comfort.
	Develop a policy that prohibits or limits the use of individual refrigerators, space heaters, printers, and other peripheral equipment at workstations. Consider ways to consolidate the number of refrigerators and printers in each building.
Plug Loads	Implement computer power management on staff workstations that shifts computers and monitors into a sleep mode after no more than 30 minutes of inactivity. Alternatively, install smart plugs or advanced power strips with schedule timer control and/or load-sensing control to automatically power off devices, such as computers and monitors after periods of inactivity to reduce standby energy waste.
	Implement TV sleep requirements to reduce energy consumption when the TV is not in use.
	For spaces where occupancy or daylighting sensors are not installed, post signage that establishes norms for turning off lights in unoccupied rooms. Department heads can lead by example in visibly adhering to the posted policies.

RECOMMENDATION 4: PLAN FOR SPACE AND WATER HEATING ELECTRIFICATION

Electrification is the process of phasing out equipment that uses fossil fuels (i.e., natural gas, propane, gasoline) and replacing it with equipment that uses electricity. Electrification reduces CO_2 emissions in current operations and also enables ongoing emissions reductions.

For more than a decade, market forces have led utilities to choose to add large-scale solar and wind energy systems to their electricity generation portfolios and to retire their coal power plants. Together, these shifts have reduced the amount of carbon dioxide that is released for every unit of electricity that is generated. These trends are expected to continue into the future, which will lead to declining emissions over time from buildings that use electric-powered space and water heating systems, while emissions from buildings that use fossil fuels will remain constant.

In many situations, heat pumps are still more expensive than a high-efficiency natural gas system. However, incentives and changing energy costs are causing heat pumps to become more cost competitive. During future HVAC and water heating decisions, staff should compare both costs and CO_2 emissions of conventional equipment and heat pumps. Table 110 lists the heat pump options for Mount Horeb buildings.

Table 10. Heat pump system options for existing systems in Mount Horeb Buildings

Existing System	Heat Pump System	Description
Furnace and A/C Split System	Dual-Fuel Air-Source Heat Pump	A cost-effective electrification option that still uses gas heat but switches to efficient heat pump heating when outdoor temperatures are above 25°F (user adjustable).
	Air-Source Heat Pump	Full electrification option.

Existing System	Heat Pump System	Description
Hot Water Boiler System	Air-to-Water Heat Pump with Gas Boiler Backup	A cost-effective electrification option that still uses gas but switches to efficient heat pump heating when outdoor temperatures are above 25°F (user adjustable). Can reuse existing distribution system and existing gas boiler for backup.
	Air-to-Water Heat Pump	Full electrification option. Can reuse existing distribution system.
Single Zone Constant Volume Gas-Fired RTU	Dual-Fuel RTU	A cost-effective electrification option that still uses gas heat but switches to efficient heat pump heating when outdoor temperatures are above 25°F (user adjustable).
	Heat Pump RTU	Full electrification option.

RECOMMENDATION 5: IMPLEMENT MONITORING AND OPTIMIZATION STRATEGIES FOR WELLS AND LIFT STATIONS

Wells and lift stations primarily use energy to operate equipment, such as pumps, rather than for space conditioning, water heating, or plug loads. For this reason, energy use intensity, which compares the amount of energy that a building consumes to the size of the building is not a meaningful way of assessing the energy efficiency of these facilities[9].

While EUI does not provide a meaningful metric for benchmarking the energy efficiency performance of wells and lift stations, these facilities, and the equipment that they house, consume a significant share (10% - 30%) of total energy use for many municipalities[10]. In 2024, the Village paid over $48,000 to power these facilities and they account for 13 percent of municipal GHG emissions. Therefore, we recommend that the Village take the steps described below to assess current energy efficiency of this equipment and to improve efficiency move forward while simultaneously operational reliability.

A detailed assessment of the energy efficiency of Mount Horeb's wells and lift stations was outside the scope of this energy planning project. The opportunities described below highlight common strategies to reduce lift station energy use and improve reliability. However, the most effective pathway for Mount Horeb will depend on site-specific factors such as system design, pump sizing, flow patterns, and operational

[9] Because EUI is not a meaningful metric for wells and lift stations, these facilities were excluded from certain tables and charts in the Baseline and Benchmarking sections of this report.

[10] SEDAC. 2022. *Lift Station Optimization in Wastewater Treatment Plants - EnergySense | The EnergySense Resilience Center at The University of Illinois System*. June 29. https://smartenergy.illinois.edu/lift-station-optimization-in-wastewater-treatment-plants/.

requirements. Detailed assessments by technical experts are needed to determine which approaches deliver the greatest benefit for the Village.

Establishing performance baseline

Establishing a performance baseline for lift stations is a critical step in identifying inefficiencies and prioritizing cost-effective improvements. Two primary ways to evaluate current performance are described below. The Village can use both preventative maintenance and reactive upgrades to manage energy use and enhance the operational efficiency of pumping equipment.

1. Energy intensity tracking. Comparing electricity use with water flow [typically expressed as kilowatt-hours per million gallons pumped (kWh/MG)] provides a valuable metric for assessing efficiency. Tracking the metric over time can reveal reduced equipment performance and needed maintenance. Using the metric to compare the energy performance of existing equipment with rated performance of prospective new equipment can inform decisions about the cost-effectiveness of investing in upgrading equipment.
2. Performance monitoring and analysis. This method uses operational data (e.g., runtime, flow, temperature, and vibration) together with manufacturer pump curves to assess efficiency and system health. Deviations from expected ranges signal issues like oversizing, clogging, seal/bearing wear, or cavitation, providing an opportunity to correct problems before they lead to failures (PumpWorks Engineering 2024). Technologies such as supervisory control and data acquisition (SCADA) provide real-time oversight and early warnings of inefficiencies and can be used to enhance monitoring capabilities.

Optimizing energy use

Beyond managing energy consumption through maintenance, lift station electricity consumption can be lowered through operational adjustments and equipment upgrades. Some common strategies include:

1. **Install variable frequency drives (VFDs**) (if not already in use): Where flows vary significantly, installing VFDs allows pumps to adjust speeds to match system demand, thus reducing wasted energy and delivering 5-40% energy savings (SEDAC, 2022).
2. **Impeller trimming**: If pumps deliver more pressure and flow than needed, the impeller can be machined to a smaller diameter, so the pump matches system requirements more closely. This adjustment can reduce excess pressure and lower energy use by 1-8% (Hydraulic Institute, 2022). However, trimming can reduce the pump's hydraulic efficiency[11] thereby negatively affecting energy efficiency (energy use per gallon pumped). To maintain reliability and minimize efficiency losses, trimming should be performed within manufacturer-recommended limits and verified against updated pump performance curves.
3. **High-efficiency motors and pumps**: Premium-efficiency motors and pump designs, as described in the Department of Energy's (DOE) Premium Efficiency Motor Selection and Application Guide (Basso et al. 2014), yield incremental but persistent savings (1–3%), and improve reliability (SEDAC, 2021). When well pumps require replacement at the end of their useful lifespan, the Village can replace existing equipment with pumps that feature high efficiency motors.

Resources for efficient equipment transitions

[11] Hydraulic Institute, 2022. "Trimming Impellers to Reduce Energy Consumption." *Pumps.Org*, September 27. https://www.pumps.org/2022/09/27/trimming-impellers-to-reduce-energy-consumption/.

As lift station components (pumps, motors, controls, etc.) approach the end of their service lives, replacement presents a natural opportunity to improve efficiency. To support this process, Mount Horeb can draw on existing technical resources such as the Focus on Energy Wastewater and Water Utilities Program[12], which offers pump assessments and incentives; DOE's Pumping System Assessment Tool (PSAT)[13], which models pumping performance and identifies efficiency opportunities; and the Wisconsin DNR's Capacity, Management, Operation, and Maintenance (CMOM) Program[14], which provides guidance for evaluating lift station performance and planning system upgrades.

Applying these resources can help Mount Horeb evaluate equipment options and identify the most cost-effective path forward. We recommend that the Village use the resources from Focus on Energy, DOE, and WI DNR, as well as other relevant information to take four key steps to plan investments that will improve the energy efficiency of its wells and lift stations.

1. **Conduct a needs assessment.** Define pumping capacity requirements by evaluating current actual flow and head conditions can avoid inefficiencies associated with oversizing.
2. **Screen potential technologies.** Proactively research potential efficiency strategies, including high-efficiency motors, VFD-compatible pumps, and SCADA ready systems to prepare the Village to be ready to leverage efficiency opportunities if time-sensitive equipment upgrades are needed.
3. **Apply life-cycle cost analysis.** Compare options for equipment upgrades and replacements based on total cost of ownership, which includes initial capital cost, and estimated energy costs, and maintenance costs for each option.
4. **Verify improved performance.** After investing in efficiency improvements, ensure that the equipment is commissioned, then follow an energy measurement and verification protocol to ensure that the upgrades are achieving the predicted improvements in energy efficiency.

[12] https://focusonenergy.com/business/wastewater

[13] https://www.energy.gov/eere/iedo/articles/pumping-system-assessment-tool

[14] https://dnr.wisconsin.gov/topic/Wastewater/CMOM.html

Solar Recommendations

RECOMMENDATION 1: INSTALL SOLAR PV ON OPTIMAL MUNICIPAL BUILDINGS

Onsite solar can reduce the Village's energy costs and also lower its CO_2 by leveraging existing roof or ground space near existing facilities. The analysis examined Village facilities for solar installations and identified 10 locations that are potential candidates for solar installations.

Recommendations

1. **Install** rooftop solar on municipal buildings
2. **Supplement** with offsite renewable energy
3. **Facilitate** solar group buy

Table 11. Solar PV installation recommendations for Mount Horeb facilities

Building	Size (kW DC)	Renewable Offset	Payback Period (Years)	Annual CO_2 Savings (MT)	Annual Cost Savings
Wastewater Treatment Plant (WWTP)	231.1	59%	15.7	196.65	$39,125
Public Safety (Police Dep't)	146.1	41%	15.5	125.49	$24,967
Electric and Water Shop[15]	65.7	65%*	15.5	56.53	$11,246
WWTP Admin Building	38.2	12%	15.2	33.43	$6,650
Village Hall	33.8	74%	15.5	29.08	$5,786
Community Center	33.5	74%	18.5	24.14	$4,803
Library	19.3	17%	16.3	15.80	$3,144
Public Works	11.8	80%	15.5	10.14	$2,017
Parks and Forestry	4.3	67%	18.5	3.07	$611
Total	**583.8**			**494.33**	**$98,349**

Table12 estimates costs for each of the recommended arrays. The estimated upfront cost is based on size and location on roof or ground. The Focus on Energy incentive shown in the table is a rebate of $50/kW, up to a maximum incentive of $25,000 per installation. The Federal Investment Tax Credit (ITC), which is currently available to non-tax paying entities via the Elective Pay provision will expire in July 2026 and it therefore may not be feasible for the Village to fund, and complete installation of, a solar array within that timeframe. For that reason, the ITC is not considered in the cost estimates in Table2.

[15] The Electric and Water shop currently generates a portion of the electricity that it consumes with a 9 kW on-site solar array. As part of the Mount Horeb Energy Plan, we recommend that the Village install additional PV capacity at this site. All fields except the Renewable Offset column for the Electric and Water Shop in Table and Table reflect information about the added PV capacity. The Renewable Offset field indicates the total renewable offset for the combined systems. Note: Installing additional solar capacity at this facility would require WPPI issuing a waiver for the installation.

Table 12. Cost details of solar PV installations for Mount Horeb facilities

Buildings	Upfront Cost	Focus on Energy Incentives	Net Cost
Wastewater Treatment Plant (WWTP)	$624,000	$11,550	$612,400
Public Safety (Police Dep't)	$394,400	$7,300	$387,200
Electric and Water Shop	$177,300	$3,300	$197,900
WWTP Admin Building	$103,000	$1,900	$101,200
Village Hall	$91,100	$1,700	$89,400
Community Center	$90,500	$1,700	$88,800
Library	$52,100	$950	$51,200
Public Works	$31,800	$600	$31,200
Parks and Forestry	$11,500	$200	$11,300
Total	**$1,575,700**	**$29,200**	**$1,570,600**

RECOMMENDATION 2: SUPPLEMENT ROOFTOP SOLAR WITH PURCHASE OF OFF-SITE RENEWABLE ENERGY

As described in Solar Recommendation 1, this Energy Plan recommends installing rooftop and/or ground mounted solar arrays at most municipal facilities. Table13 includes an indication of the percentage of each building's current electricity consumption that the recommended solar array would offset. For most facilities, due to either limited space available to install solar panels at the site, or for purposes of optimizing cost-effectiveness of the array based on the terms of the applicable electric tariff, the recommended array would offset a maximum of 80 percent of the facility's current electricity use.

Additionally, the estimated combined net cost of the recommended arrays is $1,570,600. Unless the Village is able to leverage outside funding sources to pay for the cost of these installations, we anticipate that the Village will need to install these arrays over a period of 5-10 years.

While it may be necessary for the Village to fund and install the arrays over an extended period of time, the Village can take immediate and near-term action to reduce its municipal emissions by working with Mount Horeb Utilities and WPPI to procure offsite renewable energy. Offsite renewable energy is electricity that a facility purchases, which is generated at a different location from the building that is using the electricity. Due to Wisconsin's regulatory framework, in Wisconsin, offsite renewable energy generating facilities are usually owned by a third party or by the property owner's electric utility, rather than by the owner of the facility.

Table 1313 identifies benefits and drawbacks of both on-site and off-site renewable energy.

Table 13. Comparison of on-site and off-site renewable energy procurement

	Installing on-site solar	Purchasing off-site renewable energy
Initial cost	Significant initial investment required	Initial cost varies depending on procurement method • No initial investment required for adding renewable attributes to conventional electricity purchases (Choose Renewables program. • Low initial investment may be required for community solar participation.

Installation process	Installed by third-party contractor. Requires project management by Village	Not applicable or managed by third party
Energy cost savings	Generated electricity directly reduces utility expenses.	Choose Renewables: Adds surcharge to electricity purchases. Community Solar and RER: Savings vs. added expense determined by rate structure.
Community Leadership	Offers visible and recognizable evidence to the community of Village's investment in clean energy.	May demonstrate leadership if purchase of renewable energy is effectively communicated to the community.
Ease of use	Minimal maintenance occasionally required	No extra effort required following initial registration
Emissions reduction	Renewable energy generated directly reduces Village's Scope 2 emissions from purchased electricity.	Emissions reduction value dependent upon emissions inventory or energy performance standard applied.[16]

The 2024 IECC (International Energy Conservation Code) Section CC103.3.2 of Appendix CC establishes standards for assuring the validity of off-site renewable energy that a building procures to offset its electricity use. We recommend that, if the Village chooses to purchase off-site renewable electricity, it works with the provider of the off-site renewable electricity to ensure that the electricity it purchases meets these standards, as well as the standards provided by Zero Code 2.0.

IECC Section CC 103.3.2[17] Key Requirements for off-site procurement of renewable energy:

- Renewable energy procurement agreement shall be legally binding, have a term of at least 15 years, and be transferrable to a new property owner.
- Renewable energy credits (RECs) associated with the purchased energy must have been created within the past 12 months by a renewable energy system that was constructed within the past five years.
- The renewable electricity must be either directly transmitted to the building or must be provided through the local utility.

Mount Horeb Utilities offers the Choose Renewables rate option. Business and residential customers who opt-in to this program agree to purchase a quantity of 300 kWh blocks of renewable energy each month. For each block of renewable energy, the customer agrees to pay a surcharge in addition to their regular energy charges. For each block that customers purchase, Mount Horeb utilities agrees to procure an additional 300 kWh of electricity produced from renewable sources. The Village could purchase 6,735 blocks of energy[18]

[16] Table 6 of Zero Code 2.0 provides useful framework for comparison of offsite renewable energy procurement options. https://www.zero-code.org/wp-content/uploads/2018/04/Zero-Code-TSD-OffSiteRenewables.pdf

[17] 2024 IECC Appendix CC 103.3.2. https://codes.iccsafe.org/content/IECC2024P1/appendix-cc-zero-energy-commercial-building-provisions

[18] Number of blocks based on weather-normalized 2024 electricity consumption for all municipal facilities

through the Choose Renewables program, at an annual cost of $6,735 to offset all of its current electricity consumption. If the Village installs all of the recommended on-site solar arrays, it could purchase 4,618 blocks of electricity each year at a cost of $4,618 to offset the remaining portion of its electricity use. Utilities in Wisconsin have developed additional frameworks and tariff structures through which they are providing dedicated, locally generated off-site renewable energy to customers who opt in to these programs. Two examples include community solar, and MGE's Renewable energy Rider (RER) tariff.

Community Solar. An off-site PV array that is large enough to generate electricity for multiple residential and/or commercial buildings. Community solar projects in Wisconsin are owned by the local electric utility and ratepayers within designated classes (ex. Residential, business, industrial) may choose to purchase a portion of the electricity that the array generates. While specific terms of participation vary among community solar projects, for most community solar offerings, the customer receives credit on their monthly utility bill for the value of the electricity that the portion of the PV array that they purchased generated that month.

MGE Renewable Energy Rider (RER). MGE's RER tariff offers large energy users the opportunity to opt-in to be an off-taker of the generation capacity of the utility's local large scale renewable energy projects. Specific terms of the agreement are negotiated between the customer and the utility and agreements must be approved by the Wisconsin Public Service Commission. Using the RER, local governments, school districts, and large companies have entered into agreements with MGE to allocate portions of the electricity generated by the large solar arrays that the utility has developed in Dane County. Purchasers that own multiple buildings can allocate the electricity output from the array between their buildings so that the single array and the single agreement provides renewable energy throughout the participant's portfolio of buildings.

Community solar projects and the RER model support the development of local renewable energy systems and offer rate structures through which a participant may be able to achieve cost savings in comparison to purchasing conventional electricity through the default electricity rate. Visibility of local renewable energy projects can demonstrate the Village's use of renewable energy to the community and thus build support for, and adoption of, renewable energy among residents and businesses. Both options also create opportunities for the Village to benefit from electricity cost savings, rather than paying an additional fee to access renewable electricity.

Mount Horeb Utilities is a member of WPPI Energy, which provides the electricity that MHU supplies to its customers. Currently, MHU's contract with WPPI prohibits both community solar programs and the RER tariff framework. We recommend that, while enabling these policies would require considerable changes to contracts and regulations, the Village engage with Mount Horeb Utilities and WPPI to evaluate options through which the Village can achieve electricity cost savings through participation in locally-sited renewable energy developments.

RECOMMENDATION 3: FACILITATE A COMMUNITY-WIDE SOLAR GROUP BUY PROGRAM

Seventy-three percent of respondents to the Mount Horeb residential survey either strongly agreed or somewhat agreed with the statement, "Using renewable energy is important to our household." However, only seven percent of respondents said that they had either installed solar on their home or used renewable energy. The gap between the stated values of residents and the percentage of residents who are currently using renewable energy reveals that many households face barriers in accessing renewable energy.

Respondents identified barriers to using renewable energy, which included installation costs and lack of knowledge in moving forward with installing on-site renewable energy systems. Qualitative responses also suggested that residents have concerns about selecting a qualified and reliable solar installation company.

A solar group buy program could help residents and businesses overcome financial, technical, and information barriers to installing solar arrays at their homes and businesses. Important components of a solar group buy program are outlined below. Mount Horeb can either create a new solar group buy program, or it may consider partnering with nearby municipalities to offer a joint program.

- **Contractor qualification**. The municipality issues an RFP to residential and commercial solar installers that serve the village. The RFP outlines the framework of the solar group buy program and requests proposals from installers for the rate structure(s) that they would offer if selected as the sole provider, as well as examples of the information about recommended solar arrays that they would provide to participants, and references from previous clients who will attest to the quality and reliability of the contractor's work. From the proposals submitted, the Village selects the installer who offers the greatest value to participants within the program framework.
- **Sole sourcing**. In exchange for being the sole installer servicing the program, the contractor reduces its marketing and customer relations expenses, thus lowering the company's cost of doing business and reducing overall project costs for participants.
- **Reliability of pricing and forecasts**. The Village's program implementer coordinates site visits and cost bids by the contractor and provides quality control for the energy production and cost savings forecasts that the contractor provides to participants.
- **Streamlined process**. Both quality control by the Village's program implementer and the installer's pricing agreement with the Village eliminate the need for residents to obtain multiple and conflicting bids from contractors. Oversight by the Village's program implementer ensures that projects progress on a timely basis and that participants have access to a qualified third-party to address any questions or concerns that may arise during the project development and installation processes.

Fleet Recommendations

The Village of Mount Horeb currently owns and operates 30 vehicles, which it uses to support its police, wastewater treatment, public services, and recreation departments. Large pickup trucks (3/4 ton and above), medium/heavy duty trucks, and SUVs are the most common vehicle types, followed by half-ton pickup trucks and vans. All vehicles use internal combustion engines (ICE) and do not have gasoline-electric hybrid drives. The municipality's total fuel cost for vehicles in 2023 exceeded $70,000.

Table 14 shows Mount Horeb's municipal vehicle energy use, cost, and emissions. The Village can reduce its municipal fuel use and costs, while also reducing its annual GHG emissions by implementing the efficiency recommendations in this section.

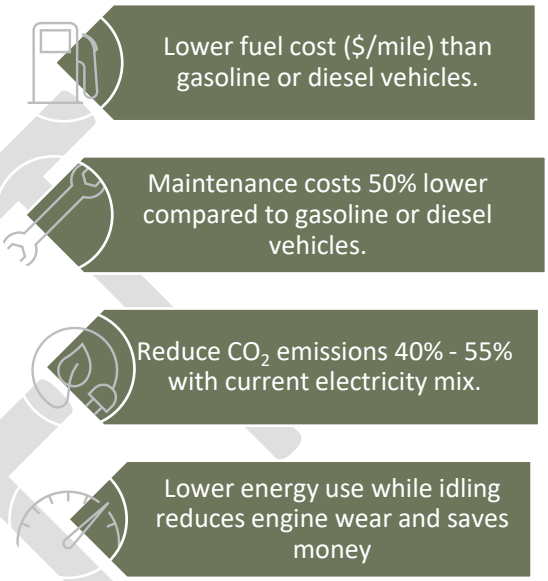


Table 14. Municipal vehicle fleet energy use

Category	Number Vehicles	Gallons of fuel	Fuel cost	Emissions (kg CO_2e)	Miles Driven	Avg MPG[19]
Pickup (1/2 Ton)	5	1,861	$6,659	15,815	60,571	27.0[20]
Pickup (3/4 Ton+)	10	3,371	$12,185	29,596	47,832	13.2
SUV	8	8,844	$31,639	75,027	91,293	10.6
Van	2	280	$1,002	2,379	10,620	10.4
Large Trucks	8	5,065	$19,410	52,092	32,713	8.9
Total	**33**	**19,421**	**$70,895**	**174,909**	**243,029**	**12.5**

Electric vehicles (EVs) provide comparable performance to conventional ICE vehicles, while offering financial and environmental advantages (see sidebar). The electric vehicle (EV) market has accelerated during the past five years and multiple manufacturers now produce an array of light duty electric cars, trucks, vans, and SUVs at price points that are competitive with conventional vehicles.

[19] Quality concerns were identified regarding annual miles driven data for some vehicles. To minimize the effects of data input errors by vehicle users. Outliers were removed from the calculation of average MPG. Therefore, the average MPG for each vehicle type may not equal the miles driven divided by the gallons of fuel used.

[20] Outliers in the vehicle fuel and mileage data suggest that the metric shown for fuel economy of half-ton pickups may not be accurate. Actual fuel economy for this vehicle category is likely closer to 13 mpg.

Currently, there are fewer EV options for larger, medium- and heavy-duty vehicles in the Village's fleet. Many of the Village's current vehicles in these categories use diesel fuel, rather than gasoline. Biodiesel is derived from plant materials and, according to the U.S. Environmental Protection Agency (EPA's) Emissions Factor Hub, generates 7.4% lower emissions than conventional diesel fuel. Additionally, emissions released from burning biodiesel are "biogenic." While emissions produced from fossil fuel combustion release *additional* GHG emissions into the atmosphere, biogenic emissions release CO2e that was already in the earth's carbon cycle, thus not adding to the overall concentration of CO2e in the atmosphere.

While the Village could cost-efficiently reduce GHG emissions by using biodiesel, rather than conventional diesel, according to the U.S. Department of Energy's Alternative Fuels Data Center[21], there are currently no biodiesel refueling stations near Mount Horeb. If the Village would like to assess options for using biodiesel in place of conventional diesel, the Village may engage with local diesel fuel retailers to determine whether they may consider adding biodiesel to the retail fuel options that they sell.

Most EVs can drive 150 – 300 miles between charges, which is significantly greater than the number of miles that the Village's vehicles travel in a single day. Because the driving range of EVs is much greater than typical daily driving distances for Mount Horeb's vehicles, the Village can add EVs to its fleet without interrupting its operations to charge vehicles. Instead, Village staff can plug-in EVs when they are off-duty, and the vehicles will be fully charged and ready for service the next day.

The project team investigated alternative electric models that Mount Horeb could purchase when replacing vehicles in its existing fleet.

RECOMMENDATION 1: ADD TWO EVS TO MUNICIPAL FLEET

Mount Horeb can reduce vehicle fuel and maintenance costs, while also lowering its annual GHG emissions by systematically replacing fleet vehicles nearing the end of their service lives with EV alternatives. While EVs offer financial savings and environmental benefits in comparison to ICE vehicles, the Project Team recommends that the Village gradually transition to EVs and that it starts the transition by replacing two conventional vehicles with EVs. Starting small will enable the Village to install required EV charging supply equipment (EVSE) and train its staff to drive and maintain these vehicles. Lessons learned from adding these vehicles will prepare the Village to systematically replace ICE vehicles with electric, or efficient ICE, options as current vehicles reach the ends of their service lives.

To ensure that the transition to EVs benefits the Village, staff will track the cost and amount of electricity used to charge the EVs, maintenance requirements, and feedback from drivers on their experiences driving the cars. The Village can use this information to guide how it adds more EVs into its municipal fleet in the future.

Part 1: Replace two existing vehicles with EVs

Replace two vehicles nearing end of service life with cost-competitive EVs that match the functionality of their ICE counterparts. The project team analyzed fleet data to identify which vehicles have cost-competitive electric options compared to conventional vehicles and are near-replacement age.

We reviewed available EVs to determine which vehicle categories currently have market-ready EV alternatives and then calculated incremental cost and payback periods to identify which categories are

[21] https://afdc.energy.gov/stations#/find/nearest?fuel=BD

feasible for adoption. While there are not yet cost-effective EVs for all vehicle categories, the EV market continues to advance quickly, so it will be important for the Village to continue to monitor the market moving forward and to watch for cost-effective electric vehicles in additional vehicle categories.

Table15 shows the four vehicle categories in Mount Horeb's fleet for which EVs are available and are currently cost-competitive. The current vehicle column shows an existing vehicle in that category in Mount Horeb's fleet, and the new gasoline vehicle benchmark shows the approximate cost and fuel efficiency rating for a new conventional vehicle in that category. The EV incremental cost is the difference between the cost of a new conventional vehicle and the cost of a corresponding EV. Costs shown do not account for any rebates or credits which may be available. The cost savings per mile is the reduced per mile cost of fueling and maintaining the EV instead of the conventional vehicle. The payback period estimates the number of years required for operational cost savings to surpass the EV's incremental costs.

Table 15. Potential EV Alternatives by Vehicle Category

Category	Ex. current vehicle	New gasoline vehicle benchmark	Ex. EV Alternative	Incremental EV Cost	Annual Cost Savings	Payback period (yrs)
Half-ton Pickup	**WWTP 2016 Ford F150**	**20 mpg $38,810**	**Ford F150 Lightning**	**$13,200**	**$1,048**	**12.6**
SUV	**Police Dept. 2015 Chevrolet Tahoe**	**22 mpg $59,000**	**Chevrolet Blazer EV**	**($12,900)**	**$1,204**	**0**
Work van	Ford Transit Connect	24 mpg $47,400	Ford E-Transit	$5,700	$1,238	4.6
Large truck	International MV607	9 mpg $112,000	International eMV series	$78,000	$3,104	25.1

Commercially available EVs in these four categories could replace 42% of the Village's vehicles. Completing this transition would reduce Mount Horeb's annual fuel and maintenance costs by approximately $16,000 and would reduce the GHG emissions from the Village's fleet vehicles by 13,300 kg CO2e per year (8.1% reduction). The Village could lower its vehicle emissions by 41,700 kg CO2e per year (25.4% reduction) by supplementing its transition to EVs by sourcing the electricity used to power the vehicles from on-site or off-site renewable energy systems.

