



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

SUSTAINABILITY & NATURAL RESOURCES COMMITTEE

Tuesday, December 16, 2025 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 November 25, 2025 Meeting Minutes
 - b. Update on Compost Collection Site
- 4) Agenda Items
 - a. Presentation and Discussion on Energy Plan
 - b. Bird City Application Approval
 - c. Review of Proposed Landscape Standards for Village Zoning Code Rewrite
 - d. Sustainability Plan Update
 - e. Approval of SNR Related Memberships
 1. Wisconsin Green Tier Legacy Communities (GTLC) Network
 2. Wisconsin Local Government Climate Coalition
 3. Illuminating Engineering Society (IES) Membership
- 5) Future Agenda Items
- 6) Meeting adjournment.

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- **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, November 25, 2025 at 7:00 PM

DRAFT MEETING MINUTES

- 1) Call to order
Chair White called the meeting to order at 7:00 p.m. Members Present: White, Best, Beheler, Grabe, Roethle and Saltes. Also Present: Administrator Owen.
- 2) Public Comments on Non-Agenda Items*
None.
- 3) Consent Agenda
Motion by Roethle to approve the consent agenda as presented, second by Saltes. Motion carried.
 - a. Consideration of October 28, 2025 Meeting Minutes
 - b. Consider bike friendly community designation
 - c. Green Team Update
 - d. Addition to Wastewater Treatment Utility Adaptive Management Program
 - e. Food Waste Pickup Location Update
 - f. Report on Sustain Dane Summit
- 4) Agenda Items
 - a. Review of Dark Sky Standards for Revised Zoning Code
Scott Lind, introduced himself, stating he assists municipalities to adopt dark-sky code standards on a pro bono basis. Lind noted that the LED lights many are switching to for energy savings carry more harsh blue tones, but there are options for warmer, less harsh LED lights and the recommendations he has included for the code will help to address this. Lind recommends tying the code to Illuminations Engineering Standards (IES), which are regularly updated and use the best practices for dark sky standards. If IES standards are incorporated into the code, we would

need to purchase an IES book to be able to inform the public about the standards and enforce them. The books would cost around \$500. New developments would need to comply with the new standards after adoption of the code and existing buildings would need to comply with the new standards when submitting for remodeling of the existing buildings. The IES also has standards for commercial signage. Best moved to recommend that the Plan Commission include Lind's dark-sky recommendations in the lighting section of the zoning code rewrite, seconded by Roethle. Motion carried.

- b. **Announcement of Mount Horeb Green Team receiving official Community Corps Recognition from Rotary International**
Grabe reported that the Green Team has officially received Rotary International Community Corps recognition. Grabe believes they are the first group to receive this designation in our district. They will have an official recognition at the February 11th trivia night at Brix.
- c. **SolSmart Wind-down and Timeline for Incentive Sunset**
White reported that the Federal Government is ending the SolSmart Program at the end of 2025 and along with it incentives for clean energy. We are just short of receiving silver recognition because we have not yet adopted our revised zoning code. Administrator Owen will follow up to see if we can still achieve silver with our proposed code and if not if we can receive our bronze plaque.
- d. **Bird City Designation Application**
Beheler reviewed the draft application and thanked everyone for the assistance with preparation. The next step is submittal on the official Bird City Application form. Beheler will report back with progress at the next committee meeting.
- e. **Board Discussion on SNR Park Proclamation**
Administrator Owen explained the proclamation was pulled from the consent agenda because a board member felt adoption under the consent agenda meant the board was adopting it as well. Since it was an SNR proclamation, the board did not need to adopt it as well. The board was overall in support of it and passed a motion in support of the proclamation. Owen added that in the future, items like this will be included as a committee update. The committee discussed procedure for providing feedback to the Board and Committees and the difference between proclamations and policy recommendations.
- f. **2026 Budget Update and Discussion**
Chair White reported that the 2026 Budget was approved by the Board last week and \$1,000 was again included in the committee budget.

5) **Future Agenda Items**

Future agenda items include: Zoning code rewrite discussion, Sustainability Plan Update, Energy Plan Presentation and Discussion, and Bird City Update. The December meeting date will be Tuesday December 16th at 7:00 p.m.

- 6) Meeting adjournment.
Motion by Best to adjourn, seconded by Saltes. Motion carried. 8:25 p.m



AGENDA ITEM REPORT

MEETING DATE

December 16, 2025

PREPARED BY

Nicholas Owen, Administrator

AGENDA ITEM # 3.b

Update on Compost Collection Site

BACKGROUND

Committee Member Grabe has been working with Kathy Plath to find grants to help fund a collection site for the composting of food waste. Grabe recently reported that the Rotary Club of Mount Horeb Grants Committee announced that the club has approved a partnership with the Lion's Club for the project. Plath will be presenting the partnership to the Lion's Club at their January 6th business meeting. We will provide updates from the Lion's club when available.

RECOMMENDATION

ATTACHMENTS

None



AGENDA ITEM REPORT

MEETING DATE

December 16, 2025

PREPARED BY

Nicholas Owen, Administrator

AGENDA ITEM # 4.a

Presentation and Discussion on Energy Plan

BACKGROUND

Dan Streit of Slipstream will present the first draft of the energy plan based on the findings from the energy audits and feedback from meetings with the SNR committee and our public engagement session. The feedback from tonight's meeting, comments from WPPI, Utility Staff and Planner Ben Rohr will be used to finalize the plan for implementation.

RECOMMENDATION

ATTACHMENTS

1. Mt. Horeb energy plan.DRAFT.11.24.25

Village of Mount Horeb Municipal Energy Plan

Version 1

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Acknowledgment: *“This material is based upon work supported by the by the Public Service Commission of Wisconsin, Office of Energy Innovation and the Department of Energy, Office of Energy Efficiency and Renewable Energy (EERE), under the State Energy Program Award Number DE-EE0000163.”*

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DRAFT

Executive Summary

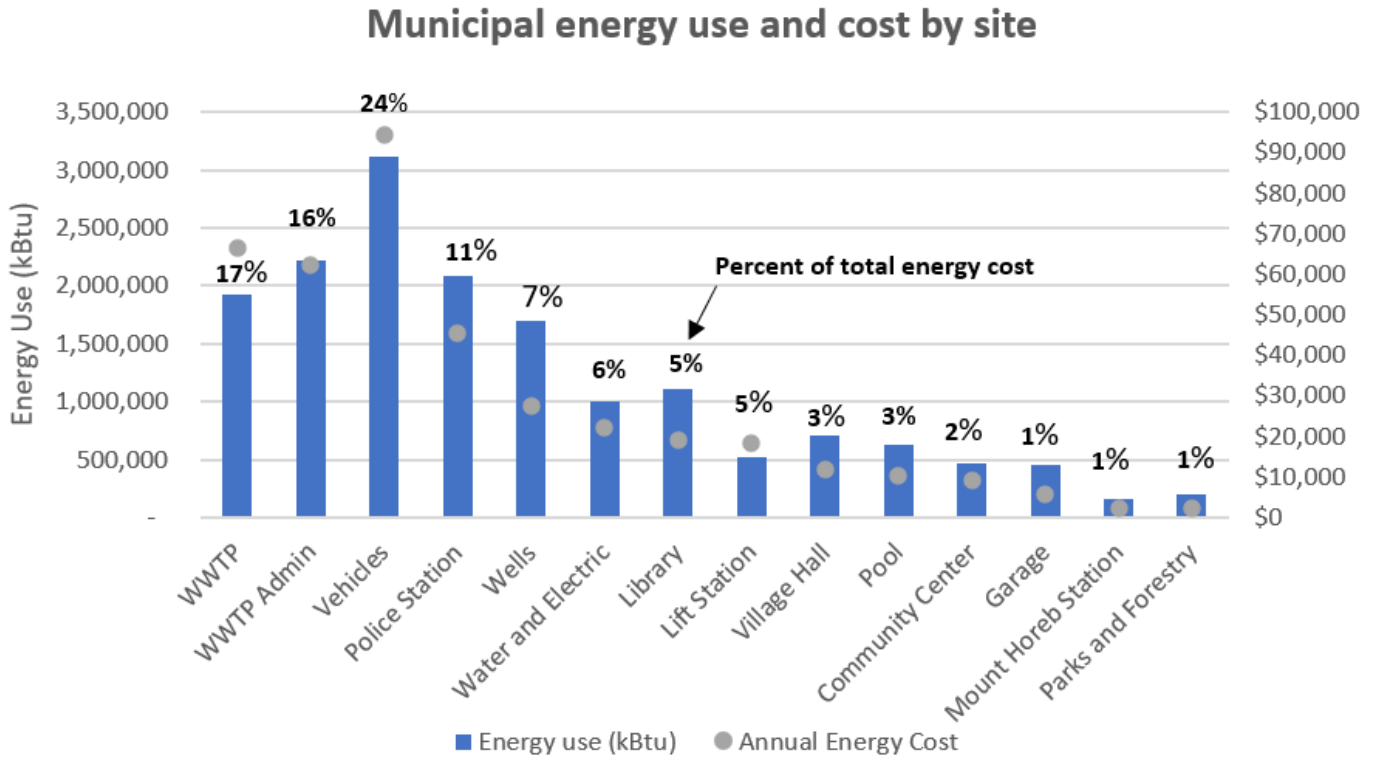
With funding from the Wisconsin Public Service Commission’s Office of Energy Innovation, the Village of Mount Horeb partnered with Slipstream and WPPI Energy to develop its first comprehensive municipal energy plan, which will guide the Village’s strategic energy investments over the next 5–10 years. The Plan evaluates the Village’s municipal operations, 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, and the Village has already demonstrated leadership through energy-efficient municipal projects, public education initiatives, and the establishment of the SNR Committee. This Plan builds on that foundation by prioritizing cost-effective, high-impact actions. The project team used a multi-stage process, including 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 Sustainability and Natural Resources (SNR) Committee.

ENERGY BASELINE

In the baseline year (2023), the Village of Mount Horeb’s municipal operations generated 1,810 metric tons of CO₂e and energy costs were \$331,071. 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 Municipal Energy Use and Emissions 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, Library, 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%.

Top recommendations focused on 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 support for increasing the use of renewable energy for municipal buildings and among residents and businesses. 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 support community members in increasing the use of renewable energy throughout the community.

- Install Solar PV on Municipal Buildings. The analysis identified opportunities to install 592 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. To optimize cost-effectiveness and to reflect space constraints, the recommended on-site solar arrays would not offset all of the Village's electricity use. The Energy Plan provides guidance for the Village in supplementing on-site PV with procurement of off-site renewable energy. For both cost-op
- 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. 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 Mount Horeb Sustainability and Natural Resources (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 Plan organizes recommendations into four major categories: Building and Facility Efficiency, Solar Energy, Vehicles & Equipment, and Policy Initiatives.

The Energy Plan recommends four types of policies to achieve these 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.
- Create a Green Business Recognition Program to encourage leadership and visibility.
- 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.

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 of its 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 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

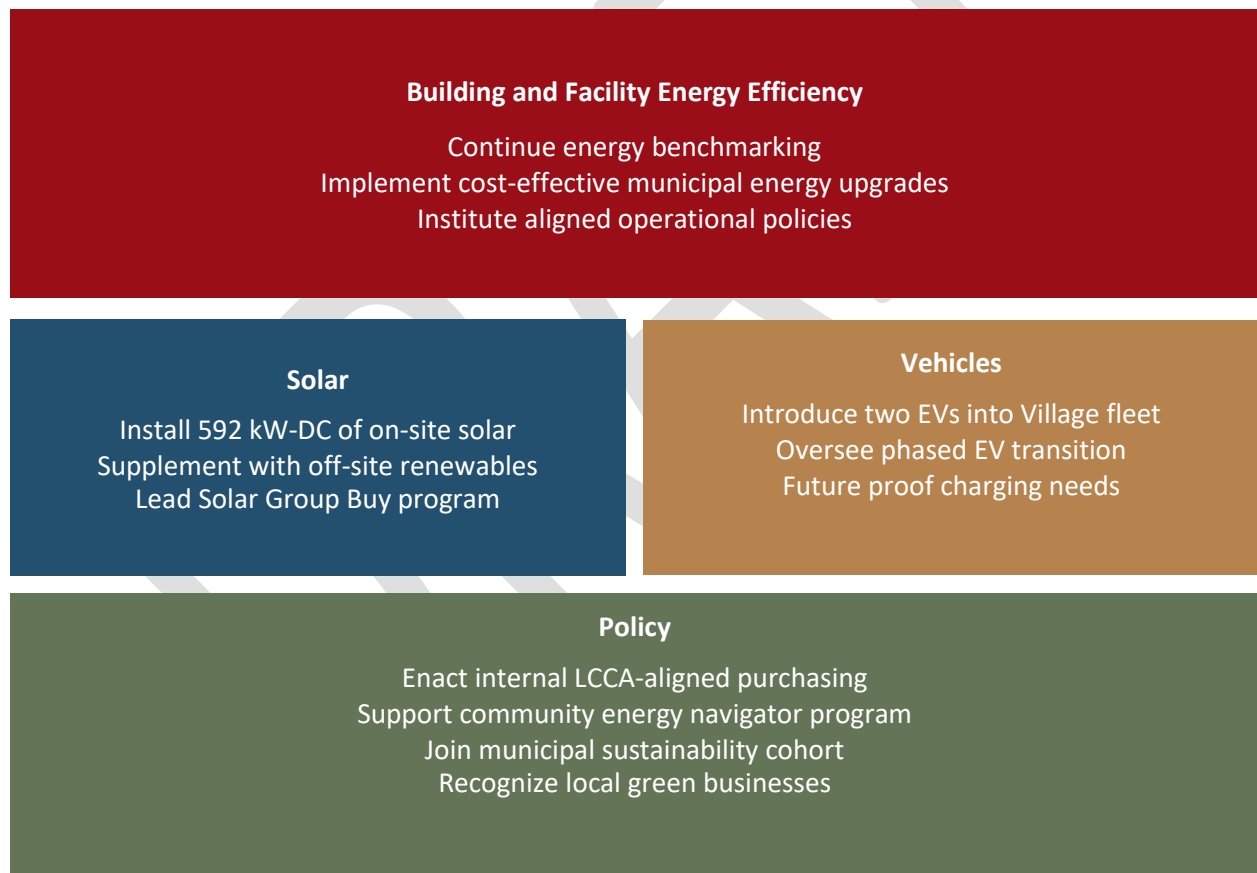
The Mount Horeb Municipal Energy Plan provides a clear, actionable roadmap for reducing energy costs, cutting emissions, and enhancing sustainability across Village operations and the broader community. By prioritizing high-impact building upgrades, embracing solar energy, modernizing the vehicle fleet, 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 CO₂ emissions. Funding is available through local utility rebates, federal funding, and state funding to implement these recommendations. Funding options for the recommendations is 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 use of 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 also 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 Mt. 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 dedicated to future energy efficiency projects.

PLAN DEVELOPMENT PROCESS

The Mount Horeb energy plan development 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 in the process was to collect data on energy use in the Village's buildings and vehicles.

The team also obtained aggregated residential and business energy consumption data. To understand current energy consumption practices, behaviors and perspectives among community stakeholders, the team also implemented a resident and business surveys.

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 median site EUI values of other buildings of the same type that are located in the same climate zone, using a publicly available dataset². 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. Secondly, the site EUI of municipal buildings was also 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 (citation). 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 four buildings for 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 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.

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/>

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.

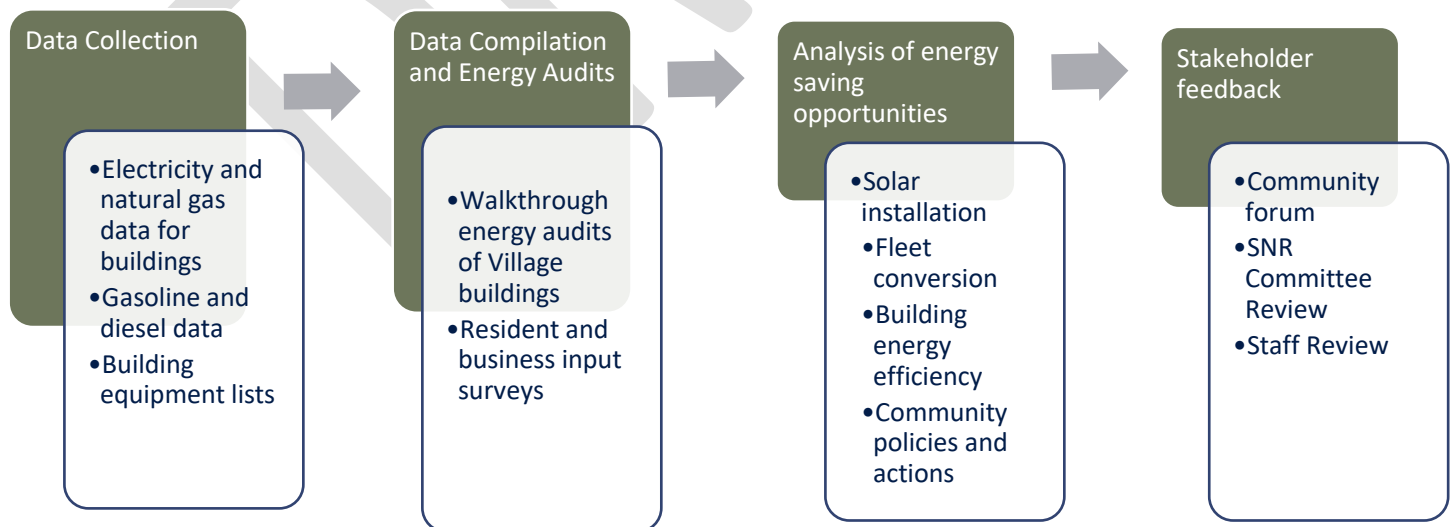
Stakeholder Feedback

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 Sustainability and Natural Resources (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