Instead of an immediate full transition, the Project team recommends initially purchasing two EVs (bolded in Table 4) as replacements for functionally comparable vehicles that are nearing the ends of their service. In addition to achieving the cost savings shown, replacing these vehicles would reduce emissions by over 2,000 kg CO2e/year. After purchasing these vehicles, we recommend collecting data and stakeholder feedback to inform how the Village will transition additional vehicles.

Part 2: Install EV Charging Systems

EVSE Recommendations

1. Prioritize level 2 chargers
2. Install EVSE to future-proof charging needs

To enable initial and expanded future operation of EVs by staff, Mount Horeb will need to install EV charging equipment.

Table 16 summarizes the three categories of EV charging stations[22]. Level 1 chargers offer very low installation costs; however, they do not recharge vehicles quickly enough to fully recharge a vehicle during a typical off-duty period. While Level 3 equipment can quickly refuel vehicles, the equipment and installation costs for chargers in this category may deter the Village from installing DC fast chargers.

The Project Team recommends that the Village install Level 2 charging equipment at central locations where vehicles are typically parked when off-duty. Using Level 2 EVSE will allow staff to plug in a vehicle that is low on charge at the end of their shift and for that vehicle to be fully charged by the start of their next shift. Level 2 chargers require a moderate incremental cost over Level 1 chargers, but this cost is offset by their enhanced functionality.

We recommend adding two EVs to the fleet during the initial transition. If the Village chooses to replace the two vehicles listed in Part 1, the Village will need to install EVSE to support these vehicles, which would require at least one Level 2 charger at the Public Safety building, and at least one Level 2 charger at the wastewater treatment plant (WWTP).

The cost for adding EV charging equipment includes both the cost for the charging ports, as well as the cost of installing the electrical system infrastructure, such as conduit and electrical panel upgrades. Depending on the locations where the charging ports will be installed and the existing electrical infrastructure that serves the building, the cost of laying conduit and upgrading electrical panels may significantly exceed cost of the charging ports. To minimize the total cost of adding the amount of EVSE that will be needed to support a full transition of the Village's current vehicles to EVs in the future, the project team recommends that Mount Horeb install conduit and upgrade electrical service levels proactively to prepare for replacing more ICE vehicles with EVs in the future.

The following steps support cost-efficiently preparing to meet future charging needs.

1. Determine the number of vehicles that park at each location (Public Works building, Public Safety building, and WWTP) for which there is currently a commercially available EV alternative.
    a. Considering likely expansion in the market sectors in which there are cost-competitive EVs, evaluate the number of ICE vehicles that could be replaced with EVs if viable large pickup truck and large truck EVs are introduced.
2. Based on the number of daily miles that each vehicle travels, EV driving ranges, and estimated cold-weather range reductions, determine a 'worst case charging scenario,' that the EVSE will need to support (ex. High number of vehicles requiring charging on a very cold day).
3. To prepare for adding EVs to the municipal fleet, install conduit and complete electrical service upgrades that will be sufficient to support the worst-case charging scenario in a full EV transition of the municipal fleet.

[22] There are variations in capacity and functionality among different types of equipment in a given category

Table 16. EV Charging Station Types

Charger type	Approx. Range Miles per charging hour	Uses	Installed cost per port (est.)
Level 1 (120V AC)	5	Home charging	Less than $500
Level 2 (240V AC)	25	Home, workplace, and public charging (most common)	$500 - $2,500
Level 3 (DC)	200+	Public charging; transportation corridors	$40,000 - $150,000

RECOMMENDATION 2: USE ESTIMATED TOTAL COST OF VEHICLE OWNERSHIP TO GUIDE PURCHASING

To reflect the ever-changing EV market and the benefits of EVs, we recommend that the Village adopt a vehicle purchasing policy to prioritize vehicles that offer the lowest cost of ownership throughout their lifecycle, rather than the lowest initial purchase price. A purchasing policy that prioritizes selecting vehicles that have the lowest total cost of ownership (TCO) will achieve two key objectives. 1) The cost of fueling and maintaining a vehicle during the ownership period may exceed the initial cost of purchasing the vehicle. Selecting vehicles based on comparative TCO will appropriately value these costs and will offer an advantage to more fuel-efficient vehicles, as well as to EVs, which are less expensive to refuel. 2) Focusing on TCO will ensure that the Village uses taxpayer dollars as efficiently as possible to provide the services for which the municipality is responsible. Looking ahead, a TCO-based purchasing policy will ensure that future decisions about fleet transitions reflect the changing costs of EVs vs ICEs and includes the following:

- Purchase cost differential
- Ongoing fuel costs: cost to charge an EV vs. cost to purchase gasoline or diesel fuel to power an ICE vehicle
- Expected maintenance costs
- Forecasted resale values of each vehicle option

Free TCO comparison calculators are offered on the U.S. DOE's Alternative Fuels Data Center site[23], and from Fleetio[24], as well as from other sites.

Table 17 summarizes EV vs conventional vehicle considerations across cost categories.

Table 17. EV vs conventional vehicle cost comparisons - upfront and operating

Vehicle Expense Category	Electric vehicle or conventional vehicle comparison
Purchase Cost	Purchase costs vary by vehicle category
Fuel Cost	Fuel cost per mile is lower for EVs

[23] https://afdc.energy.gov/calc/

[24] https://www.fleetio.com/blog/calculating-total-cost-of-ownership-for-fleet

Maintenance Cost	Studies[25] show approximately 50% lower maintenance costs for EVs.
Resale Value	Some analyses have shown higher resale value for EVs, but irregularities in markets for all used and new vehicles from 2020 – 2023 create uncertainty.

Another way for a municipal fleet to save money is to optimize the total number of vehicles in the fleet. Low annual mileage for some municipal vehicles suggests that parts of the Village's fleet may be under-utilized. To best align the Village's fleet with functional requirements, as vehicles reach the end of their service lives, the Village can add a "Do not replace" option to the choices that it evaluates in the LCCA. When evaluating the "Do not replace" option, in an LCCA, staff may assess opportunities to combine vehicle functions in order to avoid incurring replacement costs.

RECOMMENDATION 3: LEAD COMMUNITY IN EV TRANSITION

As the Village adds EVs to its vehicle fleet, it has an opportunity to demonstrate to the community that EVs are a good transportation solution for residents and businesses.

Mount Horeb can increase the visibility of EVs in the community by adding signage to the sides or backs of EVs in its fleet, which recognizes that a municipal vehicle is an EV. In addition to increasing visibility of EVs in the community, the signage could include information that quantifies the fuel cost savings and the GHG emissions reductions that the Village is realizing by operating EVs in place of gasoline-powered conventional vehicles.

Using a fun and attractive logo or identifier for municipal EVs that connects the Village's logo, community pride, or other positive associations (trolls?) with the environmental and cost benefits can prompt the vehicles to become local conversation pieces and could consequently increase interest in EVs among residents.

A second strategy through which the Village can lead the EV transition by example would be for municipal leaders, such as the Village Administrator, the police chief, and other recognizable figures to drive one of the Village's EVs to public events. At the events, these leaders may reference their enjoyment of the EV that they drove.

There is currently only one public EV charging station in Mount Horeb, with the next closest charging stations located in Verona[26]. While most EV owners primarily charge their vehicles at home, rather than at public charging stations, concern about a lack of available charging stations is a common concern that deters people from considering purchasing an EV.

The Village may be able to reduce concerns among residents about charger availability and thereby increase EV adoption among residents by facilitating the development of additional charging stations in the community. Survey results found that community members do not support the Village installing and owning public-facing charging stations. However, survey responses also indicated that there is support for the Village

[25] Harto, C. *Electric Vehicle Ownership Costs: Chapter 2 – Maintenance.* Consumer Reports. September, 2020. (https://advocacy.consumerreports.org/wp-content/uploads/2020/09/Maintenance-Cost-White-Paper-9.24.20-1.pdf)

[26] https://afdc.energy.gov/fuels/electricity-locations#/find/nearest?fuel=ELEC&location=mount+horeb,+wi

encouraging local businesses to add EV charging stations to their facilities. Mount Horeb can foster the addition of EV charging stations in the municipality by working with businesses, such as grocery stores, restaurants, and museums, and hotels, where shoppers/visitors are likely to stay for at least 30 minutes to install charging at their places of business. To support businesses that agree to add EVSE, the Village can offer to connect them with technical assistance, to streamline permitting processes, and to publicly recognize these businesses and feature their charging stations in local business guides and in tourism materials.

Policy Recommendations

The recommendations in this section focus on two objectives: 1) institutionalizing and sustaining practices and policies that advance energy efficiency within municipal government operations; and 2) identifying ways to encourage efficient energy use and reductions in CO_2 emissions throughout the community. The recommendations can serve as a springboard for future community efforts.

Policy Recommendations

1. LCCA Purchasing Policy
2. Energy Navigator Program
3. Clean energy peer support
4. Recognize clean energy leaders

RECOMMENDATION 1: IMPLEMENT SUSTAINABLE LCCA PURCHASING POLICY

There are opportunities to increase building efficiency whenever the Village purchases a piece of equipment that uses energy. For high priority measures that generate significant energy cost savings in relation to their cost, the Village may choose to upgrade equipment before it reaches the end of its useful life. However, decisions on upgrading building systems frequently occur when a system is reaching the end of its useful life and must either be replaced or undergo significant repairs. The Village's decisions in addressing these needs will impact the Village's energy use for decades. For many building improvement decisions, the approach that offers the lowest initial cost may utilize less efficient equipment or building systems, which will force the Village to incur increased energy costs throughout the time that the equipment is operational. To manage long term operational costs and to ensure overall cost-effectiveness of capital improvements, we recommend that the Village establish a purchasing policy for all building repairs, upgrades, and new construction that estimates lifecycle operational costs for each option that is being considered and recommends the option that offers the lowest overall cost (initial cost net of financial incentives + operational costs) while achieving the Village's functional requirements. The Village may further advance its environmental goals by also assessing the estimated GHG emissions for each option and applying a cost-factor to each option based on each option's projected lifetime emissions.

Table 18 summarizes types of equipment and operational standards that the Village may use to identify upgrade options that offer the lowest lifecycle costs. While the table shows current high-performance options and standards, we anticipate that efficiency and operational standards will continue to improve in future years, so the Village will need to periodically refresh this guidance.

The Village has already implemented several of these items in certain buildings, such as purchasing LEDs and installing energy efficient equipment.

Table 18 Purchasing Policy Examples

Purchasing Policy Examples	Heating, Ventilation, and Air Conditioning (HVAC) Systems	When purchasing furnaces, consider condensing furnaces with efficiency higher than 95% AFUE.
		When an HVAC system needs to be replaced, consider installation of air source or dual-fuel heat pumps.
		When purchasing air conditioners, consider ENERGY STAR certified AC with SEER2 ≥15.2.
		Install smart thermostats with occupancy sensors to automatically setback temperatures when spaces are unoccupied.
		Consider installing or upgrading the building automation system when replacing equipment.
	Appliances and Other Equipment	New windows should meet or exceed ENERGY STAR requirements. Large commercial windows or store front windows should target U-value no greater than 0.3 and SHGC no greater than 0.25.
		Consider replacing gas domestic water heaters with hybrid electric water heaters or heat pump water heaters.
		Purchase ENERGY STAR equipment to replace office appliances and domestic water heaters.
	Lighting	Continue purchasing LED bulbs or full fixture replacements for lighting retrofit.
		Consider addition of daylighting and occupancy controls for LED lighting.

RECOMMENDATION 2: CONNECT COMMUNITY WITH INCENTIVES AND FINANCING

Respondents to both the residential survey and the business survey stated that the Village could support them in saving energy and shifting to using more renewable energy by helping them identify low-cost energy saving opportunities for their homes and businesses and by providing assistance in understanding the financial incentives and financing options that are available for making energy efficiency improvements to their homes and buildings.

Focus on Energy and WPPI Energy provide portfolios of energy efficiency informational resources, financial incentives, and technical assistance programs to residential and business customers. While changes in Federal policies will eliminate some currently available clean energy funding resources, Mount Horeb residents and businesses can apply for the Federal HOMES and HEAR rebate programs until December 31, 2026.

Focus on Energy is administering the HOMES and HEAR rebate programs in Wisconsin. The programs offer significant rebates for residential building energy efficiency and electrification improvements for single family homes and for multifamily buildings. Rebates are available for all projects that install qualifying equipment (HEAR) and/or that meet energy savings requirements (HOMES), with higher rebates offered to households with lower incomes.

The HOMES and HEAR programs offer rebates that can offset significant portions of the total costs of qualifying projects. However, to receive this funding, customers must ensure that work is done in compliance with the Federal requirements. Focus on Energy representatives and trained contractors are well-equipped to guide Mount Horeb residents throughout their project. To maximize the potential benefits of this funding

resource for the Mount Horeb community, we recommend that, through 2026, the Village highlight opportunities through HOMES, HEAR, Focus on Energy, and WPPI in its outreach to residents.

Additionally, numerous informational resources about energy efficiency and renewable energy upgrades that have been created by non-profit organizations, businesses, utilities, and units of government may provide the clean energy information that Mount Horeb stakeholders are seeking.

While valuable financial, technical, and informational resources are available to help Mount Horeb residents and businesses identify, and pay for, energy efficiency and renewable energy improvements, survey results show that many community members would benefit from assistance accessing these resources. Therefore, without providing additional financial incentives or grants, the Village can facilitate energy improvements in the community by helping community members connect with existing resources. Following are three ways that the Village could support community-wide energy savings:

1. **Village of Mount Horeb Clean Energy web page**. Adding a dedicated page for energy efficiency and renewable energy information to the Village's website would help residents, businesses, and organizations in the community remove the informational and financial barriers to saving energy that they have identified. In addition to offering a community-specific location for this information, adding this information to the Village's website would increase the credibility of this information to local stakeholders. Survey responses indicated that, while residents and businesses want help finding the resources that the page would include, they also expressed concerns about determining what information on this topic is credible and trustworthy. The Village could collaborate with WPPI Energy and Focus on Energy, which both have expertise on these topics, to provide quality assurance for the information on the page and to help the Village ensure that the page continues to display currently available resources and accurate policy guidance.
2. **Staff support**. The Village could dedicate a portion of a staff person's time to serve as the Clean Energy Navigator for community members. This person would be a first point of contact for residents and businesses

   As shown by responses to the surveys, there is significant demand and need for clean energy outreach, education, and individualized support for residents and businesses. The Village may consider either re-allocating a percentage of an existing staff person's job responsibilities to coordinate the Village's sustainability outreach, education, and assistance, or seeking funding to add a new staff person to fill this role. This staff person can both coordinate the Village's community-focused work on this topic and serve as a first point of contact for incoming inquiries. Job responsibilities may include:

   - Developing partnerships with other organizations to collaborate on education and outreach. Partnerships may include the Mount Horeb School District, the Mount Horeb Area Chamber of Commerce, WPPI Energy, Focus on Energy, Neighbors Helping Neighbors, the Mount Horeb Community Foundation, neighborhood associations, and other community organizations. Periodic updates about the Village's progress implementing its Energy Plan and on opportunities for residents and businesses to access energy saving resources can also be shared through articles in the Mount Horeb Mail.
   - Coordinating the Community-Led Energy Navigator Program (see below)
   - Staffing the municipal Sustainability and Natural Resources Committee

3. **Community-Led Energy Navigators**. Mount Horeb's municipal SNR Committee, as well as its Green Team, show that there are community members who are committed to environmental sustainability. The SNR's engagement with this planning process also demonstrates that there are residents who are committed to helping reduce community-wide emissions and to operate more energy efficiently. Recognizing these community resources, the Village can seek to build on the momentum generated during this planning process, as well as the need to help connect community members and local businesses in both completing initial low-cost, low-effort efficiency upgrades, and then in identifying and funding longer term high-impact energy projects.

   By providing coordination support for a volunteer-led clean energy navigator program, the Village can amplify its efforts by engaging residents in meaningful outreach and community-building work that responds to an identified need. To support these volunteers, the Village would need to coordinate with WPPI Energy, Focus on Energy, and other relevant resource providers to compile a set of applicable informational resources and to train the volunteers in sharing this information within their neighborhoods, and beyond. The Village could further advance the work of the Clean Energy Navigators by highlighting it on the Village's website, as well as in newsletters and other communications.

RECOMMENDATION 3: JOIN LOCAL GOVERNMENT SUSTAINABILITY PEER GROUPS

Leaders of local governments face unique challenges and opportunities when developing and implementing sustainability initiatives within their municipal operations and throughout the broader community. Considerations related to procurement, funding mechanisms, staffing capacity, and assurance of reliable service delivery, are some of the many factors that leaders must navigate for these projects.

Additionally, limited staffing and availability constraints for current staff members can both contribute to municipalities failing to move forward with projects that advance the community's clean energy objectives.

Collaborations among local governments can provide peer accountability when working toward energy goals, as well as a cadence of regular checkpoints that support forward progress. Working with other municipalities that have made energy, climate, and/or sustainability commitments can also provide valuable peer learning opportunities as leaders share both their achievements and their lessons learned as they each work on energy efficiency, renewable energy, sustainable transportation, and other similar projects in their own communities.

We recommend that Mount Horeb join one or more local government peer organizations as a strategy to support its ongoing efforts to implement the Mount Horeb Energy Plan and to advance other sustainability initiatives. There are at least two networks of this type in Wisconsin, and we recommend that the Village consider joining one, or both, of the organizations.

1. Wisconsin Green Tier Legacy Communities (GTLC) network. The Wisconsin Department of Natural Resources coordinates this group of municipalities and counties. There is no cost to join the GTLC network; however, members are required to adopt a resolution that formalizes their commitment to work with the program and to provide annual reports on the municipality's sustainability activities. The GTLC network meets online quarterly. Each meeting includes presentations on topic areas that the members identify, as well as opportunities for peer learning and exchange. In addition to quarterly meetings, members are able to participate in relevant learning opportunities and receive preferential treatment when applying for state funding related to sustainability programs. There are currently 43 GTLC members from throughout the state. Member municipalities range in size from the Village of Egg Harbor (pop. 327) to the City of Green Bay (pop. 107,395).
2. Wisconsin Local Government Climate Coalition (WLGCC). WLGCC is a non-profit organization that both advocates for improved energy and climate policies and supports local governments in moving forward clean energy and climate efforts at the local level. Programs address energy use in buildings; transportation, land use; resilience, and reducing emissions from the electricity grid. The organization provides a framework for collaboration on relevant projects, as well as access to additional resources. WLGCC currently has 25 member municipalities, as well as six county governments that are members. Members range in size from Shorewood Hills to the City of Milwaukee. Nine of the members are in Dane County (including the Dane County government).

RECOMMENDATION 4: PUBLIC RECOGNITION PROGRAM FOR ENERGY EFFICIENT BUSINESSES

Both the high number of respondents to the surveys and the feedback that respondents shared show that community members and stakeholders value and support energy efficiency and renewable energy. Of the businesses who responded, 50 percent of businesses indicated that it would be helpful for the Village to publicly recognize local businesses and organizations that are making progress in operating more energy efficiently and/or are using renewable energy.

We recommend that the Village develop a mechanism to publicly identify businesses and organizations that are taking meaningful steps on a clean energy journey. Highlighting the clean energy achievements of local businesses would create two important benefits.

1. An opportunity to earn recognition for saving energy and/or using renewable energy can add motivation for businesses to implement efficiency or operational improvements that will reduce energy use, but which may otherwise be invisible to customers and stakeholders.
2. Highlighting local businesses that are actively working to enact clean energy practices would enable community members who value environmental sustainability to choose to patronize businesses and organization that align with their values. Connecting aligned businesses and customers can increase revenue for the businesses and can support development of Mount Horeb's identity as a clean energy leader among its residents.

Funding Opportunities for Recommendations

The cost of the upgrades identified in this energy plan is substantial and may be a barrier to implementing some of the recommended measures. This section is intended to provide an overview of funding opportunities for the various upgrades identified in the report.

FOCUS ON ENERGY

Mount Horeb Utilities partners with Focus on Energy to provide incentives for renewable energy installations and energy efficiency upgrades. We recommend that Mount Horeb provides a copy of this report to its Energy Advisor and asks for assistance in identifying the best way to access rebates and support programs to fund the recommended improvements. The Focus on Energy incentive amount available depends on the measure and often specific characteristics of the equipment, such as efficiency of new building equipment or quantity of light fixtures. [27]

WPPI ENERGY

Mount Horeb is a member of WPPI Energy. While Mount Horeb Utilities (MHU), like all WPPI member utilities, participates in the Focus on Energy program, WPPI may periodically have opportunities to work with the Village to access additional funding resources to demonstrate innovative energy projects. We recommend that the Village coordinate with staff at Mount Horeb Utilities to communicate the Village's progress toward completing recommendations in this energy plan, as well as to discuss the Village's funding needs related to these efforts so that WPPI can share relevant funding opportunities that emerge with the Village.

WISCONSIN PUBLIC SERVICE COMMISSION'S OFFICE OF ENERGY INNOVATION

Mount Horeb accessed a Rural Energy Start Up Program (RESP) grant from the Wisconsin Office of Energy Innovation (OEI) to pay for this Mount Horeb Energy Plan. In addition to RESP, OEI has periodically issued funding opportunities for local governments through the Energy Innovation Grant Program (EIGP). Both RESP and EIGP have typically funded several categories of projects, including comprehensive energy planning for local governments, energy efficiency upgrades to municipal buildings, renewable energy potential studies, and microgrid feasibility assessments.

The Mount Horeb energy plan is an example of a Comprehensive Energy Planning project. Generally, to ensure that building upgrade funds that it approves achieve maximum impact, OEI has required that a jurisdiction have completed a comprehensive energy plan as a prerequisite for receiving funding to support energy efficiency or renewable energy building improvements. Because Mount Horeb has completed a comprehensive energy plan, it may now be prepared to prepare a competitive proposal for EIGP funds to support an energy efficiency or renewable energy project that is described in this plan.

CLEAN ENERGY REVOLVING FUND

Mount Horeb's Energy Plan identifies opportunities for the Village to save money on its electricity, natural gas, and transportation fuel costs. To support future energy projects, the Village can deposit the energy cost

[27] Focus on Energy's 2025 Incentive Summary: https://assets.focusonenergy.com/production/02-pdf/2025/BIZ_Business-Summary-of-Services-Incentives_2025.pdf

savings from completed energy projects into a separate Clean Energy Revolving Fund sub-account. The Village can deposit money into this fund on a monthly or annual basis, which will cause the fund balance to increase quickly.

The purpose of the Clean Energy Revolving Fund is to supplement other municipal funding sources. It is not intended to replace the need for the Village to use capital funds, operating budgets, and third-party grant funds to pay for the improvements recommended in this plan.

As Mount Horeb continues to move ahead with the recommendations in the Energy Plan, it may periodically encounter recommended projects that it is not able to include in its regular capital budget. In these cases, the Village can draw from its Clean Energy Revolving Fund to supplement other municipal funding sources and obtain approval for these projects.

Appendix 1: Building Descriptions and Recommendations

BUILDING 1: VILLAGE OF MOUNT HOREB MUNICIPAL BUILDING

Size: 12,739 square feet

Age: Built in 1924

Existing heating and cooling system: Three gas-fired constant volume rooftop units (RTU) for cooling and heating that serve the whole building. Two natural-gas-fired boilers; one is for fin tube perimeter heating in stairwells and hallways, and one is serving forced air units in the offices. Boilers are reported to be turned off in the summer.

Baseline Electricity Use: 60,361 kWh/yr

Baseline Natural Gas Use: 4,913 therms/yr

Weather-normalized site EUI: 56 kBTU/sf. At regional median for comparable buildings.

Over the past several years, some of the office spaces in Village Hall have undergone an LED retrofit and have added occupancy sensors, but there is still some fluorescent lighting in the building. The hearing room has a mixture of LEDs and fluorescent lights, but no occupancy sensors. There are multiple computers, for employee use, that provide opportunity for plug load management. The roof insulation was replaced within the last ten years, and the three constant-volume rooftop units (RTUs) were installed in 2014 to provide cooling to the building. The boilers and RTUs serve overlapping zones but are controlled by separate, non-communicating thermostats, leading to simultaneous, uncontrolled heating during the winter and shoulder seasons. However, during the site visit, staff indicated needing to use space heaters for individual offices during spring and fall, suggesting underheating in the winter and overheating in the shoulder season. There are not individual thermostats for each office area and thus, no individualized temperature control. Due to this configuration, gas and electric usage in the shoulder seasons is higher than expected. Domestic hot water (DHW) is provided by a 40-gallon gas water heater.

Table9 summarizes the recommended measures by priority level and provides potential cost, energy, and carbon savings for Village Hall. The total savings row includes the savings from high priority, medium priority, and EOL measures. Payback period for the condensing boiler is based on an incremental cost instead of a first cost and it is marked with an *. Percentage reduction is relative to the existing (baseline) case. Measure cost and annual energy values displayed in the table are rounded up to the nearest ten or hundred, depending on the initial value.

Table 19. Village Hall recommended energy actions.

Measure	Priority	Installed Cost	Annual Utility Cost Savings	Financial Payback		Annual Energy Reduction		Emissions Reduction (MT CO2e)
						kWh	Therms	
Retro-commissioning	High	$4,800	$1,100	11.7%	4.7 Yrs	5,300 8.2%	1,600 37.1%	12.1 18.7%
Retrofit LED bulbs in existing fixtures	High	$1,800	$300	2.8%	7.3 Yrs	2,100 3.2%	-40 -0.9%	1.2 1.8%
Occupancy lighting controls	High	$1,000	$200	1.9%	5.7 Yrs	1,500 2.3%	-30 -0.7%	0.8 1.2%
Plug load management	Medium	$300	$200	1.3%	2.1 Yrs	1,000 1.5%	0 -	0.6 0.9%

Measure	Priority	Installed Cost	Annual Utility Cost Savings	Financial Payback		Annual Energy Reduction		Emissions Reduction (MT CO2e)
						kWh	Therms	
Improve building air sealing	Medium	$2,700	$50	0.5%	> 50 Yrs	200 0.3%	100 1.9%	0.6 0.9%
Condensing boiler*	Medium	$6,500	$200	1.5%	48.9 Yrs	200 0.3%	400 10.1%	2.5 3.9%
Overall		**$17,100**	**$2,050**	**19.8%**		**10,300 16%**	**2,030 48%**	**18 27%**

Table 20 identifies the impacts of replacing existing fossil fuel powered space and water heating equipment at Village Hall with electricity-powered systems ("Decarbonization measures"). The primary function of a decarbonization measure is to eliminate fossil fuel usage and reduce carbon emissions. Actual carbon emissions reduction over the lifetime of the equipment is difficult to quantify because of fluctuations in the generation sources that supply Mount Horeb's regional electricity grid. Mount Horeb should consider these options if they are interested in a decarbonization or electrification pathway.

The table shows the estimated energy and cost impact of each improvement. The cost listed for the equipment is shown as incremental cost compared with a like-for-like system replacement. The percentage reduction for each measure is relative to the existing (baseline) case.

Table 20. Village Hall recommended decarbonization measures.

Measure	Incremental Cost	Annual Utility Cost Savings		Annual Energy Reduction	
				kWh	Therms
Heat Pump Water Heater	$1,300	-$400	-5%	-4,500 -6.9%	300 6.8%
Air to Water Heat Pump (Alternative to Condensing Boiler)	$271,000	-$1,600	-19%	-18,800 -29%	2,400 55%

High Priority: Retro-Commissioning

Next Step: Focus on Energy provides incentives and a list of qualified contractors for retro-commissioning or building tune-ups. Contact an Energy Representative to understand potential programs and to enroll. [28]

We recommend that Village Hall explore retro-commissioning to address multiple HVAC issues that affect comfort and energy use. Retro-commissioning is a process of servicing and repairing existing heating and air conditioning equipment to restore it to nearly its original level of performance. Retro-commissioning for Village Hall would include reviewing thermostats, valves, and boiler and RTU tune-ups to reduce simultaneous heating and fan usage. Advanced controls such as demand control ventilation (DCV) and boiler supply water temperature reset based on outside air temperature are recommended to be implemented as part of the tune-up process. These tune-ups will also eliminate the need for space heaters in office areas and should mitigate occupant comfort concerns.