Mount Horeb has 11 primary municipal facilities, as well as service garages, storage sites, wells, and lift stations. It also has 30³ 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). Table 1 and Table 2 reflect the energy use and costs, as well as the relative level of emissions from each source for calendar year 2023, which is the most recent complete 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 energy use 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 site EUI target.

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

Source	Energy use (kBtu)	Site EUI ⁴	Annual Energy Cost	Percent of Total Cost
WWTP	1,921,580	N/A	\$66,508	17%
WWTP Admin	2,221,510	N/A	\$62,255	16%
Vehicles	3,121,576	N/A	\$94,257	24%
Police Station	2,080,739	79.5	\$45,488	11%
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	1%
Mount Horeb Station	159,773	79.9	\$2,360	1%
Parks and Forestry	203,344	16.9	\$2,367	1%
Total	16,299,755		\$396,873	

Figure 4 shows the relative energy use and costs for each site.

³ Data for 2023 fleet vehicle baseline analysis.

⁴ Weather-normalized site EUI

Figure 4. Municipal energy use and cost by site

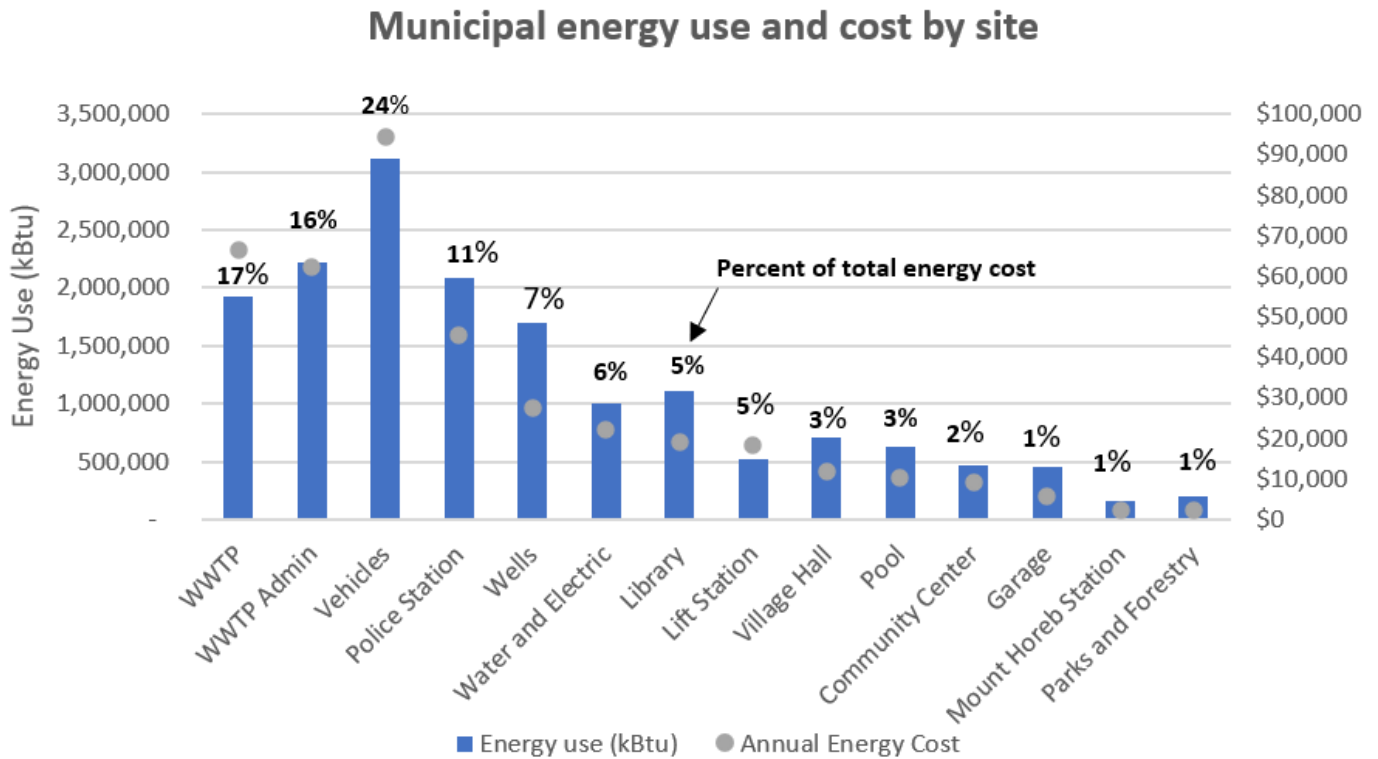


Table 2. Annual CO₂ emissions and costs by source (2023 data)

Source	CO ₂ Emissions (metric tons)	Percent of Total CO ₂ Emissions
WWTP	334.73	18%
WWTP Admin	319.2	18%
Police Station	240.76	13%
Vehicles	216.7	12%
Wells	151.16	8%
Library	126.47	7%
Water and Electric	115.95	6%
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	1,810.78	

Error! Reference source not found. illustrates the relative CO₂ impact across the three main categories of energy use (operations in gray, buildings in red, and fleet in brown). The individual impact is illustrated by each rectangle, illustrating that wells/pumps/lifts contribute the largest portion of CO₂ emissions to total municipal emissions.

MUNICIPAL FACILITIES

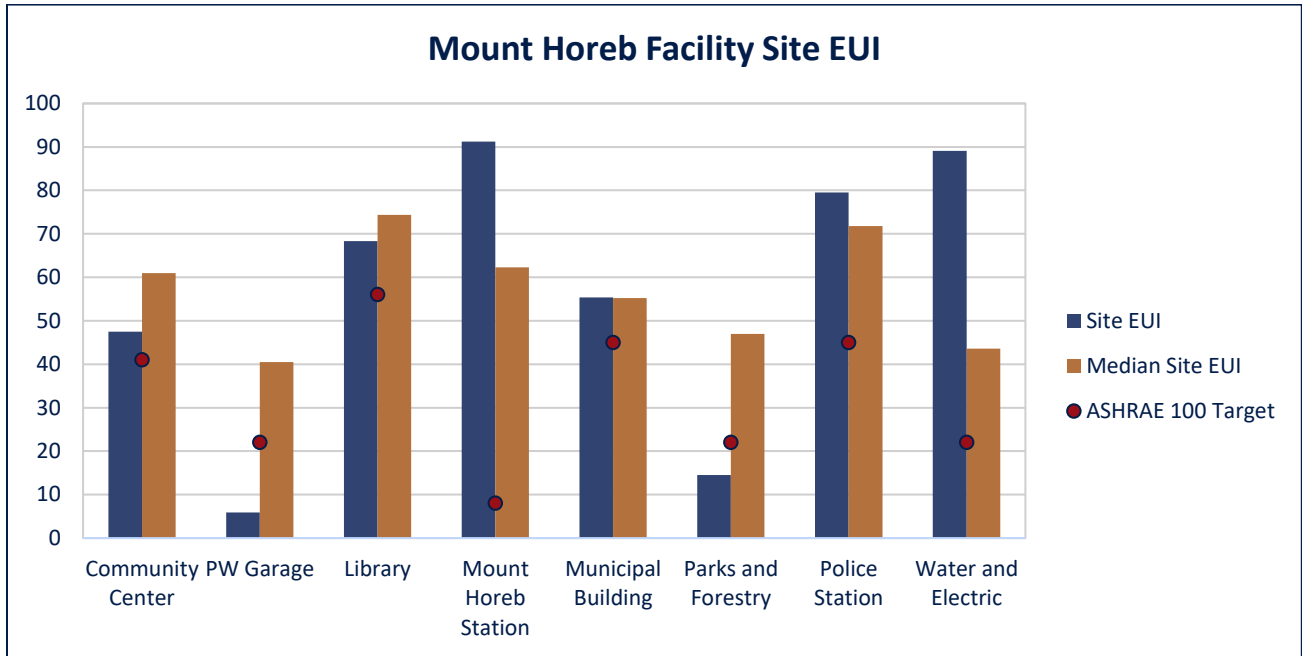
Replacing on-site combustion of natural gas and other fuels with efficient heat pump and variable refrigerant flow (VRF) equipment is essential to achieve long term emissions reduction goals. To inform long term energy planning, as shown in **Error! Reference source not found.**, the project team examined 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 2. Recommended Mount Horeb energy actions⁵ shows the site EUI for each of the Village of Mount Horeb’s municipal facilities as the red bar, as well as the median EUI for that building type in Climate Zone 5 as the blue bar. The black dot indicates the target EUI set by ASHRAE standard 100.

Figure 5. 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, half-ton pickup trucks and other light duty vehicles consume the most fuel and generate the most emissions.

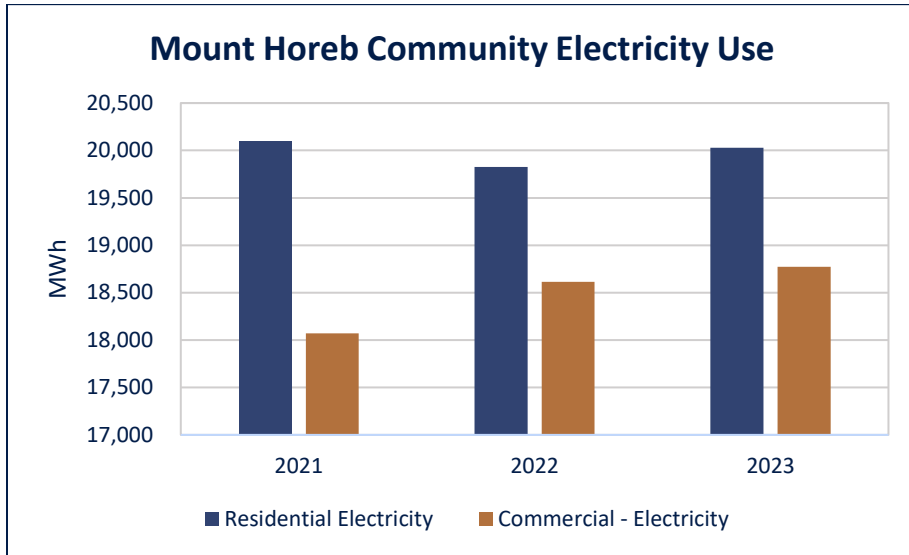
Table 4. Municipal Vehicle Use

Vehicle category	Annual Gallons	Annual miles	Avg. Fuel Economy	Fuel Cost	Emissions (MT CO2e)
Pickup 1/2 ton or smaller	7,592	82,353	10.8	\$27,160	64.40
Large pickup	5,065	45,120	8.9	\$19,410	52.09
SUV	3,371	44,576	13.2	\$12,185	29.60
Large Truck	1,861	50,269	27.0	\$6,659	15.81
Van	280	2,900	10.4	\$1,002	2.38
Total	18,169	225,219	12.4	\$66,416	164

COMMUNITY ENERGY USE

Energy use by Mount Horeb residents and businesses, as well as the perspectives of stakeholders on their current energy use, is an important component of the community’s energy baseline. Figure shows current electricity use and Figure shows communitywide natural gas use among residents and businesses. 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.

Figure 6. Mount Horeb Community Electricity Use



As shown in Figure 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 natural gas use

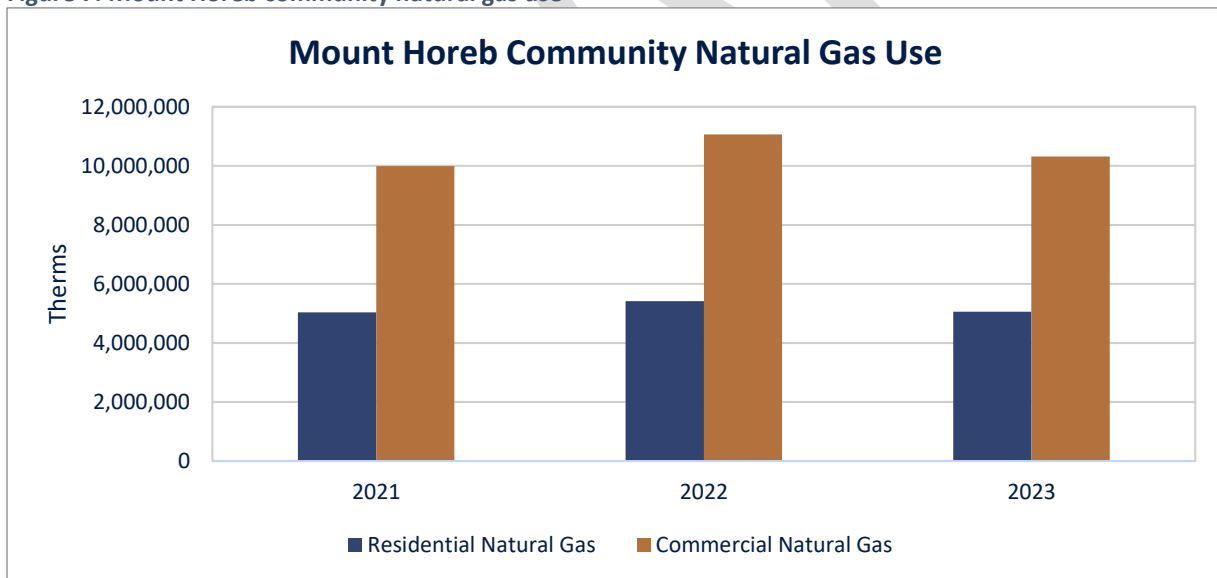
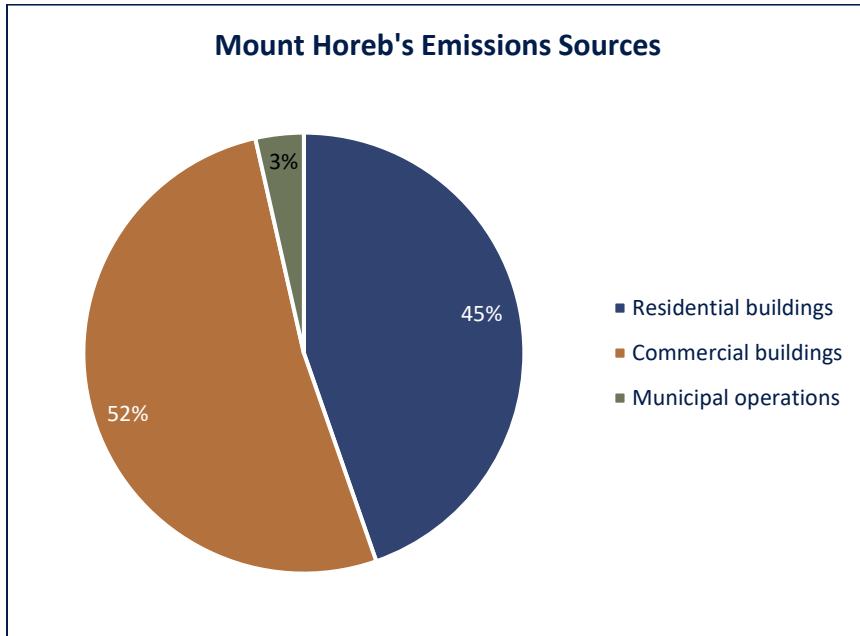


Figure 8. Mount Horeb Community Emissions by Source



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Community Engagement

The people who live, work, and run businesses and organizations in the Village of Mount Horeb's are key stakeholders of the Mount Horeb Energy Plan. They 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 8. Mount Horeb Community Emissions by Source*, 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 on four municipal facilities and using energy models to identify cost effective improvements, the project team presented to the SNR its preliminary recommendations for energy upgrades for each of the Village's facilities. At this meeting, the team also shared results of the community surveys and discussed plans for a community forum event. In November 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. Both surveys were distributed both online and in paper formats.
 - 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.