[28] Information on Focus' retro-commissioning incentives is here: https://focusonenergy.com/business/building-optimization

The retro-commissioning process would also generate a report that recommends additional system improvements, such as implementing a building automation system (BAS) to tie RTU and boiler operation together and for better implementation of advanced control sequences.

High Priority: LED Upgrades

Next Step: Finish existing fluorescent tube conversion to LED or replace existing fluorescent light fixtures with integrated LED fixtures. Discuss upgrades with Focus on Energy representatives to ensure that lighting fixture upgrades and retrofits optimize potential financial incentives.

Some areas of Village Hall, such as office spaces, have already been retrofitted with LED fixtures. The stairways and hearing room have a mixture of LED and fluorescent lighting. Energy cost savings realized by replacing fluorescent lighting with LED fixtures will quickly recoup the initial installed costs of these improvements. Therefore, we recommend all fluorescent lighting be retrofitted to LEDs. An LED tube retrofit (LED bulbs are placed into existing fixtures) is less expensive, and depending on the ballast and fixture wiring, certain types of tube retrofits can allow for external occupancy sensors (wall-mounted or ceiling-mounted). A full LED fixture replacement is more costly but allows for integrated advanced lighting controls including occupancy, daylighting and task tuning. 20 displays values for an LED tube retrofit.

High Priority: Lighting Occupancy Controls

Next Step: Incorporate occupancy sensors into LED fixtures in smaller enclosed areas, either as externally mounted components or integrated directly into the fixture. Discuss with Focus on Energy representative as occupancy sensors may be eligible for financial incentives.

Some of the office areas already have occupancy sensors installed, but the hearing room does not have occupancy sensors. We recommend installing occupancy sensors in smaller enclosed areas, such as offices, backrooms, the hearing room, corridors, and lavatories that do not already have automatic controls. Daylighting was not considered because windows are mainly located near stairways and hallways.

Medium Priority: Plug Load Management

Next Step: Implement smart plugs or advanced power strips to reduce energy used by computers and by other miscellaneous loads

We recommend installing smart plugs or advanced power strips with schedule timer control and/or load-sensing control to automatically power off devices, such as computers, after periods of inactivity to reduce standby energy waste.

Medium Priority: Improve Building Air Sealing

Next Step: Hire a qualified insulation or air sealing contractor to inspect building and air seal any leaks, gaps, or cracks in the building envelope (ex. Walls, roof, windows, doors, etc.).

Air sealing helps prevent air leaks, thus reducing the workload on heating and cooling systems and improving comfort. Air sealing is typically done on walls, floors, basements, and around doors and windows. We recommend having a professional walk through the building and air seal any leaks that they notice.

Medium Priority: Condensing Boiler Upgrade

Next Step: Consult an HVAC contractor to replace existing gas-fired boiler with a condensing boiler. Discuss this measure with Focus on Energy representative, as boiler upgrades may be eligible for incentives.

Village Hall has two existing 210 MBH boilers that are rated at 80% thermal efficiency. They are turned off during the summer months and used for forced air heating in offices and fin tube perimeter heating in stairwells and hallways. If the village is not pursuing an electrification pathway, we recommend replacing the boilers with high efficiency fully condensing boilers. After retro-commissioning to see how/if the boilers and RTUs can be integrated, the Village should have detailed heating load calculations performed to determine if the boilers can be downsized. Downsizing the boilers would both reduce the cost of the condensing boiler and reduce the cost of supplying the boiler with energy during operations. In addition to condensing boilers, implement outdoor air temperature reset controls on a trim-and-respond sequence to adjust the hot water temperature based on outdoor temperature.

Decarbonization Measure: Alternative to Condensing Boiler Upgrade – Air-to-Water Heat Pump Upgrade

Next Step: Consult a qualified HVAC contractor to supplement the existing gas-fired boiler with an air-to-water heat pump (AWHP) to reduce the use of natural gas heating.

We recommend this measure if Mount Horeb is interested in pursuing an electrification or decarbonization strategy. The hybrid AWHP + gas boiler configuration enables the use of electric heat pump technology as the primary hydronic heating source. The AWHP is used until outdoor temperatures drop below a predefined switchover point, at which the system switches over to the gas-fired boiler for heating. This configuration maximizes efficiency by leveraging the heat pump's high performance during milder conditions and maintains reliable heating during colder weather, when heat pump performance drops.

Decarbonization Measure EOL: Heat Pump Water Heater Upgrade

Next Step: Consult a qualified plumbing contractor to replace the existing gas-fired domestic water heater with a heat pump water heater (HPWH) for improved efficiency and carbon reductions.

We recommend this measure if Mount Horeb chooses to pursue an electrification or decarbonization strategy. A HPWH replaces fossil-fuel-based water heating while being 2-4 times more efficient than a standard electric water heater. It uses electricity to move heat from the surrounding area into the water, instead of generating heat directly through electric resistance. We recommend replacing the gas-fired domestic water heater at its end of life with a HPWH.

BUILDING 2 MOUNT HOREB PUBLIC LIBRARY

Size: 15,936 square feet

Age: Built in 2001

Existing heating and cooling system: One variable-air-volume rooftop air-handling unit with VAV (variable air volume) terminal boxes equipped with hot water reheat serve the west side of the building. One staged air volume rooftop air-handling unit with booster coils equipped with hot water reheat serve the east side of the building. Both rooftop units use DX cooling and gas-fired heating and have an air-side economizer. A condensing boiler provides hot water to the VAV terminal boxes, booster coils, perimeter convectors, and the radiant floor heating system. On the site visit, staff noted that radiant floor heating, which is in the children's area, is turned off and staff are uncertain about how well the radiant floor heating is functioning.

Baseline Electricity Use: 148,589 kWh

Baseline Natural Gas Use: 4,956 therms

Weather-normalized Site EUI: 68 kBTU/sf. Lower than regional median for similar buildings (74 kBTU/st).

Over the past several years, some spaces of the library have undergone LED retrofits. While there are existing occupancy sensors in the bathroom and storage areas, there are additional opportunities for both occupancy and daylighting controls throughout the building. The building is equipped with a Building Automation System (BAS) with advanced control sequences such as demand controlled ventilation (DCV) and boiler supply water temperature reset control. There is an electric humidifier for the building, but staff noted that it is turned off because condensation from high humidity was causing paint damage in the reading room. The radiant floor heating in the children's area was also turned off. There are multiple desktop computers in the area that provide opportunities for plug load management. Domestic hot water is provided by a 40-gallon electric resistance water heater that was installed in 2019.

Table 21 displays the recommended measures for the library and provides estimated installation cost, energy, and carbon savings. The total savings row includes the savings from high priority, medium priority, and EOL measures. Payback periods for most measures are based on totals cost of the measures; however, the estimated cost indicated for the roof upgrade, which is an end-of-life measure, indicates the incremental cost of increasing insulation levels in the roof in comparison to a business-as-usual like-for-like replacement. This distinction is marked with an *. The percent savings/reduction columns compare reduced energy, cost, and emissions available from completing the measure to the existing (baseline) case.

Table 21. Library measure prioritization and estimated savings.

Measure	Priority	Installed Cost	Annual Utility Cost Savings		Financial Payback	Annual Energy Reduction		Emissions Reduction (MT CO2e)
						kWh	Therms	
Retro-commissioning	High	$8,000	$1,100	7.0%	7.5 yrs	8,200 7.0%	400 7.0%	7.3 7.0%
Retrofit LED bulbs in existing fixtures	High	$2,000	$800	5.2%	2.5 yrs	6,900 5.9%	-100 -2.3%	3.7 3.6%
Occupancy lighting controls	High	$1,100	$700	4.0%	1.8 yrs	5,300 4.5%	-100 -2.3%	2.9 2.8%

Measure	Priority	Installed Cost	Annual Utility Cost Savings		Financial Payback	Annual Energy Reduction		Emissions Reduction (MT CO2e)
Daylighting controls	High	$500	$500	6.4%	0.4 yrs	8,500 7.2%	-100 -2.3%	4.8 4.6%
Plug load management	Medium	$300	$100	0.6%	2.4 yrs	800 0.7%	0 0%	0.5 0.5%
Improve building air sealing	Medium	$1,800	$90	0.6%	19.9 yrs	200 0.2%	300 4.7%	1.5 1.5%
Upgrade roof insulation*	EOL	$48,700	$400	2.5%	>50 yrs	1,800 1.5%	700 13.1%	5.0 4.8%
Heat pump water heater*	EOL	$1,300	$600	3.5%	2.5 yrs	4,500 3.8%	0 0%	2.9 2.8%
Total		**$63,700**	**$4,290**	**29.8%**		**36,200 30.9%**	**1,100 19%**	**28.6 27%**

Table 22 identifies the impacts of replacing existing fossil fuel powered space heating equipment at the library with an electricity-powered system ("Decarbonization measure"). The primary function of a decarbonization measure is to eliminate fossil fuel usage and reduce carbon emissions. Actual carbon emissions reduction over the lifetime of the equipment is difficult to quantify because of fluctuations in the generation sources that supply Mount Horeb's regional electricity grid. Mount Horeb should consider these options if they are interested in a decarbonization or electrification pathway.

Table 22. Library recommended decarbonization measures.

Measure	Incremental Cost	Annual Utility Cost Savings		Annual Energy Reduction		
				kWh	Therms	
Air-to-Water Heat Pump	$96,900	-$4,200	-28%	-45,300 -38%	4,500 82%	82%

High Priority: Retro-commissioning

Next Step: Focus on Energy provides incentives and a list of qualified contractors for retro-commissioning or building tune-ups. Contact an Energy Representative to understand potential programs and to enroll. [29]

We recommend that the Mount Horeb Library explore retro-commissioning to address HVAC issues that are affecting energy use. Retro-commissioning is a process of servicing and repairing existing heating and air conditioning equipment to restore it to nearly its original level of performance. Retro-commissioning of the library includes a BAS tune-up to identify potential improvements, such as reviewing the VAV system to reduce fan energy by lowering minimum airflow setpoints at the terminal boxes, minimizing zone reheat when the AHU is in cooling mode, optimizing humidifier operation to prevent paint damage, and improving the radiant floor heating system operation.

High Priority: LED Upgrades

[29] Information on Focus on Energy's retro-commissioning incentives is here: https://focusonenergy.com/business/building-optimization

Next Step: Finish tube replacement from fluorescent T8 to LED or replace light fixtures with integrated LED fixtures. Discuss with Focus on Energy representatives as lighting fixture upgrades and retrofits are eligible for incentives.

Some lighting in the library has already been retrofitted to LED lighting, and we recommend retrofitting the rest of the fluorescent lighting to LED lighting. An LED tube retrofit (LED bulbs are placed into existing fixtures) is less expensive than a fixture replacement, and depending on the ballast and fixture wiring, some tube retrofits can allow for external occupancy sensors (wall-mounted or ceiling-mounted). A full LED fixture replacement is more costly but allows for integrated advanced lighting controls including occupancy, daylighting, and task tuning. Table 21 displays estimated costs, as well as energy, cost, and emissions reductions for an LED tube retrofit.

High Priority: Occupancy Sensor Controls

Next Step: Incorporate occupancy sensors into LED fixtures in smaller enclosed areas, either as externally mounted components or integrated directly into the fixture. Discuss with Focus on Energy representative as occupancy sensors may be eligible for financial incentives.

Occupancy sensors are already located in lavatories and storage areas. We recommend installing occupancy sensors in the office, break rooms, and larger reading room areas where controls are not already present.

High Priority: Daylighting Controls

Next Step: Implement daylighting controls around perimeter of building in main reading, information services, and general collection areas; discuss with Focus on Energy representative as daylighting controls are eligible for incentives.

We recommend implementing automatic daylight continuous dimming controls near windows to reduce energy use while maintaining sufficient light levels for reading and other visual tasks. An initial illuminance target of 50 footcandles can be set and then fine-tuned by the controls contractor based on occupant feedback.

Medium Priority: Improve Building Air Sealing

Next Step: Hire a qualified insulation or air sealing contractor to inspect building and air seal any leaks, gaps, or cracks in the building envelope (ex. Walls, roof, windows, doors, etc.).

Air sealing helps prevent air leaks, thus reducing the workload on heating and cooling systems and improve comfort. Air sealing is typically done on walls, floors, basements, and around doors and windows. We recommend having a professional walk the building and air seal any leaks that they find.

Medium Priority: Plug Load Management

Next Step: Implement smart plugs or advanced power strips for computers and other miscellaneous loads.

We recommend installing smart plugs or advanced power strips with schedule timer control and/or load-sensing control to reduce standby energy waste by automatically powering off the library's computers after periods of inactivity.

EOL: Upgrade Roof Insulation

Next Step: Have an engineer or contractor review insulation and determine an improvement plan; discuss with Focus on Energy representative for potential incentives with roof insulation upgrades.

While adding attic insulation is expensive, it can significantly reduce heating loads. We recommend insulation be R-30 or better to comply with current energy code.

EOL/Decarbonization: Heat Pump Water Heater Upgrade

Next Step: Consult a qualified plumbing contractor to replace the existing electric resistance domestic water heater with a heat pump water heater (HPWH) for improved efficiency and carbon reductions.

A HPWH is 2-4 times more efficient than a standard electric water heater, such as the current water heater at the library, leading to substantial energy savings. An HPWH uses electricity to move heat from the surroundings into the water, instead of generating heat directly through electric resistance. When the current water heater reaches the end of its service life, we recommend replacing it with an HPWH.

Decarbonization Measure: Air-to-Water Heat Pump Upgrade

Next Step: Consult a qualified HVAC contractor to supplement the existing gas-fired boiler with air-to-water heat pump (AWHP) to reduce the use of natural gas heating.

We recommend this measure if Mount Horeb is interested in pursuing an electrification or decarbonization strategy. The hybrid AWHP + gas boiler setup enables the use of electric heat pump technology as the primary hydronic heating source until outdoor temperatures drop below a predefined switchover point, at which the system switches over to the gas-fired boiler for heating. This configuration maximizes efficiency by leveraging the heat pump's high performance during milder conditions and maintains reliable heating during colder weather, when heat pump performance drops.

BUILDING 3 COMMUNITY CENTER

Size: 9,660 square feet

Age: Built in 1978. The top floor houses the Senior Center, and the Parks and Recreation department occupies the bottom floor. The top floor used to be a library until the early 2000s, and the ground floor used to be a youth activity center.

Existing heating and cooling system: Five split system air conditioners with gas-fired furnaces provide heating and cooling to the building. Two systems serve the top floor and three serve the bottom floor, with two of the bottom floor systems in a twinned configuration. The units were replaced in 2020, 2022, 2023, and 2024. A packaged terminal air conditioner (PTAC) serves the converted screen porch area on the ground floor. On the site visit, staff noted that the office area in the senior center is always too cool in the summer and too hot in the winter, such that they use space heaters in the summer for the offices.

Baseline Electricity Use: 53,921 kWh

Baseline Natural Gas Use: 2,662 therms

Weather-normalized Site EUI: 48 kBTU/sf. Lower than median for similar buildings (61 kBTU/sf).

The Community Center is a two-story building with the parks and recreation center on the first floor and the senior center on the second floor. All the HVAC systems have been replaced in the last five years. Staff in the Senior Center noted that their offices are often too cold in the summer and too hot in the winter and they use space heaters in the summer. Because the second floor used to be a library, only one of the offices contains a thermostat, so there isn't proper temperature control in the office wing. The senior citizens who use the facility, however, are generally comfortable. For the Parks and Recreation Center, staff indicated that there is a piece of paper covering the thermostat to prevent people from changing it and the temperature is set to be constant. The converted screen porch area on the first floor is conditioned with a PTAC that is turned off when the room is not being used. Domestic hot water is provided by a 40-gallon natural gas water heater that was replaced in 2019. Lighting in the parks and recreation center has been replaced with LEDs that are connected to occupancy sensors, while the Senior Center has T8 fluorescent lighting with new fixtures. The Senior Center does not have any lighting controls. Except for the former screen porch area and the director's office in the senior center, the windows are original.

Table 23 displays the recommended measures for the Community Center and provides estimated installation cost, energy, and carbon savings. The total savings row includes the savings from high priority, medium priority, and EOL measures. Payback periods for most measures are based on totals cost of the measures; however, the estimated cost indicated for the roof upgrade, which is an end-of-life measure, indicates the incremental cost of increasing insulation levels in the roof in comparison to a business-as-usual like-for-like replacement. This distinction is marked with an *. The percent savings/reduction columns compare reduced energy, cost, and emissions available from completing the measure to the existing (baseline) case.

Table 23. Community Center measure prioritization and estimated savings

Measure	Priority	Installed Cost	Annual Utility Cost Savings		Financial Payback	Annual Energy Reduction		Emissions Reduction (MT CO2e)
						kWh	therms	
Retrofit LED bulbs in existing fixtures	High	$2,800	$400	5.2%	8.3 yrs	3,000 6.1%	-100 -3.1%	1.6 3.3%
Smart Thermostats	High	$600	$300	3.3%	2.8 yrs	1,500 3.1%	200 6.3%	1.8 3.7%

Measure	Priority	Installed Cost	Annual Utility Cost Savings		Financial Payback	Annual Energy Reduction		Emissions Reduction (MT CO2e)
						kWh	therms	
Retro-commissioning	High	$4,900	$500	6.4%	11.8 yrs	3,100 6.4%	200 6.8%	3.1 6.5%
Improve building air sealing	Medium	$1,400	$50	0.7%	28.3 yrs	200 0.3%	100 3.7%	0.7 1.5%
ENERGY STAR commercial appliances*	EOL	$1,500	$90	1.4%	16.2* yrs	800 1.6%	0 0%	0.5 1.0%
Window replacement*	EOL	$22,500	$200	1.6%	>50 yrs*	1,000 2.1%	-100 -1.8%	0.3 0.7%
Upgrade roof insulation*	EOL	$14,800	$90	1.3%	>50 yrs*	300 0.7%	200 6.3%	1.3 2.7%
Overall		**$48,500**	**$1,630**	**20%**		**9,900 20%**	**500 18%**	**9.3 19%**

Table 24 identifies the impacts of replacing existing fossil fuel powered water heating equipment at the Community Center with an electricity-powered system ("Decarbonization measure"). The primary function of a decarbonization measure is to eliminate fossil fuel usage and reduce carbon emissions. Actual carbon emissions reduction over the lifetime of the equipment is difficult to quantify because of fluctuations in the generation sources that supply Mount Horeb's regional electricity grid. Mount Horeb should consider this option if they are interested in a decarbonization or electrification pathway.

Table 24. Community Center recommended decarbonization measures.

Measure	Incremental Cost	Annual Utility Cost Savings		Annual Energy Reduction	
				kWh	Gas
Heat Pump Water Heater	$1,300	-$200	-3.4%	-2,100 -4.4%	100 3.1%

High Priority: Retro-commissioning

Next Step: Focus on Energy provides incentives and a list of qualified contractors for retro-commissioning or building tune-ups. Contact a Focus on Energy, Energy Representative to understand potential programs and to enroll. [30]

We recommend that the Community Center explore retro-commissioning to address the HVAC issues that are affecting comfort, especially in the senior center. Retro-commissioning is a process of servicing and repairing existing heating and air conditioning equipment to restore it to nearly its original level of performance. For the Community Center, this process includes reviewing thermostats and performing a test and balance procedure for the building to eliminate the need for space heaters in the summer. As part of the retro-commissioning process, we also recommend relocating the thermostats to the areas that they serve. This is particularly important on the bottom floor, which was originally an open space but was later converted

[30] Information on Focus on Energy's retro-commissioning incentives are here: https://focusonenergy.com/business/building-optimization

into a wing of offices. Currently, only one office contains a thermostat, leaving the rest of the wing without proper control.

High Priority: Smart Thermostats Upgrade

Next Step: Replace thermostats with smart thermostats. We recommend replacing existing thermostats with smart thermostats to automatically adjust temperature setpoints based on occupancy sensing, ultimately saving energy by reducing energy used to heat and cool unoccupied spaces. As part of this effort, we also recommend implementing temperature setback protocols for unoccupied periods in the parks and recreation portion of the building. When replacing thermostats, we also recommend that the Community Center considers relocating the thermostats on the ground floor to the areas they are serving for better temperature control and comfort. Currently, the office wing has only one thermostat located in one of the offices and therefore it is directing heating and cooling based only on the current temperature in a limited and confined space.

High Priority: LED Upgrades with Occupancy Sensors

Next Step: Retrofit tube replacement from T8 fluorescent to LED in the senior center. Discuss with Focus on Energy representatives to ensure that lighting equipment used for retrofits is eligible for incentives.

The parks and recreation floor already has LED lighting with occupancy controls, but the senior center has T8 fluorescent in both uplight and downlight fixtures. The senior center has newer fixtures, so we recommend an LED tube retrofit (LED bulbs are placed into existing fixtures) and implementing occupancy control. Depending on ballast and fixture wiring, some tube retrofits can allow for external occupancy sensors (wall-mounted or ceiling-mounted).

Medium Priority: Improve Building Air Sealing

Next Step: Hire a qualified insulation or air sealing contractor to inspect building and air seal any leaks, gaps, or cracks in the building envelope (ex. Walls, roof, windows, doors, etc.).

Air sealing helps prevent air leaks, thus reducing the workload on heating and cooling systems and improving comfort. Air sealing is typically done on walls, floors, basements, and around doors and windows. We recommend having a professional walk the building and air seal any leaks that they find.

EOL: ENERGY STAR Appliances

Next Step: Replace equipment with ENERGY STAR appliances at their end of life.

ENERGY STAR appliances are energy efficient appliances that use less energy than alternative non-certified models. Upon end of life, we recommend replacing appliances, such as the refrigerators and dishwasher with ENERGY STAR certified units.

EOL: Windows Replacement

Next Step: At end of life, replace windows with low-E, double pane windows.

Some windows, such as those on the porch and in the director's office on the top floor, have been replaced, while the rest remain original to the building. When the existing windows reach the end of their service life, we recommend replacing the original windows with low-E, double pane glazing for improved energy efficiency and occupant comfort. Upgraded windows can significantly reduce heating and cooling loads.

EOL: Upgrade Roof Insulation

Next Step: Request that an engineer or contractor evaluate existing insulation and determine an improvement plan; discuss with Focus on Energy representative for potential incentives with roof insulation upgrades.

The current roof is pitched with insulation between the studs and the roof. The building does not have an attic, and facility staff were not aware of any additional insulation that has been added. When the roof reaches its end of life, we recommend bringing the roof insulation level to R-30 or greater to comply with the current energy code. While roof upgrades are expensive, they can help reduce heating and cooling loads.

Decarbonization Measure at EOL: Heat Pump Water Heater Upgrade

Next Step: Consult a qualified plumbing contractor to replace the existing gas-fired domestic water heater with a heat pump water heater (HPWH) for improved efficiency and carbon reductions.

We recommend this measure if Mount Horeb is interested in pursuing an electrification or decarbonization strategy. A HPWH replaces fossil-fuel-based water heating while being 2-4 times more efficient than a standard electric water heater. It uses electricity to move heat from the surroundings into the water, instead of generating heat directly through electric resistance. When the existing domestic hot water system reaches the end of its service life, we recommend replacing it with a HPWH.

BUILDING 4 PUBLIC SAFETY: POLICE STATION

Size: 29,000 square feet

Age: Built in 2019. The building consists of a fire station and a police station. Our site visit focused primarily on the police station.

Existing heating and cooling system: The building is served by two variable-air-volume (VAV) air-handling units (AHU) with DX cooling and hot water terminal reheat, one dedicated to the fire station and the other to the police station. Hot water is provided to the building by two natural gas boilers, with one in lead and the other for backup operation. The police station's garage is served by unit heaters and gas-fired makeup air units (MAU) with energy recovery ventilation (ERV).

Baseline Electricity Use: 285,611 kWh

Baseline Natural Gas Use: 13,944 therms

Weather-normalized Site EUI: 79.5 kBTU/sf. Higher than median for similar buildings (71.8 kBTU/sf).

The building was designed with energy efficiency in mind; however, site EUI does exceed the national median for this building type. The building receives natural gas and electricity service through joint accounts that serve both the fire department and the police department. Energy costs are distributed between the Village (for the police station) and the Mount Horeb Area Joint Fire Department and Emergency Medical Service based on an agreement between the parties that the Village will pay 58 percent of the energy costs and the fire department will pay the other 42 percent of the costs. The energy assessment confirmed that the building appears to be operating efficiently. While more detailed analysis of would be needed to confirm, it is likely that the police station's higher EUI reflects a misalignment between the terms of the agreement between the parties and how energy is actually used in the building.

A building automation system (BAS) manages the HVAC system, allowing for advanced control strategies such as economizer operation, demand control ventilation via CO2 sensors, supply air temperature control, static pressure control, and hot water supply temperature reset controls. The gas and electric bills are divided between the fire and police stations, with 58% allocated to the police station and 42% to the fire department. Each station receives its own water bill. Domestic hot water is provided by an ENERGY STAR certified condensing gas water heater. The police station also features LED lighting throughout with occupancy sensors, along with automated blinds for additional efficiency.

As the building is relatively new and already incorporates many energy efficient measures, our recommendations primarily focus on electrification and decarbonization opportunities that can be implemented when the existing equipment approaches the end of its service life.

Decarbonization Measure at EOL: Air-to-Water Heat Pump Upgrade

Next Step: Consult a qualified HVAC contractor to supplement the existing gas-fired boiler with air-to-water heat pump (AWHP) to reduce the use of natural gas heating.

We recommend this measure if Mount Horeb is interested in pursuing an electrification or decarbonization strategy. The hybrid AWHP + gas boiler setup enables the use of electric heat pump technology as the primary hydronic heating source until outdoor temperatures drop below a predefined switchover point, at which the system switches over to the gas-fired boiler for heating. This configuration maximizes efficiency by leveraging the heat pump's high performance during milder conditions and maintains reliable heating during colder weather, when heat pump performance drops.

Decarbonization Measure at EOL: Heat Pump Water Heater Upgrade

Next Step: Consult a qualified plumbing contractor to replace the existing gas-fired domestic water heater with a heat pump water heater (HPWH) for improved efficiency and carbon reductions.

We recommend this measure if Mount Horeb is interested in pursuing an electrification or decarbonization strategy. A HPWH replaces fossil-fuel-based water heating while being 2-4 times more efficient than a standard electric water heater. It uses electricity to move heat from the surrounding into the water, instead of generating heat directly through electric resistance. We recommend replacing the DHW at its end of life with a HPWH.

Appendix 2: Solar Methodology

The steps described in this section were followed to recommend sizes of solar arrays that could be installed at each municipal facility. The scope of the Energy Plan project did not allow for solicitation of bids from solar installers to determine exact array configurations, capacities, and costs. The scope also did not include evaluations of roof load capacity for each facility to confirm that the roof structures at all facilities are sufficient to support the recommended solar arrays.

1. **Assessed available space**. Used on-site assessments of Village Hall, the Library, the Public Safety Building, and the Community Center to determine the amount of rooftop space that is available to install a solar array.
    a. Supplemented site visits with aerial and street level imagery from Google Maps and other online sources to assess available roof space, ground space, and potential shading for the remaining municipal facilities.
2. **Determined maximum generating capacity**. Used the National Renewable Energy Lab's (NREL's) PVWatts tool to determine the maximum photovoltaic (PV) array capacity that could be installed in the available space and the annual amount of electricity that the maximum array capacity would generate in an average year.
3. **Optimized cost-effectiveness**. The terms of the MHU electric tariff that applies to facilities that house PV arrays that have generating capacity greater than 20 kW-DC offer a low value to the customer for electricity that the PV array generates which exceeds the building's electricity demand at that time ("over production"). To reduce occurrences of over-production, if the PVWatts output estimated electricity production greater than 80 percent of the building's annual electricity consumption, the size of the recommended array was reduced to a capacity that would produce 80 percent of the facility's annual electricity consumption.
4. **Estimated net installed cost**. The initial cost of the installed array was estimated to be $2.70/watt based on NREL's most recent market assessment[31]. Focus on Energy offers a financial incentive of $50/kW-DC for commercial solar installations, up to a maximum $25,000 incentive amount. The value of this incentive was deducted from the total cost to calculate the net cost. Due to termination of the Federal Investment Tax Credit for any renewable energy systems completed after July 2026, potential value of the ITC was not deducted from the total cost.
5. **Forecast financial payback**. Used U.S. Energy Information Administration (EIA) data for Wisconsin[32] to determine an average value of $0.127/kWh for electricity that the arrays produce which reduces the amount of electricity that the facility purchases. The value per kilowatt-hour produced was applied to the amount of electricity that the array would produce each year to determine an annual value of the electricity that would be generated. The net cost of the array was divided by the annual value of electricity produced to estimate the number of years that would be required for the value of the electricity that is generated to surpass the initial net cost of the array. The financial payback

[31] https://www.nrel.gov/solar/market-research-analysis/solar-installed-system-cost

[32] https://www.eia.gov/electricity/state/wisconsin/

period does not apply a discount rate to future production and does not consider the potential effects of changes in electricity prices.

We recommend that the Village follow standard procurement procedures of soliciting bids from qualified installation contractors to determine specifications for PV systems on the buildings on which it decides to install solar arrays.

Appendix 3: Fleet Methodology

The analysis measured the current annual energy, cost, and emissions impacts of the Village of Mount Horeb's municipal fleet. It also applied data on current vehicles to performance metrics of new gasoline, diesel, and electricity-fueled vehicles to recommend a strategy through which the Village can cost-effectively reduce the energy used, and emissions generated by, its vehicles. The methodology used to calculate data on current vehicles and prepare recommendations for fleet vehicle replacements is described below.

1. Calculate key performance indicators (KPIs) for municipal fleet vehicles.
    - Collected data showing the number of gallons of fuel purchased for each vehicle, as well as the fuel type (gasoline, diesel, or other) during a 24-month period
    - Collected data showing the number of miles driven by each vehicle during the same 24-month period.
    - Applied data for fuel use, fuel type, and miles driven to calculate the pounds of CO_2 emitted by each vehicle
    - All Village-owned vehicles were assigned to one of five categories: Half-ton pickup truck, Large pickup truck, Heavy-duty truck, SUV, and Van.
    - Estimated fuel costs per gallon based on 24-month average fuel costs for the Midwest[33].
    - Calculated the annual fuel use, fuel cost, miles driven, and CO_2 emissions for all of the Village's vehicles, then segmented each metric for each vehicle category.
2. Surveyed the market to identify all electric vehicles available in the existing vehicle categories in the Village's fleet.
    - Limited findings to eliminate vehicles that are not yet in production or had limited market share, making them difficult for the Village to obtain.
    - Within each vehicle category, identified a cost-effective EV option that met minimum driving range requirements and had a strong fuel economy (kWh/100 miles) rating to use for opportunity analysis.
3. Surveyed the market to identify a leading gasoline or diesel-powered vehicle in the existing vehicle categories in the Village fleet that the Village would be likely to consider for purchase during its normal vehicle retirement and replacement process.
    - Identified cost and fuel economy metrics for each selected vehicle.
4. Used previous gasoline, diesel, and electricity costs to calculate the cost of fuel used to drive one mile by the selected EV and by the selected gasoline or diesel vehicle in each vehicle category.
5. Applied research by Consumer Reports[34] to estimate the average per mile maintenance costs for EVs and gasoline or diesel-powered vehicles.
   Calculated the potential cost savings per mile that the Village could obtain by purchasing an EV in place of a gasoline or diesel vehicle. If the net purchase cost of the EV exceeded the cost of the gasoline or diesel vehicle, calculated the number of miles after which the per mile cost savings from driving the EV would surpass the incrementally higher purchase of the EV.

[33] U.S. Energy Information Administration Weekly Retail Gasoline and Diesel Prices. https://www.eia.gov/dnav/pet/pet_pri_gnd_dcus_r20_a.htm

[34] Harto, C. *Electric Vehicle Ownership Costs: Chapter 2 – Maintenance.* Consumer Reports. September, 2020. (https://advocacy.consumerreports.org/wp-content/uploads/2020/09/Maintenance-Cost-White-Paper-9.24.20-1.pdf)

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U.S. Energy Information Administration Wisconsin Electricity Profile 2024. https://www.eia.gov/electricity/state/wisconsin/

U.S. Energy Information Administration 2018 Commercial Building Energy Consumption Survey (CBECS). https://www.eia.gov/consumption/commercial/

About Us

MadiSUN is the City of Madison's initiative to expand solar energy for homes and businesses. RENEW Wisconsin, a local nonprofit organization working to grow renewable energy statewide, administers the programs on behalf of the City.

In 2007, the City of Madison was named one of 25 Solar America Cities. Since receiving this designation, the City of Madison's Solar program, MadiSUN, has helped hundreds of businesses and thousands of residents learn more about solar energy, understand their solar production potential and assist with the solar purchasing process. Since 2016, the City has expanded the number of solar installations on its own buildings while supporting residents to make similar investments. In 2017, Madison earned "Gold" designation from the national SolSmart program for its work to improve permitting and solar installation processes.

RENEW Wisconsin is a nonprofit organization that promotes renewable energy in Wisconsin. We work on policies and programs that expand solar power, wind power, renewable fuels, local hydropower, building electrification, energy storage, and electric vehicles. Since 1991 we have been a champion for clean energy solutions in the Badger State.

INSTALLERS

As part of the MadiSUN solar group purchase program, you may receive pre-proposals from up to three different installers, providing you with a comprehensive range of options to consider. To streamline the decision-making process, we recommend that you seek full quotes from one to three installers whose pre-proposals align closely with your preferences and requirements.

Throughout this process, our team is here to provide support and guidance. We understand that navigating the solar market can be daunting, which is why we're committed to assisting you every step of the way. Whether you have questions about the proposals, need assistance comparing bids, or seek clarification on technical aspects, we're available to address your concerns and equip you with the tools you need to make an informed decision.

All Energy Solar

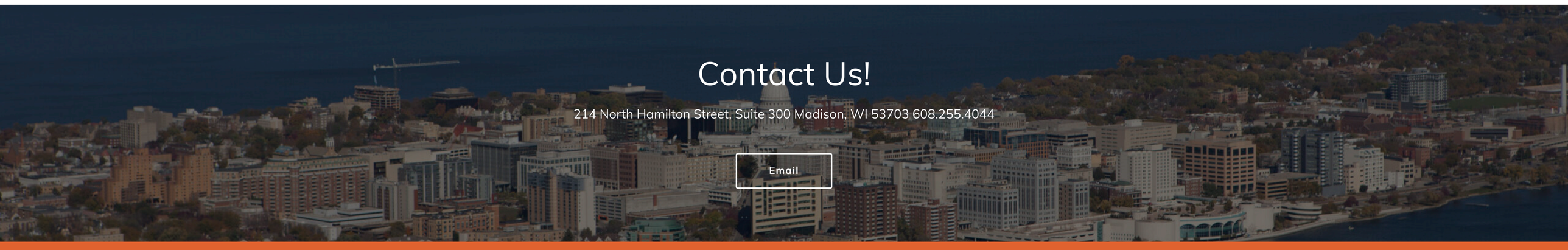
Since 2009, All Energy Solar has brought honesty, expertise, and long-term viability to every project, ensuring you get the highest quality installation and best possible experience. Their team is dedicated to making solar easy and affordable for homeowners and business owners. All Energy Solar is full-service solar solution provider with expert staff and professionals certified by the North American Board of Certified Energy Practitioners (NABCEP), including some with the highest technical certifications in the industry. Additionally, each project is handled by licensed building and electrical contractors.

Full Spectrum Solar

Full Spectrum Solar is a family owned and operated business that has been proudly serving Wisconsin for 20-years, with over 1,300 installations. Founded by brothers and UW-Madison Mechanical Engineering alumni, Burke and Mark have always strived to create a company culture that believes that the ethics of good business practice and contributing to the wellness of nature come first. The team prides themselves for how little they focus on marketing and instead believe that through great work and trust, Full Spectrum's customers become their greatest supporters as a local small business.

Midwest Solar Power

Midwest Solar Power is dedicated to transforming homes in the Madison, Wisconsin area with state-of-the-art residential solar power systems. With over a decade of experience, their team of skilled residential solar installers specializes in customized solar solutions that seamlessly integrate with each home's unique architecture and the local utility grid. With extensive backgrounds in construction, the Midwest Solar Power team takes a detail-oriented approach to ensure the finished solar array looks beautiful and performs even better, every line is followed and the final look of the system is as clean as possible.



Contact Us!

214 North Hamilton Street, Suite 300 Madison, WI 53703 608.255.4044

Email

VILLAGE OF
MOUNT HOREB

AGENDA ITEM REPORT

MEETING DATE	PREPARED BY
March 24, 2026	

AGENDA ITEM # 4.c

Sustainable Purchasing Plan Discussion

BACKGROUND

RECOMMENDATION

Watch the following link: https://www.youtube.com/watch?v=T-aE92Wc_CI

ATTACHMENTS

1. Middleton.purchasing.plan

Sustainable Purchasing

SPP IP 2025

An Implementation Plan

City of Middleton, WI

The Sustainability Committee would like to thank Staff Leaders and Committee members for the time and effort they put into reviewing and commenting on earlier versions of this implementation plan. This document reflects their valuable input and is better for it.

Table of Contents

Implementation Plan

- Overview
  - Affected Units
  - Prioritization
  - Definitions
  - Sustainability Premium
  - Guidance Sheets Overview
  - Considerations
- Prioritization Flowchart
- 5-Year Timeline
- Decision-Making Examples
- Major Purchase Checklist

Category-Specific Guidance

- Quote, Proposal, or Bid Acquisitions
- Cement and Building Materials
- Powered Equipment and Fleet Vehicles
- HVAC and Natural Gas Products
- Products that Use and Impact Water
- Chemicals, Cleaning Products, and Services
- Paper Products
- Single-Use Disposable Items
- Office Supplies

Support Materials

- Lifecycle Cost Analysis Overview
- Annual Measurement Suggestions
- Sustainable Certifications
- Additional Resources

Sustainable Purchasing Policy Implementation Plan

In 2016, Middleton voters overwhelmingly (81%) passed a referendum directing the City to take aggressive action to reduce its greenhouse gas emissions to mitigate climate change. As part of their response, the Common Council unanimously approved the City's Sustainable Purchasing Policy (SPP),[1] which directs that procurement decisions align with the City's vision for sustainability. The purpose of this plan is to assist City staff with the implementation of the SPP in order to achieve the directive put forth by Middleton's good neighbors.

Overview

Achieving sustainability is a complex and ever-evolving process that requires communication, organization, and continuous revision. To assist staff with this daunting task, an Implementation Plan (IP) has been created. The IP includes this overview, an organizational flowchart, a 5-year timeline, suggested annual measurements, guidance sheets, external resources, and the custom FALCA tool. Procurement priorities have been set, and legal considerations have been stated.

The IP should be considered a living document capable of change and reorganization necessary to meet the directives set forth by the Common Council. An annual review of the standards' efficacy is required. To that end, employees should review the 2016 referendum, related Common Council resolution, Sustainable City Plan, Sustainable Purchasing Policy, and especially this plan, all of which are available on the City website, before completing the Common Council annual report.

Affected Units

All City departments, commissions, and self-contained enterprises are bound by the SPP and this IP. Department examples include Public Works, Building Maintenance, and the Library. Commission examples include Tourism, EMS, and the Airport. The Pleasant View Golf Course is an example of a self-contained enterprise. All subsequent components of these units, as well as any city units formed in the future, are bound by the SPP and IP.

Flowchart

The flowchart prioritizes purchase categories and lists resources created to assist staff. Links are included to assist with document navigation. Should staff request additional resources or new circumstances require new methods, revisions will be reflected in the flowchart.

Prioritization

While integrating sustainable thinking into all procurement decisions is the goal of this Plan, energy-intensive products, such as fleet vehicles and HVAC systems, are extremely important. High-value and high-volume purchases, such as those procured through a quote or bid, often have considerable environmental and social impacts and, therefore, are also considered extremely important. Products that conserve water and reduce chemical use are a moderate priority. Products such as paper and office supplies are a lesser priority in terms of achieving the City's carbon and energy goals.

5-Year Timeline

A 5-year timeline has been created to manage implementation, beginning with the highest priority categories.

[1] "Resolution 2023-24 Revising the City's Sustainable Purchasing Policy," approved on April 18, 2023.

Definitions

What constitutes a major, minor, high-impact, and high-value purchase is defined below.

Major Purchase. Any item or service costing more than $25,000.

Moderate Purchase. Any item or service costing more than $5,000 and equal to or less than $25,000.

Minor Purchase. Any item or service costing $5,000 or less.

High-Impact: Any item or service that is energy-intensive, such as buildings, vehicles, and heavy equipment.

High-Value: Any item or service that is procured through a quote, proposal, or bid, or in high-volume.

Sustainability Premium

A 20% premium is allowed for all sustainable purchases. Sustainable options exceeding the cost of a similar traditional product or service by more than 20% must be approved by the department head, city administrator, or Common Council.

Decision-Making Examples

An example of the decision-making process for each category of purchase is provided. Information regarding cost trigger points and where to seek further approval is contained in each example.

Major Purchase Checklist

A checklist of sustainable purchasing steps for major, high-impact, and high-value items covering the research, decision-making, and budget request processes is provided. All major, high-impact, and high-value purchases must complete the Sustainable Purchasing Checklist, which is to be submitted with the associated budget request form.

This checklist is designed to assist staff in developing sustainable purchasing decision-making skills. Subsequent steps in the City's budgeting and procurement processes should also be followed.

Category Guidance

Specific guidance for each purchase category has been created to help staff integrate sustainable thinking into their decision-making process. An easy-to-remember maxim, general guidance, policy standards, and decision-tree questions are included for each category. This guidance is to be updated as staff discover the type of resources and amount of guidance required to meet Policy objectives.

Maxim. A maxim is a general, easy-to-remember directive to guide purchase decisions. Its purpose is to assist employees in remembering sustainability benefits when writing specifications and making procurement decisions. It is the intent of the City's Sustainable Purchasing Policy that all employees make a good-faith effort to incorporate sustainability to the maximum extent feasible.

Standard. Policy requirements are labeled as "standard(s)." A standard is a set of criteria established to regulate and manage various aspects of performance. Standards are set by governmental bodies, international organizations, or industry groups, such as the EPA, ISO, and USGBC, to ensure governments adhere to specific environmental practices and achieve sustainable development practices. A list of such organizations and related

standards is available in the External Resources section of this IP. The standards listed in the guidance sheets are part of the Sustainable Purchasing Policy, and, therefore, are important to adhere to.

Questions. A brief list of questions to consider during procurement decisions has been included. They are designed to assist staff as they integrate sustainable thinking into their decision-making process. They can also be used to create useful checklists regarding whether City Policy has been considered.

Certifications

A list of sustainable certifications, including the organization's name, logo, and website, is provided. Products and services earning these certifications are considered environmentally preferable. Please look for them.

Measurement

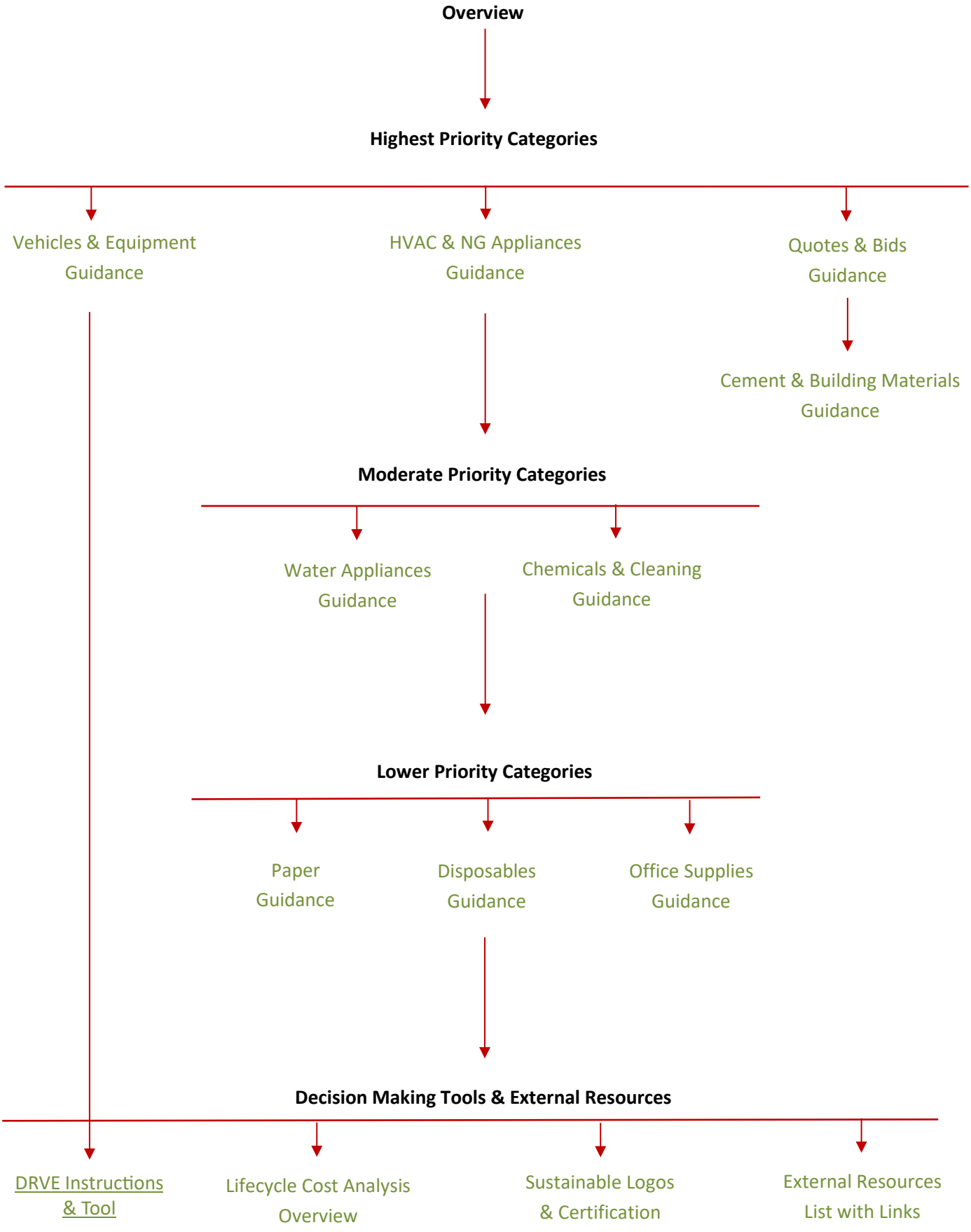
The City's decentralized purchasing process limits the ability to track data regarding procurement across all departments. Therefore, the City Administrator or their designee will gather information from Department Heads to provide an annual report to the Common Council on the City's progress in complying with the Sustainable Purchasing Policy. Measurement suggestions are included to assist the Administrator and staff in setting up a tracking system. Difficulties encountered in tracking or implementing Policy directives should be collected and included in the annual report, along with recommendations for optimizing the process.

Considerations

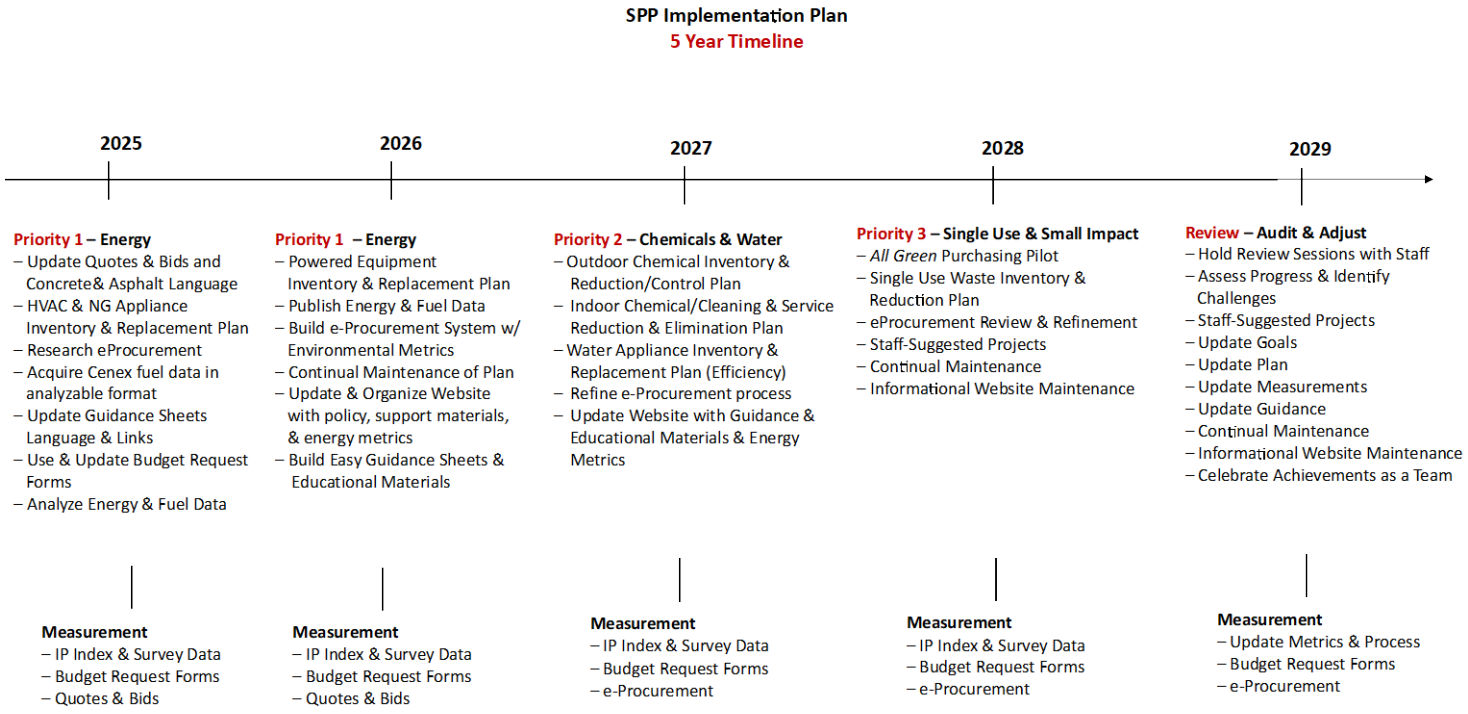
The SPP does not require procurement of goods or services that do not perform adequately for their intended use, exclude adequate competition, are not available at a reasonable price in a reasonable time period, or are of demonstrably inferior quality. The Policy also does not require anyone to conduct purchasing or procurement activities in a manner that conflicts with local, state, or federal ordinances or laws.

Thank you in advance for your attention and effort toward achieving the Sustainable Purchasing Policy goals and objectives through the application of the Implementation Plan.

Prioritization & Implementation Support Materials



Five Year Timeline



Decision-Making Examples

Every attempt to purchase the Most Sustainable Option should be made. A 20% premium over the cost of Traditional Options is allowed for all purchase levels. If the preferred Sustainable Option exceeds the cost of a Traditional Option by no more than 20% while offering significant environmental benefits, seek further guidance from the Department Leader, City Administrator, or Common Council depending on the cost category of the item or service. For clarification, numeric examples are provided below.

Minor Purchase Example ≤$5,000 w/ 20% premium

Any item or service costing $5,000 or less is considered a minor purchase. Seek guidance from the Department Leader for items that exceed the 20% cost premium.

Available Sustainable Items	Calculation	Comparison	Decision
Traditional Option = $4,500	$4,500 X 1.20% = $5,400		
	$5,400 is the upper limit for this purchase without further approval		
Sustainable Option 1 = $5,000	>	$5,000 < $5,400	> Option approved
Sustainable Option 2 = $5,400	>	$5,400 = $5,400	> Option approved
Sustainable Option 3 = $6,000	>	$6,000 > $5,400	> Option not approved, seek guidance from Department Leader

Moderate Purchase Example >$,5000 and ≤$25,000 w/ 20% premium

Any item or service costing more than $5,000 and less or equal to $25,000 is considered a moderate purchase. Seek guidance from the City Administrator for items that exceed the 20% cost premium.

Traditional Option = $15,000	$15,000 X 1.20% = $18,000		
	$18,000 is the upper limit for this purchase without further approval		
Sustainable Option 1 = $16,500	>	$16,500 < $18,000	> Purchase option approved
Sustainable Option 2 = $18,000	>	$18,000 = $18,000	> Purchase option approved
Sustainable Option 3 = $18,500	>	$18,500 > $18,000	> Purchase option not approved, seek guidance from City Administrator

Major Purchase Example >$25,000 w/ 20% premium

Any item or service costing more than $25,000 is considered a major purchase. All major purchases require the completion of the purchasing checklist and must go through the Budget Process. Services and items exceeding the 20% cost premium also should be submitted to the Finance Committee via budget request process for consideration.

Traditional Option = $15,000	$42,000 X 1.20% = $50,400		
	$50,400 is the upper limit for this purchase but still must be approved		

All major purchases must go through the Budget Process, which requires approval from the Finance Committee and Common Council.

Sustainable Option 1 = $46,800	>	$46,800 < $50,400	Seek guidance from Finance and Common Council for all purchases in this category
Sustainable Option 2 = $50,400	>	$50,400 = $50,400	>
Sustainable Option 3 = $60,200	>	$60,200 > $50,400	

Purchasing Checklist for Major, High Value, and High Impact Items

Use the following checklist to evaluate major, high-investment/high-impact purchases, such as buildings, vehicles, and HVAC systems. When cost, product availability, or other considerations make the most sustainable option untenable, use the checklist to identify possible solutions or to justify the purchase request.

Maxim | Sustainability is the Default – Justify All Else |

Research Process

- Research Product Options
- Research Relevant Codes & Laws
    - Contact Relevant Staff with Questions
        - e.g., Building Inspector, Lead Mechanic, Sustainability Coordinator
- Consider Other Projects for Potential Synergies
    - Shared/Combine/Common Use Resources
- Conduct Lifecycle Cost using FALCA or other LCC tool
- Contact Sustainability Coordinator for:
    - Assistance with LCC Tool
    - Relevant Grants & Rebates
    - Relevant City Goals/Objectives
    - Potential Code/Policy Updates/Changes
- Compare the Lifecycle Cost of Options
    - With & Without Rebates
        - *Rebates May Be Saved in Transition Fund for Future High Value/High Impact Purchases*

Decision Justification Process

- Choose Most Sustainable Option if:
    - The Cost exceeds the Traditional Option by no more than 20%
- If all Sustainable Options exceed the 20% premium but offer significant benefits, then:
    - Present options to Finance Committee & Council for further guidance
- If choosing a Less Sustainable option, then:
    - Justify the Decision. Choose all that apply.
        - All Sustainable Options cost exceeded 20% premium excessively and prohibitively
            - Provide sustainable option costs
        - Lack of Product Availability
            - Can this purchase be delayed? Yes or No – Explain
        - Lack of Necessary Infrastructure
            - Contact Sustainability Coordinator with the Specific Needs
                - Can they be addressed in a timely fashion? Yes or No – Explain
            - Contact Common Council with the Specific Needs
                - Can they be addressed in a timely fashion? Yes or No – Explain
        - Meets Required Departmental Needs or Goals
            - State Specific Needs or Goals
        - Meets Other City Goals/Objectives
            - List Specific Goal(s)

Budget Request Process

- Describe the Request in the Budget Request Form
- List Specific City Sustainability Goals/Objectives the Request Addresses
    - Contact Sustainability Coordinator for assistance
- Include this Decision Justification Checklist for all major purchases in Budget Request Form

Requests for Proposal, Quote, or Bid Procurement Guidance

Thank you for integrating sustainability measures into your purchasing habits. Your efforts help Middleton achieve more environmentally responsible, healthy, and just purchasing objectives.

High-value and high-volume purchases often have greater environmental and social impacts than low-cost purchases. Such procurements provide opportunities for the City to demonstrate its sustainability leadership. Therefore, much thought and great care must be given to such decisions.