Mount Horeb Utilities distributed both 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 5.

Table 5. Resident survey key findings

Topic	Results
Demographics	<ul style="list-style-type: none"> • 73% own and occupy a single-family home • 71% are 31 – 65 years old • 56% have household income over \$100,000
Energy actions completed	<ul style="list-style-type: none"> • 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)	<ul style="list-style-type: none"> • 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	<p><u>Statements with high levels of agreement</u></p> <ul style="list-style-type: none"> • 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. <p><u>Statements with high levels of disagreement</u></p> <ul style="list-style-type: none"> • 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	<p><u>Top tier</u></p> <ul style="list-style-type: none"> • Education on low-cost, cost-effective home improvements • Help identifying opportunities to use Focus on Energy incentives <p><u>Second tier</u></p> <ul style="list-style-type: none"> • 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

Topic	Results
Hopes for municipal energy plan	<ul style="list-style-type: none"> Investigate geothermal for heating and cooling Efficiency improvements and heat pumps for municipal buildings Reducing vehicle sizes and improving efficiency in municipal fleet vehicles
Interest in ongoing engagement	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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)	<ul style="list-style-type: none"> Managing energy use is important to the financial success of the organization: 76% Reducing energy use 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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.

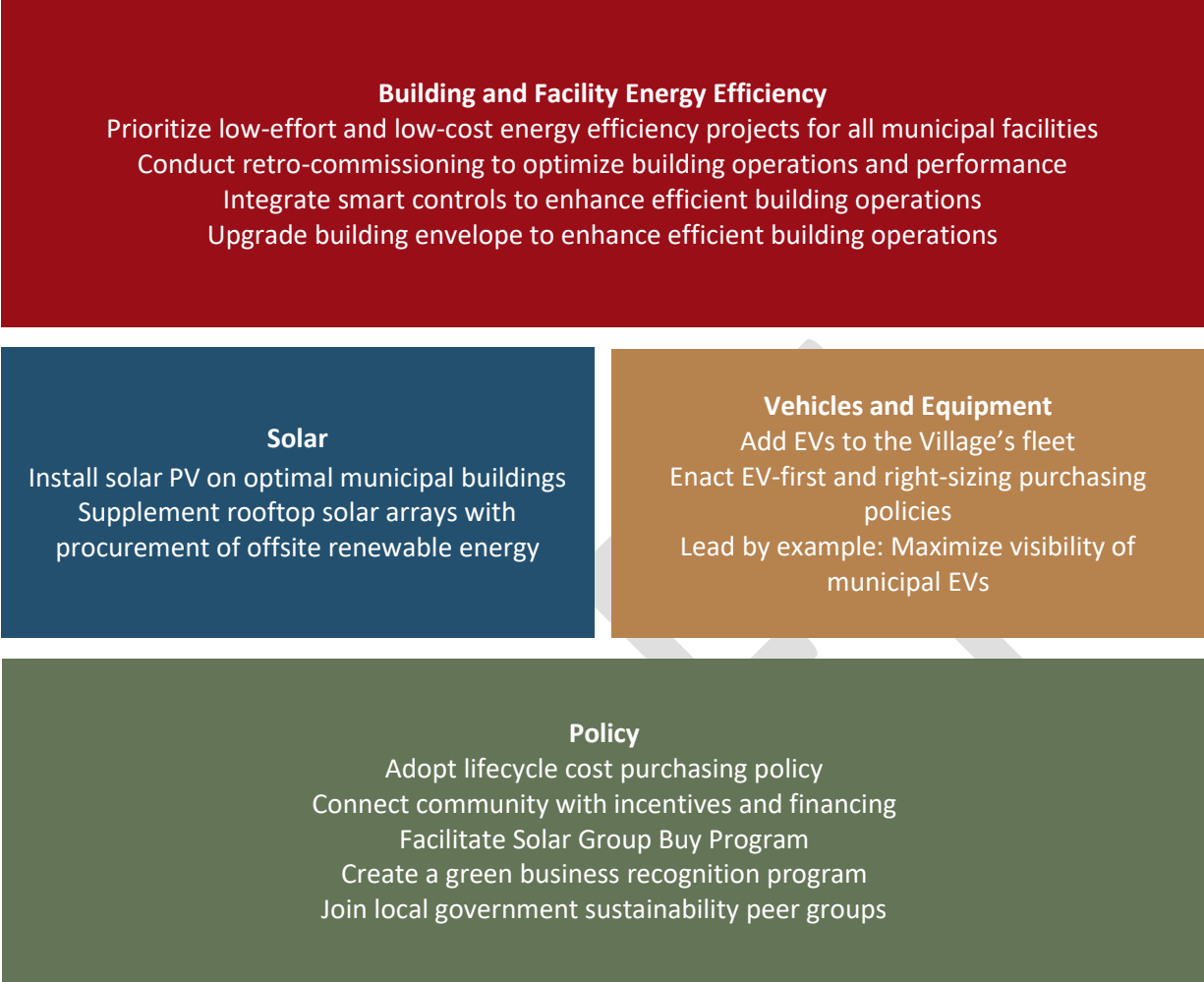


Figure9 provides an overview of recommendations by category and the following sections of the report explore each set of recommendations in more detail. We present funding opportunities for these recommendations within each of these sections and also provide a complete overview of funding options at the end of the report.

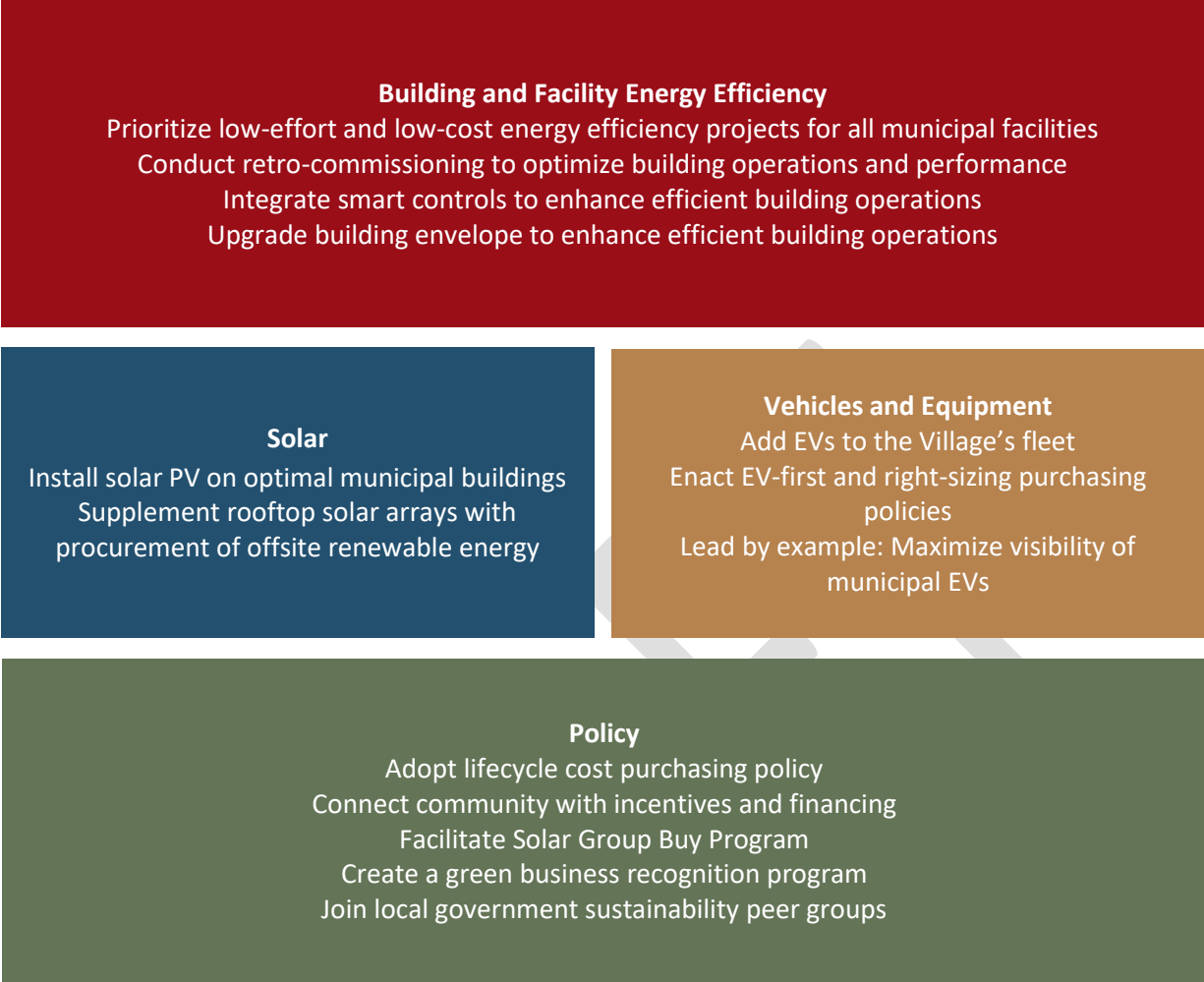


Figure 9. Village of Mount Horeb recommended actions

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

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 outlines a strategy for completing the specific energy upgrades that are described in Appendix 1.