> Wis. Stats. 62.15(1) requires that "All public construction, the estimated cost of which exceeds $25,000, shall be let by contract to the lowest responsible bidder; all other public construction shall be let as the council may direct. If the estimated cost of any public construction exceeds $5,000 but is not greater than $25,000, the Board of Public Works shall give a class 1 notice under ch. 985, of the proposed construction before the contract for the construction is executed."

Maxim | **State Minimums, Request Certifications** |

Clearly communicate environmental minimums when writing requests for proposal, quote, or bid. Consider whether third-party environmental certifications (e.g., ISO 14001 for environmental compliance) are needed for the product or service. Specify the acceptable certification(s) in the written request.

At the discretion of the City Administrator, formal solicitations other than for bids may be required to offer a discount or additional points to suppliers that offer sustainable goods and services or demonstrate their commitment to sustainability by implementing their own sustainability plans.

Standards

When requesting written proposals or quotes from vendors, the City's request must include the following statement:

> "The City of Middleton promotes sustainability within its operations, the community, and beyond. For this reason, this request for proposal (RFP)/quote (RFQ) incorporates considerations of vendor and product sustainability into the evaluation process."

Include specific minimum sustainability criteria in the RFP/RFQ, especially with regard to structures.

1. All proposed new buildings require an energy efficiency review, which must be stated in the RFQ/RFP.

Ask the vendor to submit one or more of the following types of sustainability disclosures. The vendor's response should be weighted between 1-5% of the overall proposal evaluation. The Department Head will determine the actual weight to assign to one or more of the criteria described below. Such criteria must be stated in the RFP/RFQ for fair consideration in the vendor's proposal/quote.

1. Documentation of third-party environmental certifications, also known as environmental product disclosures or declarations (EPD's).
2. Documentation of reduced energy, emissions, water, and/or waste production over time.
3. A copy of the vendor's current sustainability plan. To be accepted, the vendor's governing body must have approved the plan.

Questions

Please consider the following questions when writing Requests for Proposals/Quotes.

1. Did I include the minimum sustainability requirements in the RFP/RFQ?
2. Is a third-party environmental certification *(e.g., ISO 14001 compliance)* needed?
   a. If so, did I specify this in the RFP/RFQ?
3. Did I include the required statement listed above in the RFP?

4. Did I ask the vendor to submit one or more of the sustainability disclosures listed above?

Cement & Building Materials Purchasing Guidance

Thank you for integrating sustainability measures into your purchasing habits. Your efforts help Middleton achieve more environmentally responsible, healthy, and just purchasing objectives.

Maxim | **Use Low-Carbon & Carbon-Storing Materials** |

Building materials account for ~12% of all greenhouse gas emissions (GHGs), with concrete accounting for 8% by itself. Choosing low-carbon concrete and building materials will significantly reduce the City's GHGs, helping to achieve climate objectives. The City cannot do this alone, however. Product producers, contractors, and suppliers will need to be engaged. Therefore, please begin this process by following the standards and suggestions listed below.

Standard

1. An energy efficiency review is required for all proposed new buildings and must be stated in all RFPs/RFQs.
2. Given the technical nature of cement and many building materials, identify an engineer/public works staff member to serve as the City's embodied carbon lead.
3. Include the City's carbon reduction goals in RFPs and when requesting bids or quotes from material producers, contractors, and suppliers.
4. Request Environmental Product Declarations (EPDs) for building materials on RFPs and request product/mix-specific EPDs as available.
5. Use performance-based specifications and avoid over-design.
6. Preferentially select ready-mix and precast concrete materials with any or all of the following low-carbon strategies.
    a. Use of supplementary cementitious materials (SCBs) such as slag, fly ash, & glass pozzolan
    b. Use of blended types of cement, including but not limited to type IL and LC3
    c. Use of admixtures that reduce cement content
    d. Use of carbon sequestration technologies

Questions

Please consider the following questions when making your purchasing decisions.[2]

1. Did I include an energy efficiency audit in the RFP/RFQ?
2. Did I contact the embodied carbon lead regarding technical information for this purchase?
3. Did I include the City's carbon reduction goals in all RFPs?
4. Did I request EPDs for all concrete and building materials in RFPs?
5. Did I preference ready-mix and precast concrete materials?
    a. If no, please state your justification for this decision.

External Guidance

Please reference the guidance listed below while materials custom to Middleton are built.

[2]Questions that cannot be answered "yes" should include a justification, especially for large-cost items.

UW Article

Embodied Carbon Emissions in Construction Materials Article

Portland Studies & EPD

Low-Carbon Concrete: Sidewalks

Low-Carbon Concrete: Pole Footings

Green Purchasing: Warm-Mix Asphalt

Mobile Mix Concrete EPD

Sustainable Certifications with Logos

Fort Collins List

Santa Monica's List

Santa Monica Website & Easy Guides

Buy Green Main Website

Construction Adhesives and Sealants

Floor Coverings

Lighting – LEDs

Paint – Architectural

Toilets & Urinals

Appliances

Carpets

Fleet Vehicles and Powered Equipment Purchasing Guidance

Thank you for integrating sustainability measures into your purchasing habits. Your efforts help Middleton achieve more environmentally responsible, healthy, and just purchasing objectives.

Fleet assets are major purchases with high energy impact that require careful consideration. To assist, the Fleet Asset Life Cycle Analysis (FALCA) tool was developed to enable users to compare existing assets and potential replacement assets. See the FALCA tool document for more details.

Maxim | **Choose Future Vision over Traditional Solutions** |

In 2019, the City's annual fleet-based emissions were estimated at ~500 metric tons of CO_2. Achieving Middleton's Sustainable City Plan (SCP) greenhouse gas (GHG) emission goals cannot be accomplished with like-for-like asset replacement at the end of service life. Therefore, it is imperative that less polluting replacement options be considered and chosen whenever fiscally possible.

Standard

1. Purchase requests must include a life-cycle cost analysis (LCA), which compares cost and emissions impacts for new assets vs existing assets. The analysis is to be done using the FALCA tool or a similar tool.
2. Preference will be given to electrically driven assets to take advantage of the rapidly shrinking carbon footprint associated with grid-based electricity, and the documented cost savings associated with electric drive system maintenance. Purchase requests that do not include electric drive system options must be accompanied by a justification statement regarding why.
3. Given the City's goal of 100% renewable energy by 2040, no equipment or vehicle powered by fossil fuels with a lifespan beyond 2040 should be purchased. If no electric, biofuel, or renewable-energy-fueled option exists, then a leasing agreement ending prior to 2040 should be pursued.

Questions

Please consider the following questions when making your purchasing decisions.[3]

1. Did I conduct a LCA analysis?
2. Did I select a non-carbon-based asset?
    a. If not, what is my justification for this decision?

Tools & Instructions

Please reference the guidance listed below while materials custom to Middleton are built.

General Information

Lifecycle Costing Overview

DRVE Tool & Instructions

External Resources

UNC Understanding Lifecycle Cost Video

3:22 – Highly Recommended

AK Lifecycle Cost Analysis Guide

[3]Questions that cannot be answered "yes" should include a justification, especially for large-cost items.

HVAC Products and Reducing Natural Gas Purchasing Guidance

Thank you for integrating sustainability measures into your purchasing habits. Your efforts help Middleton achieve more environmentally responsible, healthy, and just purchasing objectives.

Maxim | **Choose Future Vision over Traditional Solutions** |

Furnaces, air conditioners, and heat pumps are critical equipment necessary to create comfortable indoor environments. Gas-powered cooking, water heating, and drying equipment also provide comfort and convenience. However, their high energy impact and carbon emissions, along with negative health impacts from indoor gas exposure, need to be considered when purchasing new equipment. Therefore, please choose the most energy-efficient option with the lowest associated carbon emissions possible.

Standard

1. When cost-equivalent equipment meets City needs, preference for electric-powered equipment.
2. When cost-equivalent equipment meets City needs, preference energy-efficient certified options, such as ENERGY STAR.
3. If the environmentally preferable product has a higher initial cost than the gas-powered product, conduct a lifecycle cost analysis (LCA). Purchase the product with the lowest lifecycle cost, rather than the lowest initial cost.

Questions

Please consider the following questions when making your purchasing decisions.[4]

2. Does the electric asset cost more than the gas option?
    a. If yes, did I conduct a life cycle analysis comparison, including the cost of carbon?
    b. If not, what is my justification for making this purchase?
3. Is the electric option certified energy-efficient?
    a. If yes, does it cost more than a comparable gas product?
4. Did I contact the sustainability coordinator regarding grants or rebates for this purchase?

External Guidance

Please reference the guidance listed below while materials custom to Middleton are built.

Santa Monica Website & Easy Guides
Buy Green Main Website
HVAC Systems

EPA Energy Star Website & Products
Energy Star Main Website
Energy-Efficient Products

Lifecycle Costing
UNC Understanding Lifecycle Cost Video
3:22 – Highly Recommended

WI LCA Guidelines for Buildings
AK Lifecycle Cost Analysis Guide

[4]Questions that cannot be answered "yes" should include a justification, especially for large-cost items.

Products that Use and Impact Water Purchasing Guidance

Thank you for integrating sustainability measures into your purchasing habits. Your efforts help Middleton achieve more environmentally responsible, healthy, and just purchasing objectives.

Maxim | **Choose Efficiency & Lifecycle Cost Over Initial Cost** |

Products that maximize energy and water efficiency, such as energy-efficient smart water softeners, can deliver improved functionality and lower total costs over the lifetime of the product. Therefore, please choose the most energy and water-efficient options when possible.

Standard

1. When cost-equivalent products meet the needs of the City, purchase products that are certified ENERGY STAR, EPEAT Silver, EPEAT Gold, and/or WaterSense.
2. If no certified product is available, or if the environmentally preferable product has a higher initial cost than a comparable conventional product, use Middleton's lifecycle cost calculator (LCC) to determine the total lifecycle cost of the product. Purchase the product with the lowest lifecycle cost, rather than the lowest initial cost.
3. For products purchased using a quote or bid process, the request for quotes or bids (RFB) should ask respondents to provide product specifications described in #2. The RFB should advise respondents that the City uses lifecycle cost analysis (LCA) for purchase decisions.
4. Guidance on the use and elimination of bottled water is listed in Guidance for Single Use Disposable Items.

Questions

Please consider the following questions when making your purchasing decisions.[5]

1. Is the product certified energy-efficient?
    a. If yes, does it cost more than a comparable conventional product?
        i. If yes, did I calculate and include a life cycle cost comparison?
    b. If not, what is my justification for making this purchase?
2. Does the product require a bid?
    a. If yes, did I remember to tell the bidder to conduct/include a LCC analysis?

External Guidance

Please reference the guidance listed below while materials custom to Middleton are built.

Santa Monica Website & Easy Guides
Buy Green Main Website
Toilets & Urinals
Appliances

Sustainable Certifications with Logos
Fort Collins List
Santa Monica's List

UNC Understanding Lifecycle Cost Video
3:22 – Highly Recommended

[5]Questions that cannot be answered "yes" should include a justification, especially for large-cost items.

Chemicals, Cleaning Products & Services Purchasing Guidance

Thank you for integrating sustainability measures into your purchasing habits. Your efforts help Middleton achieve more environmentally responsible, healthy, and just purchasing objectives.

Maxim | **Choose The Least Toxic Option** |

Cleaning products and non-cleaning chemicals frequently include toxins harmful to human health and the natural environment. In addition, some cleaners and chemicals include volatile organic compounds (VOCs) and other harmful substances that contribute to poor indoor air quality and pollute waterways. For these reasons, please choose the least-toxic option that performs adequately.

Standard – Products

Chemicals (including cleaners) purchased should meet at least one of the four standards below, if the option exists. Cleaning products must also meet any other performance and safety standards that are applicable to, or required by, their intended uses.

1. Certified under the US EPA's *Safer Choices* label.
2. Certified under one of the *Green Seal* standards.
3. Certified under one of the standards provided through the Underwriter's Laboratory (UL) *ECOLOGO* label.
4. The product lists all ingredients, and all ingredients are known to be non-toxic.

Standard – Services

1. When contracting for third-party cleaning services, specify the required use of green cleaning practices by the vendor. Green cleaning practices include using products meeting the standards described above, as well as measures taken to reduce waste, promote reuse, and access products with recycled content.

Questions

Please consider the following questions when making your purchasing decisions.[6]

1. Does the chemical meet at least 1 of the following?
    a. EPA-Certified Safer Choices
    b. Certified Green Seal
    c. Certified ECOLOGO
    d. All ingredients listed are non-toxic
2. Did I specify to the vendor the need to use green cleaning products and practices?

External Guidance

Please reference the guidance listed below while materials custom to Middleton are built.

[6]Questions that cannot be answered "yes" should include a justification, especially for large-cost items.

Santa Monica Website & Easy Guides

Buy Green Main Website
Cleaning Products
Cleaning Equipment
Carpet Cleaning
Disinfectants
Janitorial Paper and Supplies
Graffiti Removal
Hand Soap
Hand Sanitizers & Wipes
Metal Cleaners, Degreasers, & Polishers
Pest Control

Sustainable Certifications with Logos

Fort Collins List
Santa Monica's List

Cary Institute Materials

Road Salt Tips Article
Road Salt: The Problem, Solution & How To Get There

Run Time: 41:13

Paper Products Purchasing Guidance

Thank you for integrating sustainability measures into your purchasing habits. Your efforts help Middleton achieve more environmentally responsible, healthy, and just purchasing objectives.

Maxim | **Refuse, Reduce, Reuse, Recycle** |

Every department in the City purchases and/or uses paper products. Implementing *refuse*, *reduce*, *reuse* & *recycle* strategies, such as choosing electronic document management over paper and high-speed electric hand dryers over non-recycled paper towels, will help to reduce the amount of paper purchased by the City.

Standard

Office paper and paper towels must meet the following two requirements:

1. Include a minimum of 30 percent post-consumer recycled content or 30 percent post-consumer waste content.
2. Demonstrate certification by the Forest Stewardship Council (FSC). This requirement does not apply if the paper includes 100% recycled or 100% post-consumer waste content.

Questions

Please consider the following questions when making your purchasing decisions.[7]

1. Does my purchase choice reduce the amount of paper previously purchased?
2. Does my purchase include a minimum of 30% recycled content?
3. Is my purchase Forest Stewardship Council certified?

External Guidance

Please reference the guidance listed below while materials custom to Middleton are being built.

Santa Monica Website & Easy Guides
Buy Green Main Website
Letterhead, Business Cards, & Envelopes
Multi-Purpose/Copier Paper
Janitorial Paper and Supplies

Sustainable Certifications with Logos
Fort Collins List
Santa Monica's List

[7]Questions that cannot be answered "yes" should include a justification, especially for large-cost items.

Single-Use Disposable Items Purchasing Guidance

Thank you for integrating sustainability measures into your purchasing habits. Your efforts help Middleton achieve more environmentally responsible, healthy, and just purchasing objectives.

Maxim | **Re Use over Single Use** |

Single-use products contribute significantly to municipal waste and represent considerable recurring expenses for the City. Recycling disposable items reduces waste, but is still fiscally expensive and resource-intensive. For these reasons, purchasing reusable items is strongly preferred, followed by recycling.

Standards

1. Staff will make every effort to minimize the purchase and use of disposable products. Due to their high environmental impacts, special attention should be given to reducing the purchase of Styrofoam products and bottled water.
2. When required to purchase and use disposable products, staff will strive to purchase recyclable products. When recyclable disposable products are used, staff will take measures necessary to ensure that recycling receptacles are easily accessible.

Questions

Please consider the following questions when making your purchasing decisions.[8]

1. Did I minimize the purchase and use of single-use disposable products?
2. What do I need to do/purchase to avoid the use of single-use disposable products?
    a. Is this fiscally viable?
3. When I have to purchase disposable products, are they recyclable?
4. When I have to purchase disposable products, do they contain recycled material?

[8]Questions that cannot be answered "yes" should include a justification, especially for large-cost items.

Office Supplies Purchasing Guidance

Thank you for integrating sustainability measures into your purchasing habits. Your efforts help Middleton achieve more environmentally responsible, healthy, and just purchasing objectives.

Maxim | **Plants Over Petroleum** |

Conventional plastics, ink, and printer toner are derived from petroleum, a carbon-intensive fossil fuel, with toner frequently having higher volatile organic compound (VOC) content than soy-based. VOC emissions degrade indoor air quality and cause harmful human health consequences. Replacing petroleum-based products with plant-based products benefits both the environment and the health of City employees who use the products.

Standard

1. Purchase printer cartridges that use soy-based or vegetable-based toner. All printer cartridges must be properly recycled after use.
2. When purchasing office supplies, give preference to products that include post-consumer recycled content or are plant-based.

Questions

Please consider the following questions when making your purchasing decisions.[9]

1. Do the cartridges use soy-based or vegetable-based toner?
2. Does the vendor collect and recycle empty cartridges?
3. Do trashcan liners include a minimum of 10% recycled content?
4. Did I preference products that include recycled, recyclable, or plant content?

External Guidance

Please reference the guidance listed below while materials custom to Middleton are being built.

Santa Monica Website & Easy Guides
Buy Green Main Website
Computers
Food & Beverage Containers
Coffee, Tea, & Beverage Services
Letterhead, Business Cards, & Envelopes
Multi-Purpose/Copier Paper
Printing and Imaging Equipment

Sustainable Certifications with Logos
Fort Collins List
Santa Monica's List

[9]Questions that cannot be answered "yes" should include a justification, especially for large-cost items.

Lifecycle Cost Analysis Overview

Lifecycle Cost (LCC) Analysis is a comprehensive approach to financial analysis that extends beyond the conventional assessment of upfront expenses. It takes into account the entire life cycle of a product, system, or project, encompassing not only initial acquisition costs but also the operational, maintenance, and disposal costs over its entire lifespan. Environmental costs, especially those associated with climate change, such as greenhouse gas emissions (GHGs) and methane, are increasingly included in LCC analysis. By evaluating fiscal and environmental costs across this entire spectrum, LCA aims to identify the most economically viable and sustainable options.

Wisconsin Statute

According to Wisconsin statutes, the lifecycle cost of a purchase or capital construction project is an economic evaluation that *"considers all relevant costs associated with each purchase or building during its economic life, including, but not limited to, energy costs, acquisition and conversion, money, transportation, warehousing and distribution, training, operation and maintenance and disposition or resale"* (Wis. Stats. 13.48(2)(i)).

Lifecycle cost analysis must be completed prior to all major purchases and projects.

To assist in this endeavor, the DRVE tool was chosen to assist Staff with Fleet asset purchase decisions. A general LCC formula is provided below to assist with the decision-making of purchases that are not calculable using the DRVE tool.

Lifecycle Cost Formula

> LCC = Initial Costs (purchase cost, transportation fees, etc.) + (Maintenance Costs + Operating Costs + Financing Costs + Depreciation + GHG emissions costs*) x Life Cycle Years + End-of-Life Costs (disposal fees) - Salvage Value

UNC Understanding Lifecycle Cost Video
3:22 – Highly Recommended

European Commission Life-Cycle Costing Overview & Tools

AK Lifecycle Cost Analysis Guide

DRVE Tool

The DRVE tool is an Excel-based tool that compares the life cycle costs of existing fleet assets against candidate replacements. It is developed and maintained by Atlas Policy and supported by the Electrification Coalition. DRVE should be used when purchasing fleet assets.

DRVE Instructions & Calculator – Electrification Coalition

*Determining GHG emissions costs is in development

Annual Measurement Suggestions **(Priority Level listed in red)**

The following are suggestions for measurement with data collection options listed in red. In the interim, an Implementation Index developed by the *Sustainable Purchasing Research Initiative* will be used while a measurement system custom to Middleton is built.

Quotes, Proposals, & Bids Measurement (1)

Annually report the sustainability disclosures requested and documentation received for each RFP (e.g., requested disclosures 10 projects, received 5). List how the vendor's response was weighted (e.g., 2% of the decision rule) of the overall proposal evaluation. Submit received disclosures with the report.

Could be done automatically through eProcurement system

Cement & Building Measurement (1)

Annually report the embodied carbon staff lead (e.g., Engineer Smith), the number of EPDs requested and collected (e.g., requested EPDs for 10 projects, received 5), and the amount of low-carbon building materials used (e.g., 1000 lbs Type IL). Submit all EPDs received with the annual report.

Could be done tracked automatically through eProcurement system

HVAC & Natural Gas Measurement (1)

Annually report the number of gas- and electrically-powered (e.g., 7 gas furnaces & 0 electric heat pumps at Senior Center) equipment in service. Note energy-efficient certification and energy-efficient rating (1 Energy Star certified electric water heater at City Hall) if given. List plans for conversion over the next 5 years (e.g., researching electric HVAC & cooking options for the new Community Campus building).

Conduct City-wide HVAC & Appliance Inventory & Create a Reduction Plan

Power Equipment & Fleet Vehicles Measurement (1)

Annually report the total fuel consumption for individual assets (e.g., Mach-E used 1923 gallons of gas) This may require tracking individual asset's fuel usage via a card system. This data will be used to calculate associated emissions, analyze cost and emission savings, and monitor differences between assets.

Could be done if data is received in an analyzable format (i.e., not a PDF)

Airport Decarbonization Measurement (1)

Annually report the amount of natural gas used in all airport buildings, including leased hangers. Annually report aircraft fuel sales by type and amount.

Create 20 Yr Reduction Plan

Chemicals & Cleaning Measurement (2)

Annually report a list of products containing toxins, their purpose (e.g., herbicide, general cleaning), and any reduction in use from the previous year (e.g., used 10% less, requested green practices from current vendor through contract period).

If replacing a product or service, list the new option (e.g., now using EPA-certified Green Clean All Purpose Cleaner; switched to [green cleaning vendor name] at end of the contract).

Internal – Biggest change could be achieved & tracked through cleaning contracts
External – Inventory, track & plan for reduction

Water Measurement (2)

Annually report the number of water assets certified energy-efficient (e.g., 3 of 10 water heaters Energy Star certified, 1 of 8 water softeners EPEAT Silver). Note its energy-efficient rating, if given.

Could do as part of City-wide Appliance Inventory discussed above

Disposables Measurement (3)

Annually report the amount of single-use disposable items (e.g., gloves), their purpose (e.g., cleaning, medical), and any reduction in use from the previous year (e.g., used 10% less).

If replacing or eliminating a product, list the new option (e.g., switched to reusable cleaning gloves; invested in refillable water vessels).

Office Supplies Measurement (3)

Annually report the amount of fossil fuel-based items (e.g., toner) used, their purpose (e.g., printing), and any reduction in use from the previous year (e.g., used 10% less toner). Also, report the amount of recycled content (e.g., paper) used and any increase in use from the previous year (e.g., used 30% post-consumer waste paper).

If replacing or eliminating a product, list the new option (e.g., switched to planted-based soy ink toners; switched to QR codes instead of printing single-use calendars).

Paper Products Measurement (3)

Annually report the type of paper used (e.g., 30% post-consumer paper towels) and any increase in the amount of recycled content from the previous year (e.g., increased from 0% to 30% recycled content).

If replacing a product, list the new option (e.g., invested in air hand dryers)

Certifications

The following is a list of organizations that certify the sustainability of various products and services. Please look for their logos when making purchases and consult their websites for more information.

Logo	Who	Where	What It Means
	Biodegradable Products Institute https://bpiworld.org/	Plastic products	Certifies that plastic products with "biodegradable" claims will safely break down in a typical commercial composting facility.
	B Corporation[1] A non-profit dedicated to using the power of business to solve social and environmental problems. https://www.bcorporation.net/en-us/	Businesses and products from many economic sectors	The company has earned a passing score (80 out of 200) after being rated on a range of factors related to its environmental and social practices.
	Certified Humane	Animal products	Meets the Humane Farm Animal Care program standards: animals are fed a nutritious diet without antibiotics or hormones and are raised with shelter, resting areas, sufficient space, and the ability to engage in natural behaviors
	Chlorine-free Products Association http://www.chlorinefreeproducts.org/	Mostly paper products	Certifies that the product is chlorine-free.
	EcoLogo Canada's environmental product certification program https://www.ul.com/services/ecologo-certification	Consumer products	Has issued standards for over 300 product categories many of which are sold in the United States.
	Energy Star A program launched by the EPA in the 1990s to reduce energy consumption www.energystar.gov	Appliances, electronics, and lighting fixtures	Indicates that a third-party agency has tested the product for energy efficiency.
EPPnet	**Environmentally Preferable Purchasing Network (EPPNet)** https://www.nerc.org/	Environmentally preferable purchasing policies and practices	A free electronic list-serv that provides subscribers with quick access to EPP policies, specifications, vendors, pricing and performance information.
	e-Stewards https://e-stewards.org/certification-policies-and-procedures/	Mostly paper products	Certifies that recyclers of electronic equipment adhere to the highest standard of environmental responsibility and worker protection.

	Forest Stewardship Council[10] A nonprofit that advocates for the responsible care of forests. *https://fsc.org/en*	Paper and wood products	Affirms that businesses are sourcing paper and wood from suppliers that use sustainable forestry practices such as erosion control and that preserve habitats and watersheds.
	Fair Trade USA *https://www.fairtradecertified.org/*	Coffee, tea, chocolate, and rice	Certifies that imported food products were manufactured and sold under fair and safe working conditions.

Logo	Who	Where	What It Means
	Green-e Established by nonprofit Center for Resource Solutions *https://www.green-e.org/*	Renewable energy	Verifies that electricity has been generated using renewable sources such as solar and wind.
	Green Electronics Council[11] A nonprofit that brings focus to the special issues of electronics and sustainability. *https://globalelectronicscouncil.org/*	Computers, monitors, and other electronic devices	Products are awarded a gold, silver, or bronze seal based on their efficiency level and the manufacturer's commitment to reducing toxic materials and lengthening the product's life cycle.
	Greenguard A nonprofit organization *https://www.ul.com/services/ul-greenguard-certification*	Low VOC products, including flooring, paints, and furniture	Certifies products that improve indoor air quality.
	Green Seal[12] A nonprofit that has been helping organizations be greener in a real and effective way since 1989. *https://greenseal.org/splash/*	Paper, paint, restaurants, hotels, and many other goods and services	It depends on the products or service. Soap must be free of carcinogens, for instance, and hotels must have water-saving fixtures.
	Health Care Without Harm An international coalition of environmental organizations and institutions *https://noharm.org/*	Purchasing policies for medical facilities	Work is to implement ecologically sound and healthy alternatives to health care practices.
	Marine Stewardship Council[13] Develops standards for sustainable fishing and seafood traceability. *https://www.msc.org/*	Seafood	Certifies that seafood comes from fisheries that don't contribute to over fishing or environmental degradation.

[10] Certification costs money. Also, some of the council's leaders have financial ties to operations certified by the group.

[11] EPEAT's board of advisers includes manufacturers whose products have earned the seal and retailers who sell products with the seal.

[12] Certification costs money.

[13] The factors used to define a fishery as "sustainable" have been criticized for being too broad.

	National Association of State Purchasing Officials (NASPO) *https://www.naspo.org/content.cfm/%20id/Green_Guide/*	State Purchasing Officials	A Green Purchasing Resource Guide to help state officials navigating purchasing decisions.
	Rainforest Alliance[14] A nonprofit that works to conserve biodiversity and ensure sustainable livelihoods. *https://www.rainforest-alliance.org/*	Food and produce	Awarded to operations that take measurable actions to reduce water pollution, soil erosion, deforestation, and waste as well as to improve worker conditions. Using certain pesticides can disqualify a company.
	Responsible Purchasing Network (RPN) A member-based network of procurement stakeholders *www.responsiblepurchasing.org*	Procurement	An online clearinghouse of information on EPP policies, programs, purchasing guides, reports, upcoming events and other related resources.
	Scientific Certification Systems *https://www.scsglobalservices.com/?scscertified=1*	Biodegradable and "recycled content" products	Verifies green claims such as "biodegradable" or "contains recycled content."