RECOMMENDATION 1: CONTINUE ONGOING BENCHMARKING OF BUILDING PERFORMANCE

The energy performance of buildings can be tracked by examining 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 assessment 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.

Recommendations

1. Benchmark building energy use data.
2. Implement recommended measures for audited buildings to reach over 20% utility cost savings in each building.
3. Adopt standard operating procedures across buildings.
4. Institute standard purchasing policies for building equipment.
5. Conduct an evaluation of pumps, lifts, and wastewater treatment plant to identify energy savings.

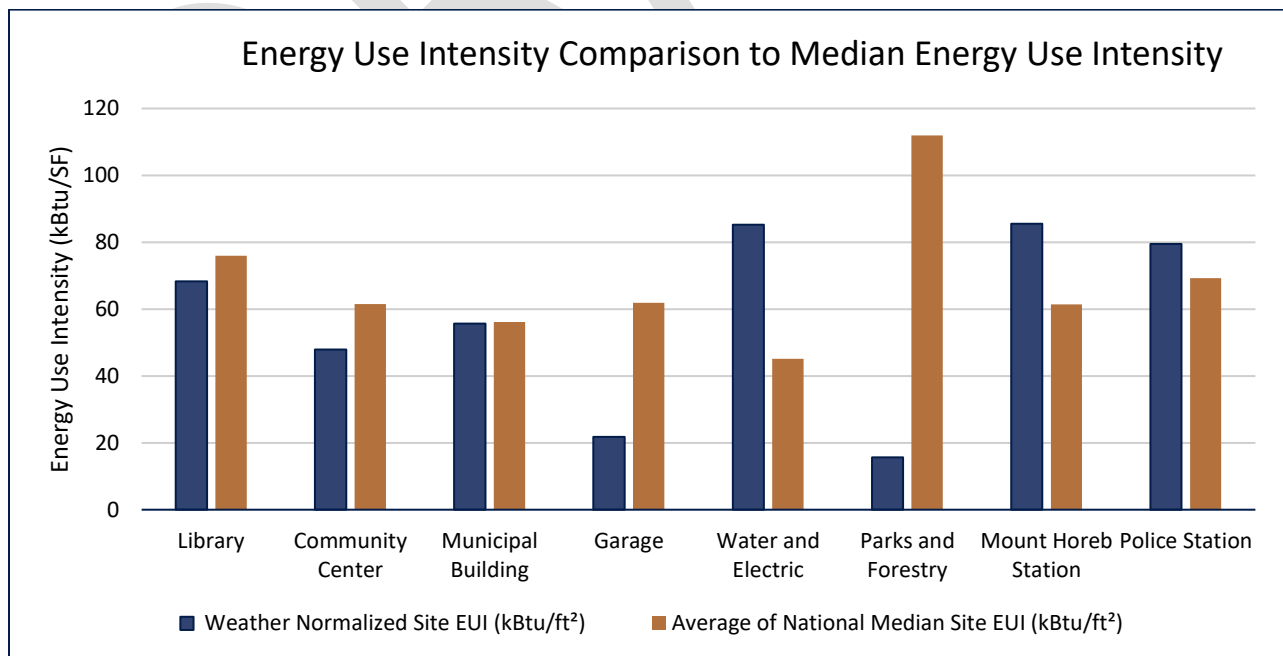


Figure 1510 illustrates the EUI of all Mt. Horeb municipal facilities over time and compared to the national

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, and 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 and the Fire Department will pay 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.

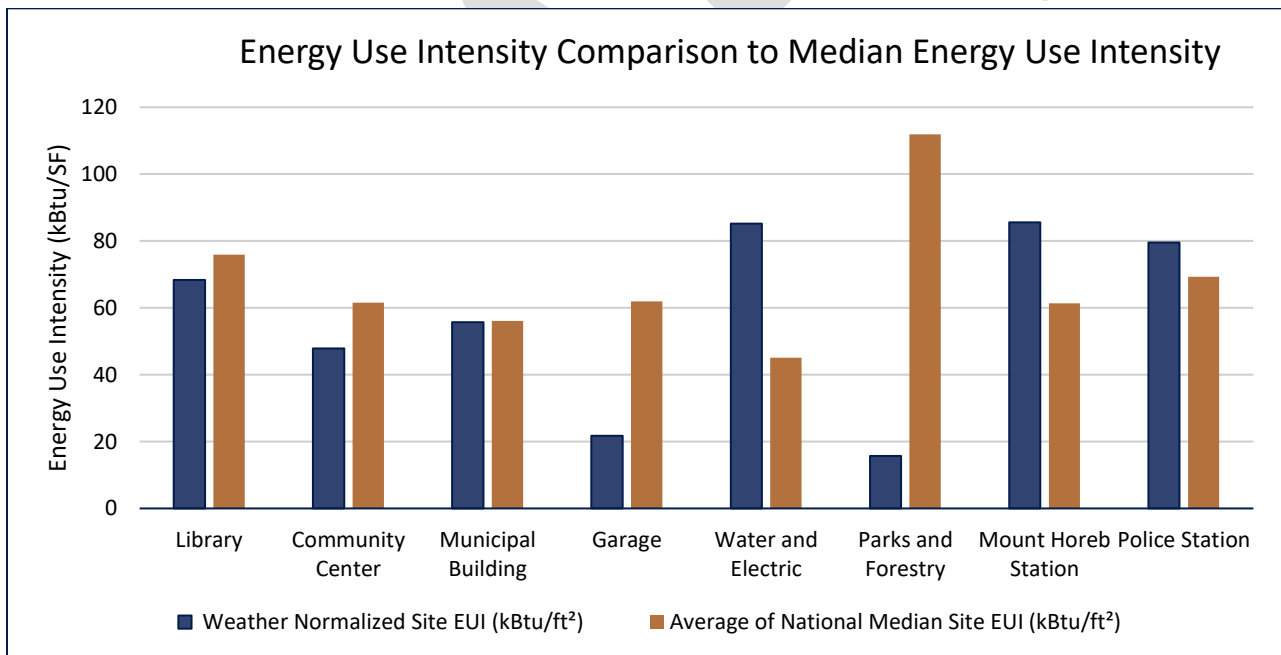


Figure 150. Energy use intensity of village facilities compared to national median EUI of similar buildings. The Police Station EUI is based on prorated energy and size of the Mount Horeb Public Safety building.

Continuing to track each facility’s EUI in comparison to relevant benchmarks is a key mechanism to identify unexpected changes in energy use and 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, it also offers the ability to benchmark energy use against a sample of similar buildings in the same use type, building age, and climate zone. 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.

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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 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	<i>Heat Pump Water Heater Air-To-Water Heat Pump -</i>		Roof Insulation Heat Pump Water Heater <i>Air-To-Water Heat Pump</i>	ENERGY STAR Appliances Window Replacement Roof Insulation <i>Heat Pump Water Heater</i>	<i>Heat Pump Water Heater Air-to-Water Heat Pump</i>

Table 8 estimates upfront cost, annual cost savings, payback period, and annual CO₂ 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. 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 25 percent if it implements all of the recommended measures.

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

Table 8. Cost and CO₂ 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

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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 Mt. 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 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 Mt. 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 staff 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 Conditioning (HVAC) Systems	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.
	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

Operational Policies

	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.

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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 CO₂ 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 CO₂ emissions of conventional equipment and heat pumps. Table 110 lists the heat pump options for Mt. Horeb buildings.

Table 1. Heat pump system options for existing systems in Mt. 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.
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 facilities⁵.