Logo	Who	Where	What It Means
	Smart Choices Program	PepsiCo. products	Products have specific requirements related to Daily Value of a targeted nutrient, limitations for fats, cholesterol, sodium, and sugar, or are formulated to have specific health or wellness benefits, such as reduced calories.
	Sweatfree Purchasing Consortium A collaboration of US states, local governments and other public agencies *https://buysweatfree.org/*	Manufacturing	Ensure that purchases are manufactured in lawful conditions, monitors industry compliance.
	UL Environment *https://www.ul.com/services/environmental-product-declaration-certification*	Carpeting, flooring, IT equipment, and office furniture	Validates environmental claims relating to recycled content, energy and water efficiency, degradability, VOC content and more.
	U.S. Department of Agriculture[15] *https://www.usda.gov/*	Food and personal care items	The product is free of hormones, antibiotics, genetic engineering, synthetic fertilizers, and most synthetic pesticides. If a product has multiple ingredients, at least 95 percent of them must be organic.
	US Department of Agriculture's BioPreferred Program *https://www.biopreferred.gov/BioPreferred/faces/Welcome.xhtml*	Products containing plant-based material	A voluntary initiative that labels products containing plant-based material.

[14] Producers must pay for certification.

[15] Farmers can use certain synthetic pesticides and still get the seal.

	US Environmental Protection Agency (US EPA) *https://www.epa.gov/smm/comprehensive-procurement-guideline-cpg-program*	Comprehensive Procurement Guidelines	Guidelines that recommend minimum recycled-content levels and provides EPP tools such as bid specifications and policies, product lists, fact sheets, and case studies.
	Watersense[16] An EPA program that promotes water - efficient products, programs, and practices. *https://www.epa.gov/watersense*	Water-using fixtures and new homes	The EPA licenses various organizations to certify products' water efficiency. New homes must have a front yard that's on a water budget.
	Whole Trade Guarantee	Whole Foods products	Assures customers that foods imported from the developing world are being traded ethically, helping other countries increase income, crops, and business practices.

[16] The program partners with KB Home, a housing manufacturer that the EPA fined in 2008 for violating the Clean Water Act.

Additional Resources

The following is a list of sustainability-related organizations, products, and US and internationally-recognized standards. Please use these resources to learn more about the various elements of sustainable procurement.

Organization, Product, Service, or Standard	Reference Guideline or Certification
Organizations	
• University of Michigan – Sustainable Purchasing	Sustainable Purchasing | U of M Procurement (umich.edu); example procurement policy for large university
• Chartered Institute of Procurement & Supply	Sustainable Procurement | CIPS; example procurement policy for large organization
• Deskera	What is Sustainable Procurement? (deskera.com)
• EPA – Sustainable Materials Management	Sustainable Materials Management | US EPA; comprehensive resource for measurement, tools, and resources
• All Materials CA Guidelines	Certified Post-Consumer Recycled-Content; guidelines for verification
• California Reportable Product Categories	Buying Recycled Products (ca.gov); 11 reportable categories (paper/compost/glass/oil/plastic/paint/antifreeze/tires/metal)
• Bain & Company – Sustainable Procurement Policy	Sustainable Procurement Policy | Bain & Company; example procurement policy for large organization
Products	
• Paper Products	Forest Stewardship Council (FSC); responsibly sourced paper products from managed forests
• Energy-consuming electronics/equipment/facilities	ENERGY STAR; EPA program to certify higher-performing products, facilities
• All Materials (search product type)	Better Materials (gbci.org); searchable materials database
• Material Safety Data Sheet (MSDS) Search Engines	Search Results - Free SDS search (msds.com); Grainger SDS Lookup; MSDS lookups

• Road Salt	Road Salt: Tips for municipalities, highway departments, and winter maintenance staff
• Cement	Low Carbon Design; discusses how materials and design can reduce cement emissions by 40%
Standards	
• Construction Materials – Embodied Carbon	Embodied Carbon in Construction Calculator (EC3) - CarbonCure; login required, free calculator that compares construction materials
• Global Reporting Initiative (GRI), Science Based Targets Initiative (SBTI)	GRI - Home (globalreporting.org), Ambitious corporate climate action - Science Based Targets; industry leading impact reporting systems
• International Standards for Organization (ISO)	ISO - Popular standards; 9000 Quality, 14000 Environmental, 20121 Sustainable Events, 26000 Social Responsibility, 50001 Energy
• Sustainability Certification Examples	The 33 sustainability certifications you need to know | Greenbiz; comprehensive list of current certifications
• Leadership in Energy & Environmental Design (LEED) – Green Building Certification & Staff Accreditation	LEED tools | U.S. Green Building Council (usgbc.org); LEED AP Overview | Become a LEED Accredited Professional | GBES; LEED certification (buildings) & accreditation (people)

ARTICLE VIII: LANDSCAPING REQUIREMENTS

Section 17.08.01: Purpose

The purpose of this Article is to establish landscaping requirements and other regulations intended to preserve and maintain vegetation within in a manner that promotes the natural resource protection, aesthetic, and public health goals of the Village.

Sections 17.08.02 to 17.08.09: Reserved

Section 17.08.10: Applicability

(1) The requirements of this Section shall not apply retroactively to existing buildings, structures, or paved areas, including requirements for bufferyards.

(2) Any use for which site plan approval is required under Section 17.10.43 shall provide landscaping in accordance with the regulations of this Section, including the following development.

(a) New buildings and paved areas. All new buildings and paved areas shall provide landscaping per the requirements of this Article.

(b) Expansions of existing buildings or paved areas. In the case of expansions, only the new portion of the building or paved area shall provide landscaping per the requirements of this Article.

(3) Where insufficient site area remains to comply with all provisions of this Section, the Plan Commission may require compliance to the greatest extent practical.

(4) Existing Plant Materials. If existing plant material meets the requirements of this Article and will be preserved on the subject property following the completion of development, it may be counted as contributing to the landscaping requirements and worth double the landscaping point value per plant.

(5) Exemptions.

(a) Parking areas of 4 or more spaces shall meet the paved area landscaping requirements for paved areas. Any parking area of 3 or fewer spaces is exempt from the paved area landscaping requirements.

(b) All land uses in the Downtown Mixed-Use District, Parks and Recreation District, and Conservancy District are exempt from all landscaping requirements.

(c) Single family dwelling units, two family dwelling units, manufactured homes, pocket neighborhoods, and agricultural land uses are exempt from landscaping requirements.

(6) Changes to the Landscaping Plan. The Village may allow or require changes to the landscaping plan of Section 17.08.20 or the landscaping requirements of Section 17.08.30, as provided for below.

(a) The Zoning Administrator, and the Plan Commission shall have the authority to allow alterations or substitutions of one type of plant for another to the landscaping requirements as long as the altered requirements achieve an equivalent or greater level of landscaping on a site. Such alternations or substitutions may be based on the following:

1. Unusual conditions
2. The consideration of landscape architecture approaches
3. The preservation of existing trees
4. The consideration of Wisconsin native landscaping

5. When larger size plantings are provided as part of the overall landscape plan
6. When more shrubs may be appropriate versus more trees, and vice versa
7. Utility or other easements

(b) The Zoning Administrator and the Plan Commission shall have the authority to require the modification of any landscaping plan including the rearrangement of landscaping points on a site to better meet aesthetic, environmental, and stormwater management goals or objectives.

(c) The Zoning Administrator and the Plan Commission may permit less required points for a certain portion of the site (building foundations, paved areas, street frontages, and yards) to be acceptable within the Landscaping Plan if the total number of landscaping points for the entire site is met.

Sections 17.08.11 to 17.08.19: Reserved

Section 17.08.20: Landscape Plan

The applicant shall provide a digital copy of a landscaping plan. The plan shall be drawn at a reasonable scale to clearly delineate the landscape improvements and depict all required elements as specified within the Site Plan Review Section 17.10.43(e), at the discretion of the Zoning Administrator:

Sections 17.08.21 to 17.08.29 Reserved

Section 17.08.30: Landscaping Requirements

Landscaping shall be provided based on the following requirements for building foundations, paved areas, street frontages, yards, and bufferyard.

(1) **Building Foundations**. See Figure 17.08.30d.

(2) **Paved Areas**. See Figure 17.08.30d.

(a) Parking Lot Design. See also Section 17.06.06(7).

1. Interior parking lot landscaping shall be required for any parking lot with more than 30 parking spaces. Internal parking lot landscaping shall be accomplished by the installation of landscaped planter islands or other types of landscaping application approved by the Zoning Administrator.

2. Landscaped planter islands shall be required at the ends of all parking rows, driveway entrances, and at intermediate locations such that there is a maximum of 180 feet between islands. See Figure 17.08.30a.

a. Landscaped planter islands are required where 2 rows of parking stalls meet at a right angle. See Figure 17.08.30b.

Figure 17.08.30a: Requirements for Interior Landscaping

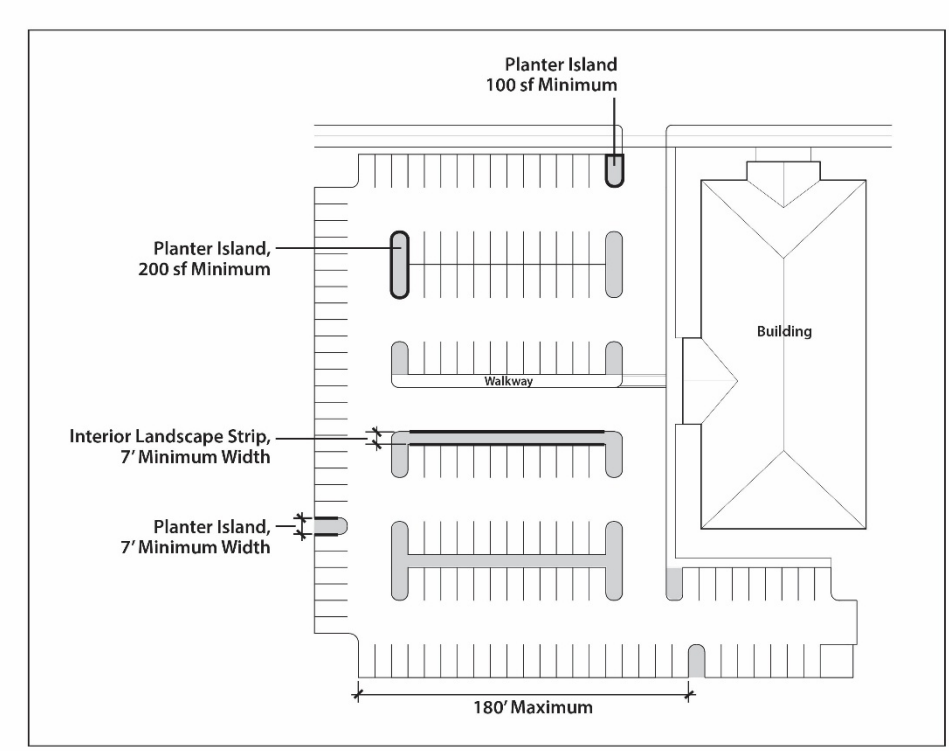
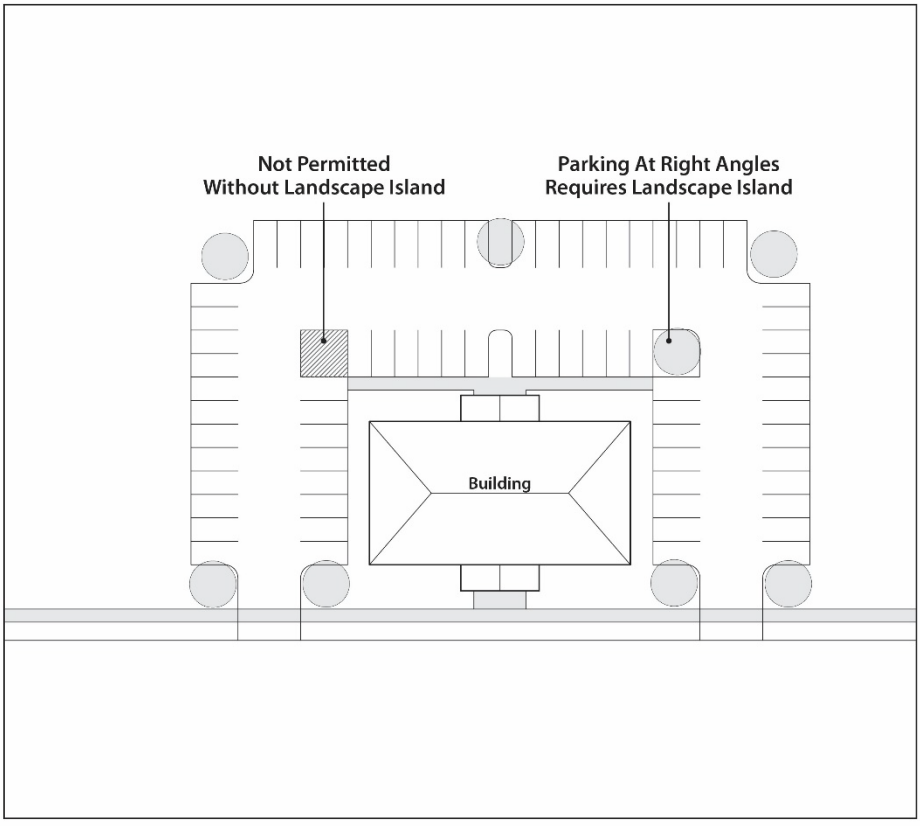
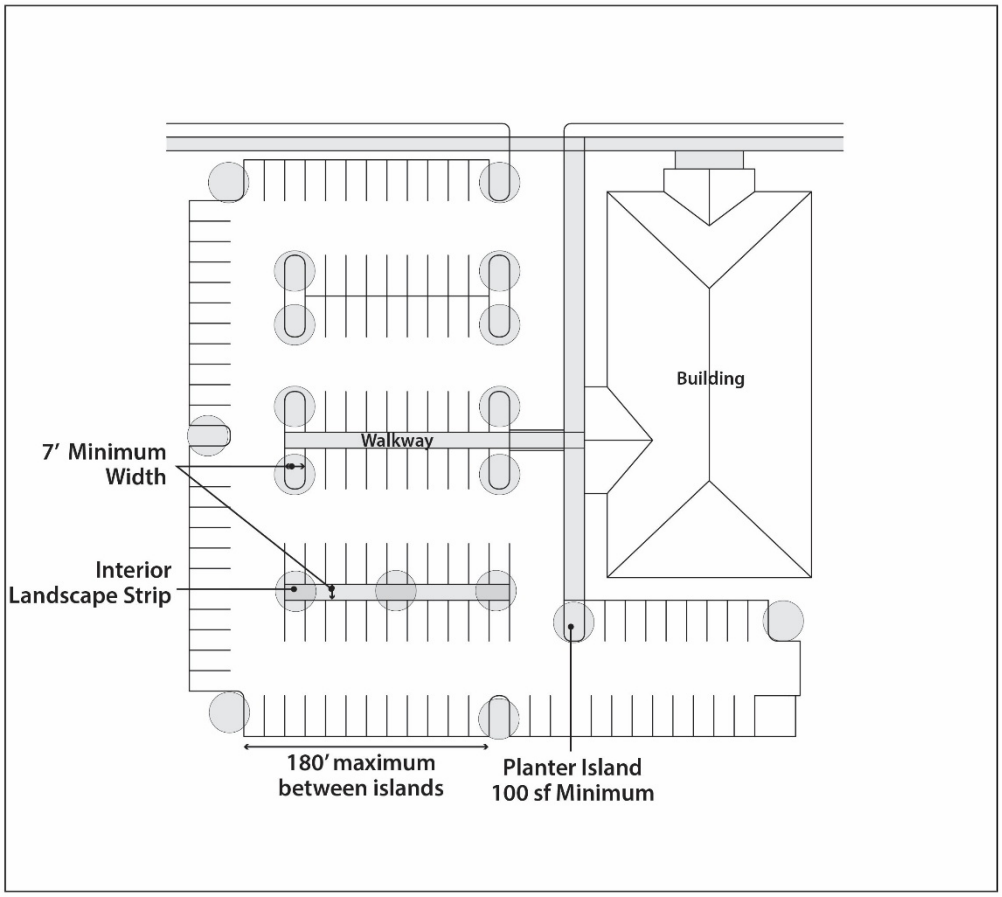


Figure 17.08.30b: Parking Rows at Right Angles



3. Each landscaped planter island shall be no less than 100 square feet in area and 7 feet in width, measured from the back of the curb. For double-parking rows, each landscaped planter island shall be no less than 200 square feet in area. The 7-foot width requirement may be reduced to accommodate the triangular shape resulting from angled parking.
   a. Exception. A continuous 7-foot wide landscape strip may be provided between double parking rows in place of landscaped planter islands.
   b. See Figure 17.08.30a, b, and c.

Figure 17.08.30c: Interior Landscaping



4. All islands shall be crowned for positive drainage, unless bio-retention methods of stormwater management are utilized per a stormwater management plan approved by the Village Engineer.
5. One shade tree shall be provided for every island and for every 40 linear feet of continuous landscape strip, except as would be in conflict with a lighting fixture or underground wet utility pipe. Medium or low trees (evergreen or deciduous) may be used to supplement deciduous shade trees in locations that may not support healthy shade tree or tall deciduous tree growth. This determination shall be made by the Zoning Administrator. For double-row parking, two shade trees or tall deciduous trees shall be required for each island. See Figure 17.08.30g for minimum planting sizes.

6. In addition to the required trees and shrubs, islands shall be planted with grass, low ground cover, shrubs, flowers, decorative stone/river rock, mulch, or a combination thereof. Mulches and decorative stone shall be installed so that the loose material will not erode, fall, be plowed, or be otherwise transported onto paved surfaces.

7. To ensure proper visibility within the parking lot, landscaping shall not impede on-site traffic visibility or the vision triangle per Section 17.06.03.

(b) Paved area expansions (see Section 17.08.10(2)) shall be subject to the same landscaping formula requirements as new paved areas (see Section 17.08.30(2)).

(3) **Street Frontages**. See Figure 17.08.30d.

(4) **Yards**. See Figure 17.08.30d.

(5) **Bufferyards**. A Bufferyard is a combination of distance and a visual buffer or barrier. It includes an area, together with the combination of plantings, berms and fencing that are required to eliminate or reduce existing or potential nuisances (e.g. dirt, litter, noise, glare, signs, and incompatible land uses, buildings, or parking areas). See Figure 17.08.30h for an example of what a bufferyard includes.

(a) The required level of bufferyard opacity is listed in Figure 17.08.30e. Detailed bufferyard requirements are listed in Figure 17.08.30f. Opacity is a quantitatively-derived measure which indicates the degree to which a particular bufferyard screens the abutting property. The required level of opacity indicated is directly related to the degree to which the potential character of development differs between different zoning districts.

(b) Bufferyards shall be located along (and within) the outer perimeter of a lot wherever 2 different zoning districts abut one another. Bufferyards shall not be required in front yards or along public street frontages.

(c) To ensure that the year-round screening objectives are fulfilled, only the plant classifications in Figure 17.08.40b listed as "Appropriate for Screening" shall count toward bufferyard point totals, unless non-screening plants are used in combination with a solid fence or a berm of 6 feet or more, in accordance with Figure 17.08.30f.

(d) Reduction of Required Bufferyard Width.

1. Intent. This Subsection is intended to allow for the reduction of the required width of a required bufferyard where the presence of permanently protected green space or similar areas provides equivalent permanent screening and separation benefits as would be provided by the otherwise required bufferyard.

2. Where the minimum permitted width for the required bufferyard is not available under the current or proposed state of development, the Planning Commission, may reduce the width required for the bufferyard to that currently available on the site, provided that the portion of the site that requires a bufferyard contains one or more of the following:

   a. Steep slopes that contain retaining walls or rip-rap

   b. Permanently undevelopable green space or other permanently protected green space designated on site plans such as a native or restored prairies or park savannas, wetlands, bodies of water, floodplains, drainageways, upland woods, stormwater basins, or other natural resource protection areas, including areas protected by covenants or conservation easements.

3. If there is permanently protected green space located on an adjoining property adjacent to the portion of a site that requires a bufferyard, the Planning Commission, may reduce the width required for the bufferyard. The reduction shall consist of no more than 1 foot for

every 3 feet of permanently protected green space on the adjoining property, as measured from the property line at a right angle into said adjacent property. There shall be no reduction in the number of landscape points required.

(e) Use of Required Bufferyard and Landscaped Areas.

1. Any and all required bufferyard or landscaped areas may be used for passive recreation activities. Said areas may contain pedestrian or bike trails provided that no required landscaping material is eliminated; the total width of the required bufferyard, or the total area of required landscaping, is maintained; and all other regulations of this Chapter are met.
2. No swimming pools, tennis courts, sports fields, golf courses, or other such similar active recreational uses shall be permitted.
3. No parking, buildings, outdoor light fixtures, and no outdoor display of storage of materials shall be permitted.
4. Paving in such areas shall be limited to that required for necessary access to or across the subject property or for a passive recreational use such as paved multiuse trails or pedestrian walkways.

(6) Determination of Landscaping Requirements.

(a) The requirements of this Article are additive to each other and any other landscaping or screening requirements in this Chapter.

(b) Landscape points used to meet one requirement (e.g. building foundations, paved areas, street frontages, yards, or bufferyards) shall not be used to meet another requirement.

(7) Measurement and Calculation.

(a) Landscaping point values shall be doubled for mature existing landscape plantings that are retained and protected with the development of the site. Existing plantings eligible for double point values shall be determined by the Zoning Administrator.

(b) In calculating the number of required landscaping points under the provisions of this Section, all areas and distances on which required calculations are based shall be rounded up to the nearest whole number of square feet or linear feet.

(c) Any partial plant derived from the required calculations of this Section (for example: 23.3 shade trees) shall be rounded up to the next whole plant (for example: 24 shade trees).

(8) Utility Easements. Landscaping materials, fences and berms located within a duly recorded utility, stormwater, or a pedestrian easement, that may have been permitted per terms of an easement encroachment agreement, shall not count toward meeting a landscaping requirement, unless authorized otherwise by the Village and the easement holder. However, the width of such areas may be counted as part of a landscaping width requirement for bufferyards.

(9) Other Green Space Areas. Green space areas not used for landscape plantings other than natural resource protection areas shall be graded and seeded or sodded with an acceptable maintainable seed mix, restored to native vegetation. Alternatively, such areas may be maintained in crop production if a principal use exists on-site and if approved by the Zoning Administrator.

Figure 17.08.30d: Landscaping Requirements for Regular Development*

	Landscaping Component**				
	Building Foundation Perimeter	Paved Areas	Street Frontage Length	Yards	Bufferyards
Type of Landscaping:	A minimum of 25 % of points on side facing public street and 50% of points on side of main entrance. Shade Trees and Tall Trees not allowed.	A minimum of 30% of points devoted to Tall Trees and 40% to Shrubs.	A minimum of 50% of points devoted to Tall Trees & 30% to Medium Trees.	Any type allowed.	See types "Appropriate for Screening" in Figure 17.08.40b
Native and Existing Plantings:	**Wisconsin native plant species identified in Figure 17.08.40a shall count as 1.5 times the point values for each planting provided as shown in Figure 17.08.30g and 17.08.40a. Any existing on-site mature tree that is protected shall count as 2 times the point values for each planting provided as shown in Figure 17.08.30g and 17.08.40a.**				
Placement of Landscaping:	Within 10 feet of building foundation.	Within 10 feet of paved area or within paved area.	Within 10 feet of street right-of-way.	Any location.	Within bufferyard, per Figure 17.08.30f
Calculation of Landscaping Points by Zoning District:	Points per 100 linear feet of building foundation	Greater of: points per 10 parking stalls or 10,000 square feet of paved area	Points per 100 feet of the longest street right-of-way frontage	Points per 1,000 sq ft of the largest floor's gross floor area	See Figure 17.08.30f
Agricultural (AG), Parking and Recreation (PR), Conservancy (CON)	20	20	20	10	Only required along certain zoning district boundaries. See Figure 17.08.40b for requirements.
Single-Family Residential (SF-1) (SF-2)	40	50	100	20	
Two-Family Residential (TF-1) and Pocket Neighborhood Residential (PN-1)	40	50	100	20	
Multi-Family Residential (MF-1) (MF-2)	40	50	100	20	
Manufactured Home Res. (MH-1)	40	50	100	20	
Institutional (INST)	40	50	100	20	
Neighborhood Mixed-Use (NMU)	40	50	100	20	
Corridor Mixed-Use (CMU)	80	50	100	20	
Downtown Mixed-Use (DMU)	0	0	0	0	
Business Park (BP)	80	50	100	20	
Light Industrial (LI)	60	50	100	20	
Heavy Industrial (HI)	30	30	50	10	
Intensive Outdoor Activity (IOA) and Adult Entertainment (AO)	60	50	100	20	

*Note: Single family dwelling units, two family dwelling units, manufactured dwelling units, pocket neighborhood, and agricultural land uses are exempt from landscaping requirements. Additionally, any parcel zoned Parks and Recreation (PR) or Conservancy (CON) are exempt from landscaping requirements.
**See Figures 10.08.30g and 10.08.40a for points associated with plant types and see Figure 17.08.70a-g for example of the point calculations used for this table.

Figure 17.08.30e: Required Bufferyard Opacity Values

Apply the required opacity value from this Figure to Figure 17.08.30f and select the most appropriate bufferyard option. Note that certain land uses, conditional uses, and planned development projects may have more stringent bufferyard requirements.		Adjacent Property Zoning District										
		AGR, PR, CON	SF-1, SF-2	TF-1	PN-1, MH-1	MF-1	MF-2, NMU, INST	DMU	CMU, BP	LI	HI	IOA, AO
Subject Property Zoning District:	Agriculture (AG) Parks and Recreation (PR) Conservancy (CON)	0										
	Single Family Residential–1 (SF-1)	0	0									
	Single Family Residential–2 (SF-2)	0	0									
	Two Family Residential-1 (TF-1)	0	0	0								
	Manufactured Home Residential (MH-1)	0	.1	.1	0							
	Pocket Neighborhood Residential (PN-1)	0	.1	.1	0							
	Multi-Family Residential–1 (MF-1)	0	.1	.1	.1	0						
	Multi-Family Residential-2 (MF-2)	0	.1	.1	.1	0	0					
	Neighborhood Mixed-Use (NMU)	0	.1	.1	.1	.1	0					
	Institutional (INST)	0	.1	.1	.1	.1	0					
	Downtown Mixed Use (DMU)	0	0	0	0	0	0	0				
	Corridor Mixed Use (CMU)	0	.3	.3	.3	.2	0	0	0			
	Business Park (BP)	0	.4	.4	.3	.3	.2	0	0			
	Light Industrial (LI)	0	.4	.4	.3	.3	.3	.3	.2	0		
	Heavy Industrial (HI)	0	.6	.6	.6	.6	.6	.3	.3	.3	0	
	Intensive Outdoor Activity (IOA)	0	.6	.6	.6	.6	.6	.4	.4	.4	0	0
	Adult Entertainment (AO)	0	.6	.6	.6	.6	.6	.4	.4	.4	0	0

Figure 17.08.30f: Detailed Bufferyard Requirements

Opacity	Required Number of Landscaping Points per 100 feet	Required Minimum Width (in feet)	Required Structure
0.05	00	10	Minimum 44-inch picket fence*
	00	10	Minimum 4-foot wood rail fence*
	40	10	N/A
	36	15	N/A
	33	20	N/A
	31	25	N/A
	29	30	N/A
0.10	00	10	Minimum 44-inch picket fence*
	38	10	Minimum 4-foot wood rail fence*
	91	10	N/A
	80	15	N/A
	73	20	N/A
	68	25	N/A
	65	30	N/A
	62	35	N/A
	00	35	Minimum 4-foot berm
0.20	00	10	Minimum 6-foot solid fence*
	84	10	Minimum 44-inch picket fence*
	133	15	Minimum 4-foot wood rail fence*
	198	15	N/A
	173	20	N/A
	158	25	N/A
	149	30	N/A
	140	35	N/A
	10	35	Minimum 4-foot berm
	135	40	N/A
	00	40	Minimum 5-foot berm
0.30	00	10	Minimum 6-foot solid fence*
	198	15	Minimum 44-inch picket fence*
	320	20	N/A
	240	20	Minimum 4-foot wood rail fence*
	276	25	N/A
	252	30	N/A
	235	35	N/A
	104	35	Minimum 4-foot berm
	223	40	N/A
	44	40	Minimum 5-foot berm
	215	45	N/A
	209	50	N/A
	00	50	Minimum 6-foot berm
0.40	53	10	Minimum 6-foot solid fence*
	330	20	Minimum 44-inch picket fence*
	440	25	N/A
	362	25	Minimum 4-foot wood rail fence*
	385	30	N/A
	349	35	N/A
	208	35	Minimum 4-foot berm
	327	40	N/A
	148	40	Minimum 5-foot berm

Opacity	Required Number of Landscaping Points per 100 feet	Required Minimum Width (in feet)	Required Structure
	310	45	N/A
	299	50	N/A
	56	50	Minimum 6-foot berm
0.50	150	10	Minimum 6-foot solid fence*
	564	30	N/A
	405	30	Minimum 44-inch picket fence*
	492	30	Minimum 4-foot wood rail fence*
	499	35	N/A
	319	35	Minimum 4-foot berm
	454	40	N/A
	261	40	Minimum 5-foot berm
	422	45	N/A
	405	50	N/A
	160	50	Minimum 6-foot berm
	388	55	N/A
	374	60	N/A
0.60	250	10	Minimum 6-foot solid fence*
	433	35	Minimum 4-foot berm
	541	35	Minimum 44-inch picket fence*
	630	35	Minimum 4-foot wood rail fence*
	626	40	N/A
	379	40	Minimum 5-foot berm
	570	45	N/A
	525	50	N/A
	270	50	Minimum 6-foot berm
	500	55	N/A
	480	60	N/A
0.80	415	30	Minimum 6-foot solid fence*
	655	40	Minimum 4-foot berm
	627	45	Minimum 5-foot berm
	873	45	Minimum 44-inch picket fence*
	910	50	N/A
	505	50	Minimum 6-foot berm
	809	50	Minimum 4-foot wood rail fence*
	804	55	N/A
	744	60	N/A
	710	65	N/A
	677	70	N/A
1.00	636	40	Minimum 8-foot solid fence
	732	50	Minimum 8-foot solid fence
	751	50	Minimum 8-foot solid fence
	867	55	Minimum 8-foot solid fence
	1091	60	Minimum 8-foot solid fence
	1136	60	Minimum 8-foot solid fence
	1083	65	Minimum 8-foot solid fence
	994	70	Minimum 8-foot solid fence
	934	75	Minimum 8-foot solid fence
	892	80	Minimum 8-foot solid fence

Notes: *Fences contributing to landscaping requirements are not permitted along street frontages for nonresidential uses. Where used in combination with plant materials to meet bufferyard requirements, a minimum of 50% of all plant materials shall be located on the

Opacity	Required Number of Landscaping Points per 100 feet	Required Minimum Width (in feet)	Required Structure

exterior side (the side away from the center of the subject property) of the fence. A building wall which does not contain doors (except those used for emergency exit) may be used to satisfy the required fence portions of the bufferyard requirements.

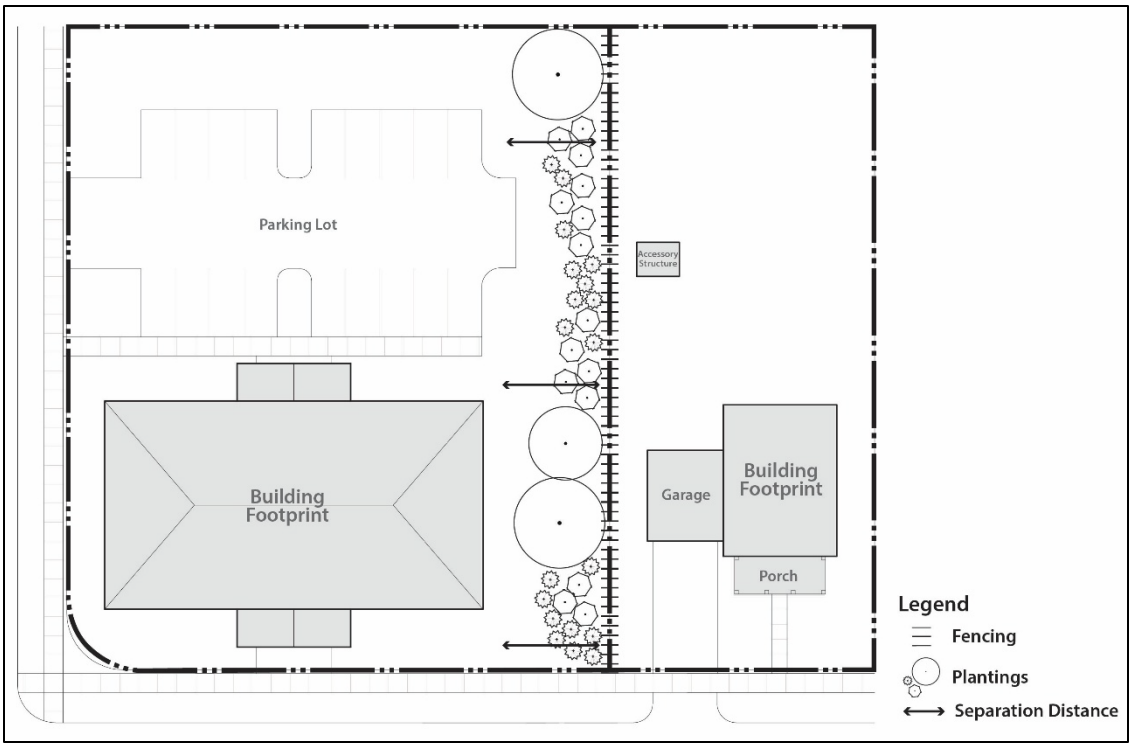
Figure 17.08.30g: Landscaping Points

Plant Category	Landscaping Points Per Plant	Minimum Permitted Installation Size
Shade Tree[1]	40	3" caliper trunk diameter
Tall Deciduous Tree[1]	30	2 ½" caliper trunk diameter
Medium Deciduous Tree[1]	15	2" caliper trunk diameter
Low Deciduous Tree[1]	10	1.5" caliper trunk diameter
Tall Evergreen Tree[1]	40	5' Tall
Medium Evergreen Tree[1]	20	4' Tall
Low Evergreen Tree[1]	12	3' Tall
Tall Deciduous Shrub	10	3' Tall
Medium Deciduous Shrub	3	2' Tall
Low Deciduous Shrub	1	1' Tall
Medium Evergreen Shrub	5	2' Tall/Wide
Low Evergreen Shrub	3	1' Tall/Wide
Perennials/Ornamental Grasses	1	1 Gallon Container
Rain Garden & Bioswale Plants	1	4-6" Container, 12" O.C. Spacing
Non-Contributory Plants	0	N/A

Source: A Guide to Selecting Landscape Plants for Wisconsin, E. R. Hasselkus, UW-Extension Publication: A2865

[1] Any Wisconsin native planting per Figure 17.08.40a is worth 1.5 times the point value as provided in this table. Any existing on-site tree that is protected with no impervious surface or grading within its canopy is worth 2 times the point value as provided in this table. If said tree dies, it shall be replaced with the comparable new tree landscaping points as provided in this table. Any multi-stem tree shall be a minimum of 1 ½ - 2 inches in diameter.

Figure 17.08.30h: Bufferyard Example



Sections 17.08.31 to 17.08.39: Reserved

Section 17.08.40: Classification of Plant Species

(1) Species suitable for landscaping and compatible with local climate and soil factors are listed in Figure 17.08.40a. This list is not intended to be exhaustive, and the Zoning Administrator, shall review proposals for the applicability of species not listed and is authorized to approve appropriate similar species. See Figure 17.08.40b for species appropriate for specific and common landscaping situations (e.g., planting under power lines), and Figure 17.08.40c for a list of species to use selectively or to avoid.

(2) Wisconsin native plant species identified below in Figure 17.08.40a shall be worth 1.5 times the point values shown below. Any existing on-site tree that is protected with no impervious surface or grading within its canopy is worth 2 times the point values shown below. Existing trees must meet or exceed the minimum installation size requirements in Figure 17.08.30g above to receive 2 times the point value.

Figure 17.08.40a: Commonly-Used and Generally Appropriate Landscaping Species**

Plant Category	Landscaping Point Value Per Plant	Common Name	Scientific Name	Native Planting Type*
Shade Trees	50	Maple	*Acer spp.*	Yes
	50	Linden (Basswood, Redmond, Little Leaf)	*Tilia spp.*	Yes
	50	Elms (hybrids)	*Ulmus spp.*	No
	50	Oak (White, Northern Red, Bur, Swamp White)	*Quercus spp.*	Yes
	50	Honey Locust (male cultivars)	*Gleditsia triacanthos var. inermis*	No
	50	Hackberry	*Celtis occidentalis*	Yes
Tall Deciduous Trees	30	Chinkapin oak	*Quercus muehlenbergii*	Yes
	50	Kentucky Coffee Tree (male cultivars)	*Gymnocladus dioicus.*	Yes
	30	Ginkgo (male cultivars)	*Ginkgo biloba*	No
	30	State Street Miyabe maple	*Acer miyabei 'Morton'*	No
Medium Deciduous Trees	15	Serviceberry	*Amelanchier**	Yes
	15	Eastern Redbud	*Cercis canadensis*	No
	15	Winter King Hawthorn	*Crataegus viridis*	No
	15	Hornbeam (Musclewood)	*Carpinus caroliniana*	Yes
	15	Ironwood/Hophornbeam	*Ostrya virginiana*	Yes
Low Deciduous Trees	10	Hazelnut	*Corylus spp.*	Yes
	10	Flowering crabapples	*Malus spp.*	No
	10	Prairie crabapple	*Malus ioensis*	Yes
	10	Japanese tree lilac	*Syringa reticulata*	No
Tall Evergreen Trees	40	Firs	*Abies spp.*	No
	40	Black Hills Spruce	*Picea glauca var. densata**	No
	40	Serbian Spruce	*Picea omorika*	No
	40	Pine	*Pinus spp. (not nigra)*	Yes
Medium Evergreen Trees	20	Juniper (Red Cedar)	*Juniperus virginiana*	Yes
	20	Arborvitae	*Thuja spp.*	Yes
	20	Eastern hemlock	*Tsuga canadensis*	Yes
Low Evergreen Trees	12	Juniper (Mountbatten)	*Juniperus chinensis*	No
Tall Deciduous Shrubs	10	Dogwood (Gray, Pagoda)	*Cornus spp.*	Yes
	10	Viburnum (Arrowwood, Warfaring Tree, Nannyberry)	*Viburnum spp.*	Yes
Medium Deciduous Shrub	3	Elderberry	*Sambucus candensis "aurea"*	No
	3	Forsythia (Virgina, Rugosa)	*Forsythia*	No
	3	Shrub Rose	*Rosa spp.*	Yes
	3	Potentilla	*Potentilla spp.*	Yes
	3	Bush Honeysuckle	*Diervilla spp.*	Yes
	3	Ninebark	*Physocarpus spp.*	No

Plant Category	Landscaping Point Value Per Plant	Common Name	Scientific Name	Native Planting Type*
	3	Azalea	*Rhododendron (Azalea) spp.*	No
	3	St. John's Wort	*Hypericum "Ames"*	Yes
	3	Summersweet Clethra	*Clethra alnifolia*	No
Low Deciduous Shrubs	1	Gro-Low Sumac	*Rhus aromatica "Gro-Low"*	Yes
Medium Evergreen Shrubs	5	Juniper (Pfitzer)	*Juniperus x pfitzeriana*	No
	5	Yew (Japanese)	*Taxus spp.*	No
Low Evergreen Shrubs	2	Boxwood	*Buxus spp.*	No
	2	Juniper (Sergeant, Creeping, Andorra)	*Juniperus spp.*	No
Ornamental Grasses	1	Prairie Dropseed	*Sporobulus heterolepsis*	Yes
	1	Little Bluestem	*Schizachyrium scoparium*	Yes
	1	Karl Foerster Feather Reed Grass	*Calamagrostis x acutiflora 'Karl Foerster'*	No
	1	Sideoats Grama	*Bouteloua curtipendula*	Yes
	1	Big Bluestem	*Andropogon gerard*	Yes
	1	*Indiangrass*	*Sorghastrum nutans*	Yes
	1	Northern Sea Oats	*Chasmanthium latifolium*	Yes
	1	Switchgrass	*Panicum virgatum*	Yes
Perennial Plantings	1	Coneflower	*Echinacea spp.*	Yes
	1	Black-Eyed Susan	*Rudbeckia*	Yes
	1	Lily	*Lilium spp.*	No
	1	Daylily	*Hemerocallis spp.*	No
	1	Columbine	*Aquilegia spp.*	Yes
	1	Aster	*Aster spp.*	Yes
	1	Blazing Star	*Liatris spp.*	Yes
	1	Peony	*Paeonia spp.*	No
	1	Pachysandra	*Pachysandra spp.*	No
	1	Stonecrops	*Sedum spp.*	Yes
	1	Astilbe	*Astilbe spp.*	No
	1	Hosta	*Hosta spp.*	No
Pollinator Perennials	2	Butterfly Weed	*Asclepias tuberosa*	Yes
	2	Smooth Blue Aster	*Aster laevis*	Yes
	2	Wild Bergamot	*Monarda fistulosa*	Yes
	2	Prairie Blazing Star	*Liatris pyconstachya*	Yes
	2	Sweet Black-Eyed Susan	*Rudbeckia subtomentosa*	Yes
	2	Smooth Penstemon	*Penstemon digitalis*	Yes
	2	Showy Goldenrod	*Solidago speciosa*	Yes
	2	Prairie Dropseed	*Sporobolus heterolepis*	Yes
	2	Prairie Onion	*Allium stellatum*	Yes
	2	Lance-leaf (sand) Coreopsis	*Coreopsis lanceolata*	Yes
	2	Wild Lupine	*Lupinus perennis*	Yes
	2	Pale Purple Coneflower	*Echinacea pallida*	Yes

Plant Category	Landscaping Point Value Per Plant	Common Name	Scientific Name	Native Planting Type*
Rain Garden Mix	2	Purple Prairie Clover	*Sporobolus heterolepis*	Yes
	2	Boneset	*Eupatorium perfoliatum*	Yes
	2	Blue Vervain	*Verbena hastata*	Yes
	2	Brown Fox Sedge	*Carex vulpinoidea*	Yes
	2	Wild Columbine	*Aquilegia canadensis*	Yes
	2	Blue Wood Aster	*Aster cordiforlium*	Yes
	2	Tell Bellflower	*Campanula americana*	Yes
	2	Cardinal Flower	*Lobelia cordiforlium*	Yes
	2	Palm Sedge	*Campanula mericana*	Yes
	2	Mountain Mint	*Pycnanthemum (native species)*	Yes
	2	Downy Wood Mint	*Blephilia ciliata*	Yes

*Wisconsin native plant species identified in this column shall be worth 1.5 times the point values identified.
**Not all species listed are suitable in all locations.

Figure 17.08.40b: Sample Plant Species Appropriate for Specific Situations

Classification	Landscaping Point Value Per Plant	Common Name	Scientific Name
Appropriate for Planting Under Power Lines	Medium Deciduous Tree	Serviceberry	*Amelanchier*
	Low Deciduous Tree	Flowering crabapple	*Malus spp.*
	Low Deciduous Tree	Japanese tree lilac	*Syringa reticulata*
	Tall Deciduous Shrub	Dogwood (Grey or Pagoda)	*Cornus*
Appropriate for Screening	Tall Evergreen Tree	Firs	*Abies spp.*
	Tall Evergreen Tree	Juniper (Red Cedar)	*Juniperus virginiana*
	Tall Evergreen Trees	Spruces	*Picea spp.*
	Tall Evergreen Trees	Pines	*Pinus spp.*
	Tall Evergreen Tree	Douglas fir	*Pseudotsuga menziesii var. glauca*
	Tall Evergreen Tree	Eastern hemlock	*Tsuga canadensis*
	Medium Evergreen Tree	Arborvitae	*Thuja occidentalis*
Salt Tolerant	Shade Tree	Kentucky Coffee Tree	*Gymnocladus dioicus*
	Shade Tree	Northern Red Oak	*Quercus rubra*
	Shade Tree	Swamp White Oak	*Quercus bicolor*
	Shade Tree	Honey Locust	*Gleditsia triacanthos*
	Shade Tree	White Oak	*Quercus alba*
	Tall Deciduous Tree	Ginkgos	*Gingko spp*
	Medium Deciduous Tree	Canadian Serviceberry	*Amelanchier canadensis*
	Low Deciduous Tree	Flowering Crabapples	*Malus spp*

Classification	Landscaping Point Value Per Plant	Common Name	Scientific Name
	Tall Deciduous Shrub	Dogwood (Gray, Pagoda)	*Cornus spp*
	Tall Deciduous Shrub	Common Lilac	*Syringa vulgaris*
	Tall Deciduous Shrub	Viburnum	*Viburnum*
	Medium Deciduous Shrub	Black Chokeberry	*Aronia melanocarpa*
	Medium Deciduous Shrub	Forsythia	*Forsythia spp*
	Low Deciduous Tree	Japanese Tree Lilac	*Syringa reticulata*
	Low Deciduous Shrub	Potentilla	*Cinquefoils*
	Low Deciduous Shrub	Azalea	*Azalea spp*
	Low Deciduous Shrub	Snowberry	*Symphoricarpos*
	Tall Deciduous Shrub	Staghorn Sumac	*Rhus typhina*
	Tall Deciduous Shrub	Mockorange	*Philadelphus*
	Medium Evergreen Shrub	Pfitzer Juniper	*Juniperus x pfitzeriana*
	Medium Evergreen Shrub	Yew (Japanese)	*Taxus spp*
	Low Evergreen Shrub	Boxwood	*Buxus spp*

Figure 17.08.40c: Prohibited Species and Species to Use Selectively

Classification	Common Name	Scientific Name	Prohibited[2] or Use Sparingly[1]	Reason
Shade Tree	Non-resistant elms	*Ulmus spp.*	Prohibited	Dutch Elm Disease
	Boxelder	*Acer negundo*	Prohibited	Spread quickly, self seed and sucker aggressively, attract bugs
	Norway Maples	*Acer platanoides*	Prohibited	Over-planted, dense, become weedy through self seeding
	Red Maples	*Acer rubrum*	Use Selectively	Not urban tolerant, prefer acidic soil
	Sugar Maples	*Acer saccharum*	Use Selectively	Not urban tolerant, best in open space settings
	Silver Maple	*Acer saccharinum*	Prohibited	Branches drop, become weedy through self seeding and aggressive root systems
Tall Deciduous Tree	Autumn Blaze Maple	*Acer x freemanni*	Prohibited	Historically over-planted
	Ash trees	*Fraxinus spp.*	Prohibited	Emerald Ash Borer
	Black Walnut	*Juglans nigra*	Prohibited	Root toxins limit other plant growth, drops messy tennis ball sized fruit
	Bradford pears	*Pyrus calleryana "bradford"*	Prohibited	Branches tend to break
	Cottonwood	*Populus deltoids, populus fremontii, or populus nigra*	Prohibited	Weak wood and aggressive root systems, seed litter

Classification	Common Name	Scientific Name	Prohibited[2] or Use Sparingly[1]	Reason
	Poplar	*Populus*	Prohibited	Aggressive root systems, short lived weedy nature
	Willow	*Salix*	Use Selectively	Weak wooded and prone to storm damage, aggressive roots
Medium Deciduous Tree	Ailanthus, Tree of Heaven	*Ailanthus altissima*	Prohibited	Invasive non-native
	European white birch	*Betula pendula*	Prohibited	Bronze Birch Borer
	White mulberry	*Morus alba*	Prohibited	Invasive non-native
Low Deciduous Tree	Purple Leaf Cherry Plum, Japanese Purple Plum	*Prunus cerasifera 'Atropurpurea'*	Use Selectively	Drops fruit
	Purple Sandcherry	*Prunus x cistena*	Use Selectively	Short-lived
	Russian Olive	*Elaegnus angustifolia*	Prohibited	Drops fruit, invasive, non-native
	Amur Maple	*Acer tataricum subsp. ginnala*	Prohibited	WisDNR restricted list
Tall Deciduous Shrub	Buckthorns	*Rhamnus cathartica*	Prohibited	Invasive, non- native
	Autumn-olive	*Elaeagnus umbellata*	Prohibited	Invasive, non- native
	Multiflora rose	*Rosa multiflora*	Prohibited	Invasive, non- native
Medium Deciduous Shrub	Japanese spirea	*Spiraea japonica*	Prohibited	Invasive (re-seed)
	Burning bush	*Euonymus alatus*	Prohibited	Invasive, non- native
	Honeysuckle	*Lonicera spp.*	Prohibited	Invasive, non- native
Low Deciduous Shrub	Japanese Barberry	*Berberis thunbergii*	Prohibited	Invasive
Tall Evergreen Tree	Austrian pine	*Pinus nigra*	Prohibited	Susceptibility to many diseases and pests

Notes:
[1] "Species to Use Sparingly" may be used as part of an overall landscaping plan, but only if the number of individual plants does not constitute more than 1 plant per 20 total plants within the same plant classification. For example, if a landscaping plan includes a total of 20 Tall Deciduous Trees, no more than 1 of those 20 trees may be classified as a "Species to Use Sparingly." The purpose of this provision is to encourage plant species diversity throughout the Village.
[2] "Prohibited Species" shall not be included as part of any landscaping plan that is subject to Village review per Section 17.10.43. The purpose of this provision is to limit the planting of species that are invasive, have invasive tendencies, or that may perpetuate or spread disease. Also see the Wisconsin Department of Natural Resources Regulated Species list for all Prohibited and Restricted Species. Additional tree species that are not recommended, should be used sparingly, or should be selectively used by location have been added to this list beyond those listed in the source above.
[3] "Species to Use Selectively" should only be used in locations that meet the plant's growing requirements, such as soil type, salt, pollution and other site impacts. These species should be used in locations that do not negatively impact surroundings.

Sections 17.08.41 to 17.08.49: Reserved

Section 17.08.50: Standards for Rain Gardens and Bioswales

(1) Definition.

(a) Rain gardens can serve both as landscaping and stormwater management features on a building site, where appropriately designed and sited. A rain garden is a shallow, depressed garden that is designed and positioned on a site to capture stormwater runoff and allow for the infiltration of water back into the ground. Rain garden plants are carefully chosen for their ability to withstand moisture extremes and potentially high concentrations of nutrients and sediments that are often found in stormwater runoff. A well designed and maintained rain garden serves as an attractive component of an overall landscaping plan for a development site.

(b) Bioswales can serve both as landscaping and stormwater management features on a building site, where appropriately designed and sited. A bioswale is a linear, vegetative stormwater runoff conveyance system that is designed to store and infiltrate water from small storm events back into the ground and direct water from heavy rain events to appropriate storm sewer inlets or other management facilities. The flow of water being conveyed through a bioswale is slowed down, allowing for municipal storm systems to more effectively manage heavier rain events and help reduce the risk of flooding on or off-site. Water being infiltrated or conveyed via a bioswale is also filtered by the vegetation within it, generally improving both ground and surface water quality.

(2) Requirements.

(a) The installation of a rain garden or bioswale may contribute to the overall stormwater management plan for a development site and count toward meeting the Village's landscaping guidelines. Rain gardens and bioswales may count for 20 points for every 20 square feet of planted area.

(b) Detailed plans shall be provided that show all proposed dimensions of the rain garden or bioswale including length, width, depth, and slope of depression; location of the rain garden or bioswale on the lot relative to hard-surfaced areas, downspouts, site topography, and drainage patterns; characteristics of the soil underlying the rain garden or bioswale; description of planting media; the species, number, and size at time of installation of all vegetation proposed for the rain garden or bioswale; and information on any other materials that will be used to line the rain garden or bioswale. The installation of a rain garden shall not change drainage patterns at the lot line. See the Wisconsin Department of Natural Resources Technical Standards for Rain Gardens for more information.

(c) Installation shall not be proposed for any of the following areas of a site:

1. Areas where there is known soil contamination unless the rain garden or bioswale is proposed to be constructed with an under-drain and an impervious basin liner;
2. Areas where the characteristics of the soil would not allow for the proper infiltration, as defined by the Wisconsin Department of Natural Resources, of water into the ground; or
3. Areas where there are expected to be high levels of foot traffic, unless such areas are protected from foot traffic.
4. Areas less than 5 feet from any building foundation with frost footings or pavement and less than 10 feet from any building foundation with a full basement.
5. Areas located within any on-site easements.

(d) The owner of the site shall record a maintenance agreement with the Village if utilized for required stormwater management on the site. Specifically: kept free of trash, weeds, debris, and dead or dying plants; any pipes associated with the rain garden or bioswale will be inspected on a

bi-annual basis and kept free of debris; and by the beginning of every spring dead plant materials will be cut back or removed.

(e) Bioswales and rain gardens shall be generously (and appropriately) vegetated with native plantings to qualify for landscaping points. If bioswales and rain gardens (or portions thereof) are lined with turf but do not include other vegetation, then they will not count toward meeting landscaping point requirements.

(f) Rain gardens and bioswales may serve as a component of an overall stormwater management plan for a site only if detailed plans, calculations, and specifications are submitted and approved by the Village Engineer. Detailed plans shall include the location and description of all other stormwater management facilities serving the site, particularly those to which any bioswale will be directed.

Sections 17.08.51 to 17.08.59: Reserved

Section 17.08.60: Installation Requirements

(1) Installation. Any and all landscaping and bufferyard material required by the provisions of this Chapter shall be installed on the subject property, in accordance with the approved site plan within 365 days of the issuance of an occupancy permit for any building on the subject property. Failure to comply with this requirement shall be subject to the fees and penalties in Sections 17.10.60 and 10.10.61.

(2) All landscaping and bufferyard areas shall be seeded with lawn or native ground cover unless such vegetation is already fully established.

(3) The exact placement of plants and structures shall be depicted on the required detailed landscaping plan submitted to the Village for its approval. Such plant and structure location shall be the decision of each property owner provided the following requirements are met:

(a) Where a combination of plant materials, berming, and fencing is used in a bufferyard, the fence and/or berm may be located toward the interior or exterior of the subject property and at least 50 percent of the required landscaping points shall be located toward the exterior of the subject property.

(b) A property owner may establish through a written agreement, recorded with the Register of Deeds that an abutting property owner agrees to provide on the immediately abutting portion of his or her land a partial or full portion of the required bufferyard, thereby relieving the developer of the responsibility of providing the entire bufferyard on his property. Responsibility for maintenance of bufferyard landscaping shall be included as part of this agreement.

(c) Under no circumstance shall landscaping or bufferyard materials be selected or located in a manner resulting in the alteration of drainage patterns at the lot line and in the creation of a safety or visibility hazard. Plant material located on any berm shall be placed to facilitate water infiltration to maximize plant survival. A flat portion of the top of the berm shall be utilized for planting, if possible.

(d) The restrictions on types of plants listed in this Article shall apply.

(4) Upon completion of the approved landscape improvements, a certification of compliance shall also be submitted by the owner or agent.

(5) Maintenance.

(a) The continual maintenance of all required landscaping and bufferyard materials shall be a requirement of this Chapter and shall be the responsibility of the owner of the property on which said materials and plants are required. This requirement shall run with the property and

shall be binding upon all future property owners. Development of any or all property following the effective date of this Chapter shall constitute an agreement by the property owner to comply with the provisions of this Section.

(b) The owner of the premises shall be responsible for the watering, maintenance, repair, and replacement of all landscaping, fences, and other landscape architectural features on the site. All planting beds shall be kept weed-free. Plant material which has died shall be replaced with equivalent vegetation within twelve months.

Sections 17.08.61 to 17.08.99: Reserved

HERITAGE
COMMUNITY
OPPORTUNITY

VILLAGE OF MOUNT HOREB
E. Main Street
Mount Horeb, WI 53572
Phone: (608) 437-6884 Fax: (608) 437-3190
Email: mhinfo@mounthorebwi.info Web: mounthorebwi.info

BICYCLE AND PEDESTRIAN SAFETY PLAN

PURPOSE

Mount Horeb is a community that values safety, sustainability, and active living. This plan outlines steps to make walking and biking safer, easier, and more enjoyable for residents of all ages. By improving our streets and pathways, we support healthier lifestyles, reduce traffic congestion, and strengthen our village's sense of connection.