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 municipalities⁶. In 2024, the Village paid over \$58,000 to power these facilities and they account for 14 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 Mt. Horeb will depend on site-specific factors such as system design, pump sizing, flow patterns, and operational 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

⁵ 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.

⁶ 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/>.

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 efficiency⁷ 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

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, Mt. Horeb can draw on existing technical resources such as the Focus on Energy Wastewater and Water Utilities Program⁸, which offers pump assessments and incentives; DOE's Pumping System Assessment Tool (PSAT)⁹, which models pumping performance and identifies efficiency opportunities; and the Wisconsin DNR's Capacity, Management, Operation, and Maintenance (CMOM) Program¹⁰, which provides guidance for evaluating lift station performance and planning system upgrades.

Applying these resources can help Mt. 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.

⁷ 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/>.

⁸ <https://focusonenergy.com/business/wastewater>

⁹ <https://www.energy.gov/eere/iedo/articles/pumping-system-assessment-tool>

¹⁰ <https://dnr.wisconsin.gov/topic/Wastewater/CMOM.html>

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.

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Solar Recommendations

RECOMMENDATION 1: INSTALL SOLAR PV ON OPTIMAL MUNICIPAL BUILDINGS

Onsite solar can reduce the Village’s energy costs and also lower its CO₂ 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

- Install rooftop solar on municipal buildings
- Supplement with offsite renewable energy
- Facilitate solar group buy

Table 2. 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	74.7	65%	15.5	64.27	\$12,787
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	592.7			502.1	\$99,889

Table 312 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 shown in the table is an incentive 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 Table 32.

Table 3. Cost details of solar PV installations for Mount Horeb facilities

Buildings	Upfront Cost	Focus on Energy Incentives	Net Cost
Wastewater Treatment Plant (WWTP)	\$623,970	\$11,550	\$612,400
Public Safety (Police Dep't)	\$394,470	\$7,300	\$387,200
Electric and Water Shop	\$201,690	\$3,750	\$197,900

Buildings	Upfront Cost	Focus on Energy Incentives	Net Cost
WWTP Admin Building	\$103,140	\$1,900	\$101,200
Village Hall	\$91,147	\$1,700	\$89,400
Community Center	\$90,450	\$1,700	\$88,800
Library	\$52,110	\$950	\$51,200
Public Works	\$31,787	\$600	\$31,200
Parks and Forestry	\$11,494	\$200	\$11,300
Total	\$1,600,258	\$29,650	\$1,570,600

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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. Table 213 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 43 identifies benefits and drawbacks of both on-site and off-site renewable energy.

Table 4. 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 <ul style="list-style-type: none"> 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. ¹¹

¹¹ 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>

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 103.3.2¹² 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 \$2.00 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 7,718 blocks of energy¹³ through the Choose Renewables program, at an annual cost of \$15,436 to offset all of its current electricity consumption. If the Village installs all of the recommended on-site solar arrays, it could purchase 5,100 blocks of electricity each year at a cost of \$10,200 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

¹² 2024 IECC Appendix CC 103.3.2. <https://codes.iccsafe.org/content/IECC2024P1/appendix-cc-zero-energy-commercial-building-provisions>

¹³ Number of blocks based on weather-normalized 2024 electricity consumption for all municipal facilities

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. We recommend that 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

73 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 share 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.

- **Contractor qualification.** Village qualifies contractor. 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 offering the best value to participants, the contractor reduces its marketing and customer relations expenses by being the sole source installer for the program.
- **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 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.

Error! Reference source not found.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 5. Fuel use, costs, and emissions for municipal vehicles

Category	Number of Vehicles	Gallons of fuel	Fuel cost	Emissions (kg CO ₂ e)	Miles Driven	Avg MPG
Pickup (1/2 Ton)	5	1,861	\$6,659	15,815	60,571	27.0 ¹⁴
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	174,908	243,029	12.5

¹⁴ 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.

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.

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.

Benefits of EVs



Lower fuel cost (\$/mile) than gasoline or diesel vehicles.



Maintenance costs 50% lower compared to gasoline or diesel vehicles.



Reduce CO₂ emissions 40% - 55% with current electricity mix.



Lower energy use while idling reduces engine wear and saves money

RECOMMENDATION 1: ADD THREE 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 three 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 three 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 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.

Table 6 **Error! Reference source not found.** 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 6. 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	<i>International MV607</i>	<i>9 mpg \$112,000</i>	<i>International eMV series</i>	<i>\$78,000</i>	<i>\$3,104</i>	<i>25.1</i>

Commercially available EVs in these four categories in 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 **Error! Reference source not found.**) 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

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

Table 176 summarizes the three categories of EV charging stations¹⁵. 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 the pilot, 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.

EVSE Recommendations

Prioritize Level 2 chargers

Upgrade electrical to future-proof charging demands

¹⁵ There are variations in capacity and functionality among different types of equipment in a given category

Table 176. 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

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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. The Village should apply the Lifecycle Cost Analysis based purchasing policy that is described in the Policy Recommendations section below to its vehicle purchases. An LCCA-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

Table 1817 summarizes EV vs conventional vehicle considerations across cost categories.

Table 187. 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
Maintenance Cost	Studies ¹⁶ show approximately 50% lower maintenance costs for EVs.
Resale Value	Some analyses have shown higher resale value for EV, 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.

¹⁶ 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>)

RECOMMENDATION 3: LEAD COMMUNITY IN EV TRANSITION

As the Village pilots EVs in 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 pilot vehicle is an electric vehicle. 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 being located in Verona¹⁷. 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, the survey found that there is support for the Village 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.

¹⁷ <https://afdc.energy.gov/fuels/electricity-locations#/find/nearest?fuel=ELEC&location=mount+horeb,+wi>

Policy Recommendations

The recommendations in this section focus on two objectives: 1) institutionalize and sustain practices and policies that advance energy efficiency within municipal government operations; and 2) identify ways to encourage efficient energy use and reductions in CO₂ emissions throughout the community. The recommendations can serve as a springboard for future community efforts.

RECOMMENDATION 1: IMPLEMENT SUSTAINABLE LCCA PURCHASING POLICY

There are opportunities to increase building efficiency at every point of purchase with any 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 Operational Policies

Policy Recommendations

- LCCA Purchasing Policy
- Energy Navigator Program
- Clean Energy Peer Support
- Recognize Clean Energy Leaders

Operational Policies	Heating, Ventilation, and Air Conditioning (HVAC) Systems	Consider installation of air source or dual-fuel heat pumps where applicable.
		When purchasing furnaces, consider condensing furnaces with efficiency higher than 95% AFUE.
		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	Purchase ENERGY STAR equipment to replace office appliances and domestic water heaters.
		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.
	Lighting	Consider addition of daylighting and occupancy controls for LED lighting.
		Continue purchasing LED bulbs or full fixture replacements for lighting retrofit.

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RECOMMENDATION 2: CONNECT COMMUNITY WITH INCENTIVES AND FINANCING

Respondents to both the residential survey and the business survey stated that the Village could help them save energy and shift to using more renewable energy by helping them identify low-cost energy saving opportunities in 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. 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 Clean Energy Navigator Program (see below)
- Staffing the municipal Sustainability and Natural Resources Committee

Community-Led Navigators. Mount Horeb's municipal Sustainability and Natural Resources 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.
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 and 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 resident and business surveys, as well as 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.

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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 and installations. It's recommended that Mt. Horeb provides a copy of this report to its Energy Advisor and asks for assistance in identifying the best way to access rebates. The 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.¹⁸

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 savings from completed energy projects into a separate Clean Energy Revolving Fund sub-account. The

¹⁸ Focus on Energy's 2025 Incentive Summary: https://assets.focusonenergy.com/production/02-pdf/2025/BIZ_Business-Summary-of-Services-Incentives_2025.pdf

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.

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Appendix 1: Building Descriptions and Recommendations

BUILDING 1: VILLAGE OF MOUNT HOREB MUNICIPAL BUILDING

Size: 12,739 ft²

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 with occupancy sensors, but there is still some fluorescent lighting. 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 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 the use of space heaters for individual offices during these seasons, 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.

Table 9 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 CO ₂ e)
						Electricity (kWh)	Gas (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)
						Electricity (kWh)	Gas (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. Mt. 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 290. Village Hall recommended decarbonization measures.

Measure	Incremental Cost		Annual Utility Cost Savings		Annual Energy Reduction		
	\$	\$	%	Electric kWh	%	Gas 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.¹⁹

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.