ACKNOWLEDGEMENTS

Sustainability and Natural Resources Committee
Tim White, Trustee
Sarah Best, Trustee
Kerry Beheler, Citizen Representative
Scott Roethle, Citizen Representative
Elizabeth Grabe, Citizen Representative
Jack Salttes, Citizen Representative
Aaron Fendrick, Student Representative

Village Staff:
Nic Owen, Village Administrator
Doug Vierck, Police Department Chief
Steve Salerno, Mount Horeb School District Administrator

VISION STATEMENT

A Mount Horeb where everyone can comfortably walk or bike to school, parks, shops, and community destinations.

COMMUNITY CONTEXT

Mount Horeb's compact layout and existing trail system make it well-suited for active transportation, with the Military Ridge State Trail, the downtown district, and nearby school campuses serving as major activity hubs. At the same time, high traffic volumes on Main Street and Springdale Street create challenges for people walking and biking. Seasonal tourism and community events further increase foot and bicycle activity throughout the year, underscoring the need for safe, comfortable travel options for all users.

GOALS AND OBJECTIVES

The plan aims to improve safety for all travelers by enhancing visibility at key locations, upgrading crossings, and creating safe, low-stress bicycle routes. It also seeks to increase walking and biking by establishing continuous, well-connected routes, improving overall comfort and convenience, and supporting Safe Routes to School initiatives. Finally, the plan promotes sustainability and community health by reducing dependence on vehicles, encouraging active transportation, and advancing broader climate and sustainability goals.

BICYCLE NETWORK & DESIGNATED ROUTES

To build a safer, more connected village, Mount Horeb will establish designated bicycle routes that help riders travel comfortably across town without relying on high-traffic streets.

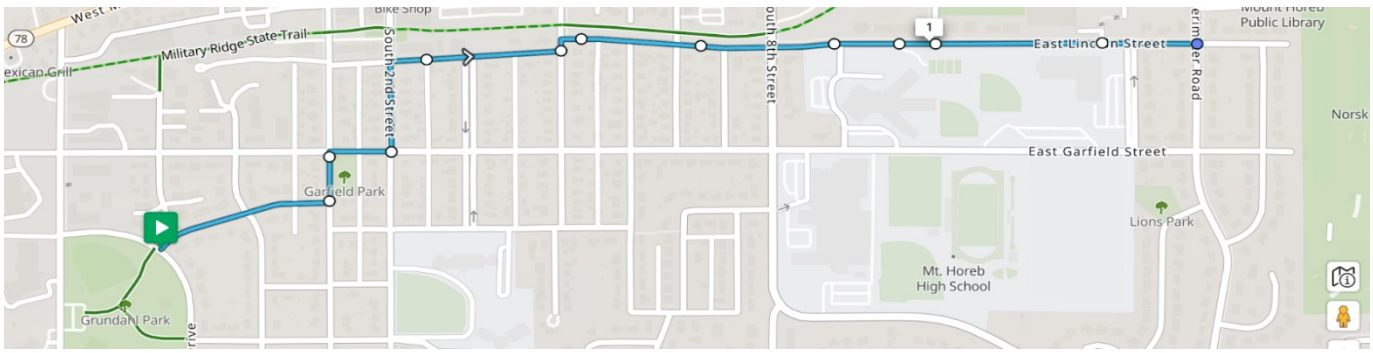
East–West Route: Connecting Parks, Schools, Downtown, and the library
The east-west bike corridor connects key community destinations across Mount Horeb, providing a safe and direct route for students, families, and residents.

ROUTE (West to East): Follow E Henry Street, turn left onto S 1st Street**,** turn right onto E Garfield Street**,** turn left onto S 2nd Street**,** turn right onto E Lincoln Street.

STATISTICS: 1.3 Miles | +87 FT / -36 FT Elevation Change (West to East)

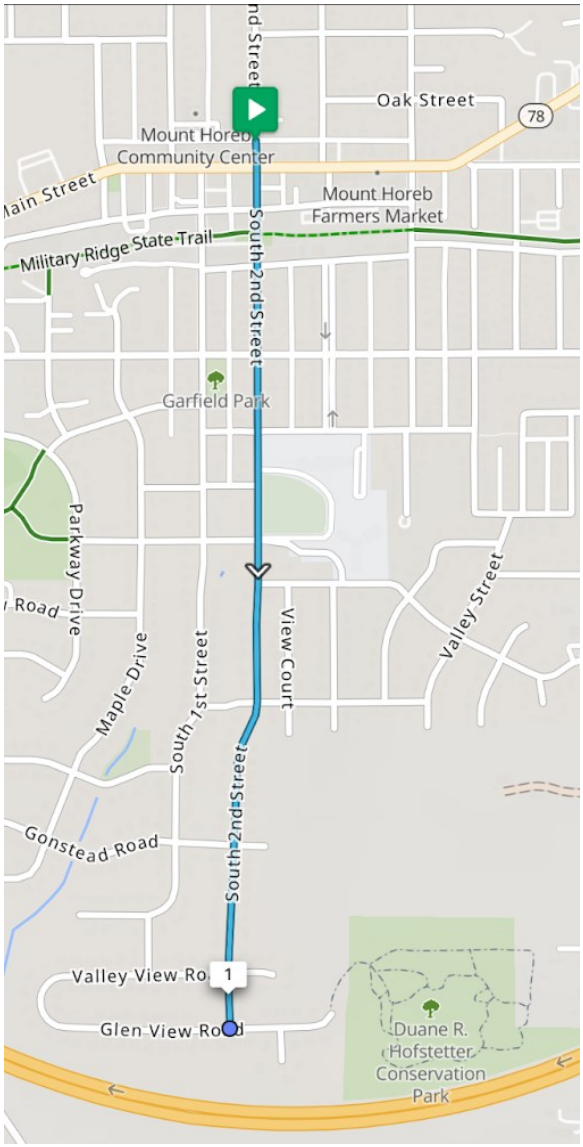
POINTS OF INTEREST:

- **Western Terminus**: Grundahl Park.
- Garfield Park
- Downtown Mount Horeb Business District
- Mount Horeb Middle School
- Viking Park (Tennis/Pickleball Courts)
- Liberty Park
- Mount Horeb Intermediate School
- **Eastern Terminus**: Mount Horeb Public Library



North–South Route: Connecting Downtown, Primary Center and South Mount Horeb

The north-south bike corridor connects the downtown district with the primary center and Hofstetter Conservation Park.



ROUTE (North to South):

- **Northern Terminus**: 109-111 N 2nd Street
- **Southern Terminus**: S 2nd Street & Glen View Rd

STATISTICS:

1 Mile | +26 FT / -105 FT Elevation Change (North to South)

POINTS OF INTEREST:

- **Northern Terminus**: Downtown Mount Horeb Business District
- Garfield Park
- Mount Horeb Primary Center
- **Southern Terminus**: Hofstetter Conservation Park

PEDESTRIAN IMPROVEMENTS – MAIN STREET CROSSWALKS

Tourism plays a significant role in Mount Horeb's local economy. Visitors are drawn to the Village to experience the Trollway, local shops, restaurants, and community events. As a result, downtown Main Street functions not only as a transportation corridor, but also as a pedestrian-oriented destination.

Many visitors are unfamiliar with downtown parking locations and traffic patterns. This can create confusion and increase the likelihood of mid-block crossings or unsafe crossing attempts along Main Street. The situation is further intensified during the weekly Farmers Market, which is located along this corridor and coincides with evening peak traffic volumes. During these periods, both pedestrian and vehicle activity increase substantially, elevating the potential for conflict.

High-visibility crosswalk markings are a proven safety countermeasure that can significantly improve pedestrian conspicuity and driver yielding behavior. According to the Federal Highway Administration (FHWA), enhanced crosswalk visibility treatments have been shown to reduce pedestrian injury crashes by up to 40 percent. Implementing high-visibility crosswalks in key downtown locations would support tourism, improve pedestrian comfort, and enhance overall safety for residents and visitors alike.

For additional information, see the FHWA Proven Safety Countermeasure: Crosswalk Visibility Enhancements.
https://highways.dot.gov/safety/proven-safety-countermeasures/crosswalk-visibility-enhancements

PEDESTRIAN IMPROVEMENTS – MAJOR ROUNDABOUTS

Two of Mount Horeb's highest-volume roundabouts, 8th Street & Springdale and Perimeter Road & Springdale, serve as critical gateways into the community. While roundabouts reduce severe vehicle crashes overall, pedestrians can have trouble finding safe gaps, maintaining visibility, and navigating crossings due to continuous vehicle flows and driver yielding behavior. National research identifies several treatments that make roundabout crossings safer and more predictable for people walking and biking. Below are improvements Mount Horeb can explore.

High-Visibility Crosswalk Markings
Install ladder-style or continental-style crosswalk markings to increase pedestrian conspicuity. FHWA highlights crosswalk visibility enhancements as a proven countermeasure for reducing pedestrian conflicts.

Advance Yield Lines and "Yield to Pedestrians" Signs
Placing yield lines farther upstream gives drivers more reaction time and improves yielding rates, which is especially important at roundabout entries where drivers are scanning for circulating traffic. FHWA guidance emphasizes clear signing and markings as key components of pedestrian-friendly roundabouts

Targeted Pedestrian-Scale Lighting
FHWA lists improved lighting as a cross-cutting safety countermeasure for pedestrian visibility, especially in locations where vehicle speeds are variable and drivers enter with limited sight distance.
Lighting should be placed directly at crosswalks and splitter islands to illuminate pedestrians waiting to cross and to help drivers detect them earlier at night or in low-light conditions.
Illuminated Signage or Active Warning Units
For approaches with limited visibility, active signs (LED-bordered pedestrian signs) are an option supported in pedestrian crossing installation guidelines

PEDESTRIAN IMPROVEMENTS: SIDEWALK NETWORK ENHANCEMENTS

A safe, accessible, and continuous sidewalk network is essential to supporting walking in Mount Horeb, particularly around schools, parks, and other key community destinations. Enhancing sidewalk connectivity not only improves safety and comfort for all users but also strengthens the community's broader goals of encouraging active transportation and reducing reliance on vehicles.

Filling Gaps Near Schools, Parks, and Neighborhoods
Mount Horeb's pedestrian network includes several areas where sidewalk gaps interrupt an otherwise walkable environment. These discontinuities can discourage walking, especially for children, older adults, and people with limited mobility. As part of the Pedestrian and Bicycle Safety Plan, the Village will identify and map all sidewalk gaps within a half-mile radius of schools, parks, the public library, and high-use community facilities. Priority will be given to locations where missing sidewalk segments force pedestrians into the roadway or require unsafe crossings.

PEDESTRIAN IMPROVEMENT: PAVING MILITARY RIDGE STATE TRAIL

Paving a portion of the Military Ridge State Trail within the Village of Mount Horeb is possible, but it requires close coordination with the Wisconsin DNR, because the corridor is a state trail with an existing master-planned purpose, established surface (predominantly crushed limestone), and winter shared-use considerations (including snowmobiling on the limestone segments). Today only about 2.5 miles are asphalt (primarily near Fitchburg/Verona), with the remainder in limestone, and snowmobiles are allowed only on the limestone sections—not on the paved segment between Fitchburg and Verona. Any proposal to pave inside the village would therefore need to address how winter uses (snowmobile routing, ski/snowshoe use) would be accommodated if a segment were converted to asphalt.
A practical roadmap is to follow the Verona model. In 2025, the City of Verona approved a Land Use Agreement with the DNR to replace bridges and pave an intown stretch of the trail, with the city taking on design, construction, and defined maintenance responsibilities for the paved surface while the DNR retained corridor oversight. Verona's public project page shows the agreement was signed in May 2025, design advanced through 2026, and asphalt paving scheduled for 2027; meeting notes indicate the city coordinated sequence (bridges first, then paving) and long-term maintenance terms with the DNR. For Mount Horeb, a similar pathway would likely include: (1) early

discussions with the DNR property manager to confirm master plan consistency and scope; (2) a concept plan that maps limits, cross-sections, winter use management (e.g., alternate snowmobile routing or seasonal agreements), and access points; (3) a draft land use/operating agreement defining roles (construction, snow/ice control, surface maintenance, vegetation management), term, and liability; (4) environmental/permit review as needed; and (5) local funding commitments and public involvement. The DNR's own information page points to Property Master Plans as the touchstone for proposed changes, while Verona's project documentation provides a recent, local precedent for the agreement structure, schedule, and deliverables.

Links:
https://www.veronawi.gov/918/Military-Ridge-State-Trail-Paving-Projec
https://dnr.wisconsin.gov/topic/parks/militaryridge/info

PROGRAMS AND EDUCATION

Engineering improvements alone are not sufficient to achieve lasting pedestrian and bicycle safety outcomes. Education, encouragement, and targeted enforcement play a critical role in shaping behavior, improving awareness, and building a culture of shared responsibility on Mount Horeb's streets. The following programs and initiatives are recommended to support a comprehensive, community-wide safety strategy.

SAFE ROUTES TO SCHOOL

The Village will continue to support and expand Safe Routes to School initiatives that promote safe, active transportation for students and families. Key actions include:

- Hosting annual Bike to School Day events to encourage participation and raise awareness
- Providing student and parent safety education focused on safe walking and biking practices
- Partnering with school administrators to identify and address safety concerns along primary student travel routes

These efforts help establish safe travel habits early and reinforce the importance of pedestrian and bicycle safety within the broader community.

COMMUNITY EDUCATION

Ongoing public education is essential to increasing driver awareness and improving compliance with pedestrian and bicycle laws. Recommended initiatives include:

- Driver awareness campaigns emphasizing yielding requirements and speed compliance
- Crosswalk safety campaigns highlighting proper driver and pedestrian behavior
- Bicycle skills workshops for youth and adults to build confidence and safe riding practices
- Helmet distribution partnerships to improve access to properly fitted safety equipment
- Public outreach should be coordinated seasonally and aligned with high-traffic events, including National Bike Month and community festivals.

ENFORCEMENT

Targeted, data-informed enforcement supports engineering and education efforts by reinforcing safe behaviors. In collaboration with the Mount Horeb Police Department, the Village will prioritize:

- Targeted speed enforcement in school zones and high-pedestrian corridors
- Crosswalk yield enforcement operations downtown and other high-activity areas
- Ongoing coordination between enforcement personnel and safety committees to address emerging concerns
- Strategic enforcement efforts will focus on improving compliance, reducing risky behavior, and enhancing safety for all roadway users.

DATA COLLECTION AND EVALUATION

The Village will establish an ongoing collaboration between the Mount Horeb Police Department, Public Safety Committee and the Sustainability and Natural Resources Committee to conduct an annual review of pedestrian and bicycle safety conditions. This review will include:

- Analysis of reported crash data involving pedestrians and bicyclists
- Collection of pedestrian and bicycle counts at key corridors and crossings
- Community engagement to assess perceived safety, barriers, and areas of concern

Conducting this evaluation on an annual basis will allow the Village to monitor trends, identify emerging issues, and measure the effectiveness of implemented safety improvements. The review will take place each May to align with National Bike Month, reinforcing the Village's commitment to active transportation and providing an opportunity to share findings with the community.

FUNDING OPPORTUNITIES

The most recent funding cycles for the Wisconsin Transportation Alternatives Program (TAP) and the federal Safe Streets and Roads for All (SS4A) program have now concluded, meaning new applications cannot be submitted until future rounds are announced. Wisconsin's TAP 2026–2030 solicitation closed on **October 31, 2025**, with project awards announced in mid-2026, and the program webpage confirms that this solicitation cycle is now closed. Similarly, the SS4A program's **FY2025 Notice of Funding Opportunity** closed on **June 26, 2025**, and no subsequent application window has yet opened; federal resources note that FY2026 guidance is expected but not yet released as of early 2026. As a result, while these programs remain important long-term funding avenues for pedestrian and bicycle safety improvements, Mount Horeb will need to monitor forthcoming federal and state announcements to determine when the next opportunities for competitive applications will become available.

Local capital improvement funds remain an essential complement to state and federal funding. These funds can be used to cover design and engineering costs, provide the required match for grant programs, or deliver smaller but high-impact safety projects such as upgraded lighting, signage, curb extensions, and crosswalk enhancements. By allocating local dollars strategically, Mount Horeb can accelerate priority improvements, remain competitive when applying for external grants, and ensure continuous progress on safety goals even when grant cycles fluctuate.

Finally, public–private partnerships (P3s) present opportunities to collaborate with local businesses, developers, and institutions to support pedestrian and bicycle safety improvements. P3s allow communities to tap into private-sector capital, expertise, and innovation, while sharing risks and responsibilities across sectors. These partnerships can be applied to fund segments of shared-use paths, construct high-amenity bicycle parking, enhance streetscapes, or integrate active-transportation improvements into new developments. Successful P3s have been used across the United States to deliver transportation projects more efficiently, demonstrating the value of early coordination, shared objectives, and creative financing structures. For Mount Horeb, such partnerships could bolster limited public resources while enhancing placemaking and accessibility in key activity centers.

IMPLEMENTATION: 2026 PRIORITIES

Develop Education Plan
In 2026, the Village will lead the creation of a coordinated education and encouragement strategy focused on safe walking and biking. This effort will be a collaboration between the Mount Horeb Police Department, Mount Horeb Area Schools, the Sustainability and Natural Resources Committee, and the Recreation Department. The plan will outline appropriate school programs, community training resources, and public awareness campaigns aimed at promoting safe travel behavior.

Enhance Public Access to Walking and Biking Information
The Village website will be updated to provide clear, easy access to pedestrian and bicycle planning resources. These additions will help residents identify safe routes, understand local infrastructure, and stay informed about ongoing improvements. Web links will include:
Low-Stress Route Finder
https://cityofmadison.maps.arcgis.com/apps/webappviewer/index.html?id=cb7a2e78477044c19bf6a5eaa1820e38
Dane County Bike Map
https://www.cityofmadison.com/mpo/maps-data/bike-maps/dane-county-bike-map
Pedestrian Facilities Map
https://cityofmadison.maps.arcgis.com/apps/webappviewer/index.html?id=054c8e1fc0754301909c7536b8f84dd9

These resources will support residents in choosing safe, comfortable travel routes and will increase visibility of active-transportation options.

Conduct Pedestrian Safety Audit of Major Roundabouts
Conduct a roundabout pedestrian safety audit at 8th Street & Springdale and Perimeter Road & Springdale Roundabouts

- Document existing lighting conditions
- Measure driver yielding behavior at each crosswalk
- Assess sight lines and landscaping impacts
- Determine appropriate device placement (e.g., RRFBs vs. PHBs)

IMPLEMENTATION: 2027 - 2029 PRIORITIES

Install Bicycle Network Wayfinding and Crossing Signage
To improve navigation and support a low-stress transportation network, new wayfinding signs and bicycle/pedestrian crossing signs will be added along designated routes. This will enhance safety by clearly directing riders and increasing driver awareness at key conflict points.

Add Bicycle Racks at Key Destinations
As demand and usage grow, the Village will install secure bicycle parking at major community destinations such as parks, civic buildings, business areas, and trail access points.

2nd Street Reconstruction (2027)
Planned reconstruction of 2nd Street in 2027 offers an opportunity to integrate bicycle infrastructure. The Village should install bicycle lane pavement markings from Lincoln Street to Carver Street, improving north–south connectivity and safety.

Development of Main Street Pedestrian Improvement Plan
A dedicated planning effort will outline strategies to enhance pedestrian access, safety, and comfort along Main Street. This may include crosswalk upgrades, curb extensions, lighting improvements, and sidewalk enhancements.

Develop Village Sidewalk Improvement Plan
A systematic sidewalk assessment and improvement program will be created to identify gaps, ADA deficiencies, and priority repair locations. This plan will guide annual investments and ensure equitable, accessible routes throughout the Village.

Explore Main Street Traffic Signal Upgrades
The Village will evaluate the potential for upgrading a Main Street traffic signal to include an **Inductive Loop Sensor** or other bicycle-responsive detection technology. Such upgrades would improve signal timing responsiveness for cyclists and support safe, predictable crossings.

CONCLUSION

By investing in safe, connected walking and biking routes - Mount Horeb can create a healthier, more sustainable, and more welcoming community. This plan provides a roadmap for improvements that support residents of all ages and abilities.

VILLAGE OF
MOUNT HOREB

AGENDA ITEM REPORT

MEETING DATE	PREPARED BY
March 24, 2026	

AGENDA ITEM # 4.g

Bird City Update

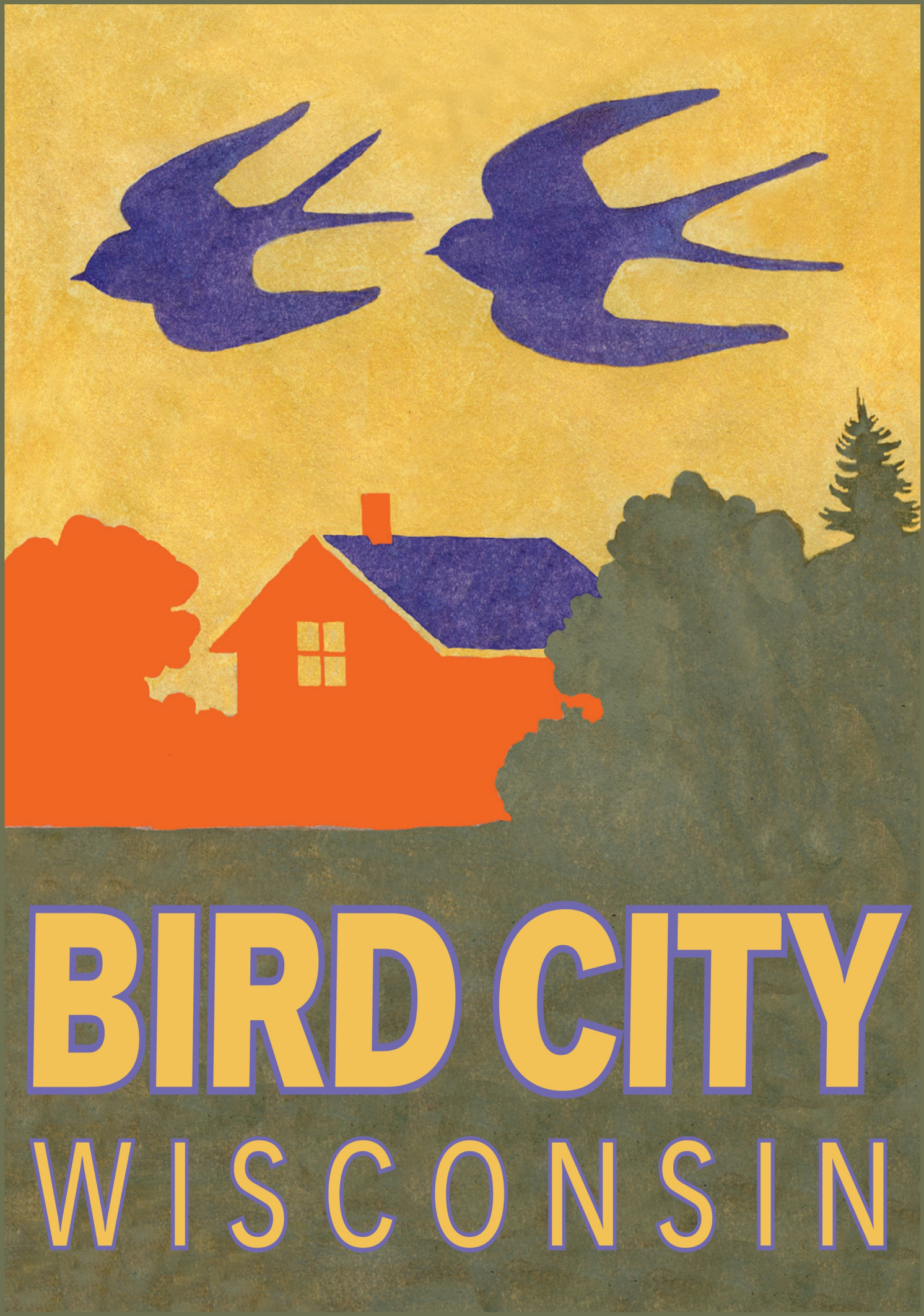
BACKGROUND

RECOMMENDATION

a photo of a Red headed woodpecker taken by a local bird photographer: Click Here https://flic.kr/p/2omPpUT

ATTACHMENTS

1. Bird City Logo - high res
2. Notes for SNR 24 March 2026 version 2 re Mt H Bird City updates and ideas


BIRD CITY
WISCONSIN

Notes for SNR 24 March 2026 re Mt H Bird City updates and ideas

1. DRAFT Intro paragraph for Mount Horeb Bird City public page. SNR approve Thank you!

Known as the gateway to Wisconsin's Driftless Region, the Village of Mount Horeb is a natural haven for birding and outdoor recreation. Surrounded by rolling hills, native prairies, woodlands, and waterways that are part of the ancestral territory of the Ho-Chunk Nation, the Mount Horeb area provides diverse habitats that support a wide variety of bird species throughout the year.

Visitors can explore miles of scenic trails at Blue Mound State Park, Stewart Lake County Park, and Donald County Park; bike the Military Ridge State Trail; or enjoy canoeing, kayaking, and fishing on Stewart Lake, all while taking in the sights and sounds of Wisconsin's native birds.

Beyond the trails, you'll find a vibrant and welcoming community known as the Troll Capital of the World! Hand-carved Norwegian heritage trolls line Main Street, each with its own unique story, adding a touch of whimsy to your visit as you explore all that Mount Horeb has to offer.

2**. We can use a Mt H Village logo or a photo of our Village entrance sign? Choose which one? Do we have high res images of either?**

3. Status: Working on the public page Kerry B.

Community page admins Liz Grabe for Green Team, Allison Plumer for Chamber of Commerce, Kerry B for SNR, Tim White for Village, future Village Admin TBD

4. **Kerry B updating our application:**

- Status of lighting ordinance?
- Status of landscape standards?

- No High Flyer designation as per Director Kelsey Bell 13 March 2026:

"As you noted, Mount Horeb had 21 actions approved, across the 4 categories, but the number of actions is not equivalent to the points, as some actions are worth 2 points. So Mount Horeb's points are actually 25. **However, to reach High Flyer, we also require communities to have completed action 2.1.4 (*Prohibit Trap, Neuter and Release (TNR) programs for feral or free roaming cats. Do not actively subsidize or condone outdoor cat colonies, and prohibit the formation, feeding, and support of outdoor cat colonies*). For this particular action we would be looking for something in your community's ordinances that specifically states that TNR programs are prohibited, OR that people cannot own/harbor cats that run-at-large. Harboring is an important inclusion because it would cover any cat colonies where someone is feeding the feral cats. A note about prohibiting abandonment and/or release of cats would strengthen the ordinance, but 1 of the first 2 ordinances I listed is a must. If Mount Horeb meets those requirements, please add them to your application and I will update as necessary."**

5. **We are planning an expanded daytime award presentation in April.**

Location Options 1. at Stewart Lake County Park, hosted by Village and SNR
2. at Culver's Mount Horeb, hosted by Mt H Rotary and the Green Team.

Keep in mind the Bird City designation is a municipal Mt Horeb designation, so ultimate responsibility lies with the Village of Mount Horeb muni government.

Community orgs are most welcome to support and sponsor events! Suggest orgs also invited include the Mound Vue Garden Club, Mt H Library, Mt H Chamber of Commerce, Community Garden, Dane County Parks, Friends of Stewart Park. All will be involved with Bird City in some way.
Any others?
Media coverage from the Mount Horeb Mail.

WI Bird City Director is available and excited for an outdoor presentation at Stewart Lake. She is available April 13, 14, 16, 17, 27, 29, 30.
Chamber Director is available 4/13 12-3, 4/14 9-5, 4/16 11-5, 4/17 9-4, 4/27 9-5, 4/29 12-5

What is our (SNR members and Village Board members) availability on these April dates for 1-2 hours, likely after 10 am as Bird City Director is traveling from central Wisconsin?

Discussion, details, suggestions?

6. **Ideas for public events?**

7. **Ideas for Education Events, especially involving Youth Groups?** Please send ideas and contacts to Kerry SNR and or Liz Green Team

8. **Help! Can we print:**
- posters of the Bird City logo for public events?
- Mount Horeb Welcome Back Birds official proclamation
Ie do we have the budget and who can color print these?
Mount to heavy card stock. Have one for the Library for Welcome Back Birds Day display, have one for Mound Vue Garden Club plant sale 9 May, have one at Jada's Greenhouse for public viewing. QR code for contact info, other info etc?