¹⁹ 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 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 Mt. 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 Mt. 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 ft²

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 (76 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 2101. Library measure prioritization and estimated savings.

Measure	Priority	Installed Cost	Annual Utility Cost Savings		Financial Payback	Annual Energy Reduction		Emissions Reduction (MT CO ₂ e)
						Electricity (kWh)	Gas (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%
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%

Measure	Priority	Installed Cost	Annual Utility Cost Savings		Financial Payback	Annual Energy Reduction		Emissions Reduction (MT CO2e)
						Electricity (kWh)	Gas (therms)	
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. Mt. Horeb should consider these options if they are interested in a decarbonization or electrification pathway.

Table 2112. Library recommended decarbonization measures.

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

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.²⁰

We recommend that the Mt. 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

²⁰ 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. **Error! Reference source not found.**²² 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: 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 are recommending this measure if Mt. 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 ft²

Age: Built in 1978. The top floor is the senior center, and the bottom floor is the parks and recreation center. 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 regional median for similar buildings (59 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 seniors, 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 2123. Community Center measure prioritization and estimated savings

Measure	Priority	Installed Cost	Annual Utility Cost Savings		Financial Payback	Annual Energy Reduction		Emissions Reduction (MT CO2e)
						Electricity (kWh)	Gas (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%
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 years*	1,000 2.1%	-100 -1.8%	0.3 0.7%
Upgrade roof insulation*	EOL	\$14,800	\$90	1.3%	>50 years*	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 2134 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. Mt. Horeb should consider this option if they are interested in a decarbonization or electrification pathway.

Table 2134. Community Center recommended decarbonization measures.

Measure	Incremental Cost		Annual Utility Cost Savings		Annual Energy Reduction		
	\$	\$	%	Electric kWh	Percent Reduction	Gas therms	%
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. ²¹

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

²¹ Information on Focus on Energy’s retro-commissioning incentives are here: <https://focusonenergy.com/business/building-optimization>

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 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: 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.

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 are recommending this measure if Mt. 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 ft²

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 regional median for similar buildings (55 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 is served under central natural gas and electricity 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 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 Mt. 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 Mt. 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.

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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.

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.

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 assessment²². 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 Wisconsin²³ 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 period does not apply a discount rate to future production and does not consider the potential effects of changes in electricity prices.

²² <https://www.nrel.gov/solar/market-research-analysis/solar-installed-system-cost>

²³ <https://www.eia.gov/electricity/state/wisconsin/>

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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 CO₂ 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 Midwest²⁴.
 - Calculated the annual fuel use, fuel cost, miles driven, and CO₂ 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 Reports²⁵ to estimate the average per mile maintenance costs for EVs and gasoline or diesel-powered vehicles.
6. 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

²⁴ U.S. Energy Information Administration Weekly Retail Gasoline and Diesel Prices.

https://www.eia.gov/dnav/pet/pet_pri_gnd_dcus_r20_a.htm

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>)

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.

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Appendix 4: Additional References and Resources

Advanced Manufacturing Office: Case Study - The Challenge: Saving Energy at a Sewage Lift Station Through Pump System Modificat. n.d.

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U.S. Environmental Protection Agency (EPA). *U.S. Energy Use Intensity by Property Type*. ENERGY STAR Portfolio Manager Technical Reference. August 2024. <https://portfoliomanager.energystar.gov/pdf/reference/US%20National%20Median%20Table.pdf>

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

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/>



AGENDA ITEM REPORT

MEETING DATE

December 16, 2025

PREPARED BY

Nicholas Owen, Administrator

AGENDA ITEM # 4.b

Bird City Application Approval

BACKGROUND

From SNR Member Beheler:

To Dos for the SNR:

1. The Bird City Wisconsin (BCW) \$175 application fee has been paid before the end of 2025, so we are now in their system.
2. We must vote on the World Migratory Bird Day resolution, attached. It cannot be a proclamation, according to Bird City rules. After the SNR vote, it needs to be sent to the Village Board for a full vote. Edit as needed.
3. Regarding the actual on-line portal Bird City application, our steps include:
 - SNR read and edit/add info to the attached Word document. EDITS WELCOME!!
 - SNR votes on 16 Dec 2025
 - full Village Board votes on 7 January 2026
 - once completed on the municipal end, Kerry enters the information into the on-line BCW portal.

RECOMMENDATION

ATTACHMENTS

1. kab nearly completed BCW Application for SNR voting 12 12 25
2. reso 2026-01 World Bird Day

Bird City Wisconsin

1 . Habitat

1 . 1 . Promote best management of community habitat

1.1.3 - (1 POINT) The Mount Horeb Green Team is a citizen-led group partnered with the Mount Horeb Rotary Club. The Green Team takes an active role in the planning process for protecting and enlarging favorable bird habitat with the Village-wide native species pollinator planting project “Yard in Every Yard (YEY)”, begun August 2025. YEY follows the Pollinator Pathway initiative. YEY promotes best management of community land by using Village park lands for pollinator and bird gardens; creates and protects pollinator and bird nesting and feeding habitat by planting gardens; uses native plants and seeds; provides training for control of invasive plants in the plots; provides educational brochures for all ages; and involves the community in partnership and stewardship of the native plant plots.

1.1.4 - (1 POINT) Tree City USA: Mount Horeb received Tree City USA status in 1997, and has achieved re-designation every year since 1997. <https://www.mounthorebwi.info/192/Urban-Forestry#:~:text=The%20Mount%20Horeb%20Public%20Services,status%20every%20year%20since%201997>.

1.1.5 - (1 POINT) A substantial effort to promote pollinator health was made in September 2023 when Mount Horeb enacted a natural landscaping native plant pollinator garden ordinance which allows homeowners to plant native forbs, grasses, edible plants, shrubs, or trees for bird and pollinator habitat. <https://ecode360.com/27692202#27692210>

1.1.6 - (1 POINT) Mount Horeb municipal Forestry Actions include: 1. Expertise: Village Forester is a certified ISA arborist with 25 years of expertise, who holds a BS in Forestry and has taught a portion of the Wisconsin DNR’s Wisconsin Community Tree Management Institute.

2. The Mount Horeb Parks, Recreation and Forestry Commission serves as the Village Tree Board.

3. Mount Horeb has a municipal tree ordinance, Chapter 8.10 of the municipal codes.

<https://ecode360.com/27691989>

4. Mount Horeb has an annual Arbor Day observation.

<https://www.mounthorebwi.info/DocumentCenter/View/671/Arbor-Day>

5. Mount Horeb has a community forestry program.

1 . 3 . Promote native plants

1.3.1 - (2 POINTS) Document a program to support the establishment of natural lawns and native landscaping. “Slow Mow May” voluntary program sponsored by the Mound Vue Garden Club. Over 150 Mt Horeb homes and businesses participating in 2025.

1.3.3 - (1 POINT) Document an ongoing community program to incorporate a significant number of native trees, native shrubs, native herbaceous plants, and/or cultivars of native species in public or large-scale private landscaping. YEY sponsored by the Mount Horeb Green Team and Slow Mow May sponsored by

the Mound Vue Garden Club. Also the 18 Mount Horeb free municipal public parks of various sizes provide bird nesting and foraging habitat. <https://www.mounthorebwi.info/191/Parks-Information>

1.3.5 - (1 POINT) Attach a copy of a local ordinance to demonstrate that your community does not restrict natural/native landscaping that emphasizes native plants and non-turf lawns. Mount Horeb enacted a natural landscaping native plant pollinator garden ordinance which allows homeowners to plant native forbs, grasses, edible plants, shrubs, or trees for bird and pollinator habitat.

<https://ecode360.com/27692202#27692210>

1 . 4 . Control invasive plants

1.4.2 - (2 POINTS) Mount Horeb natural landscaping native plant pollinator garden ordinance states “Plantings shall be deliberately selected and arranged as part of a coherent overall plan. Overgrowth of conventional turf grasses or weeds, or any other unmanaged vegetation growth, shall not constitute a planned natural landscaping area.” Also, the natural landscaping ordinance states “No species identified on the Wisconsin Department of Natural Resources Regulated Invasive Plants list, Chapter NR 40, whether designated as Prohibited or Restricted, shall be permitted.

<https://dnr.wisconsin.gov/topic/Invasives/RegulatedSpecies>”

1 . 5 . Provide nesting habitat

1.5.1 - (1 POINT) Implement a municipal moratorium on the trimming of trees and shrubs and the mowing of ditches, storm water retention basins, and other grasslands from May 15 to July 15 to prevent the destruction of active bird nests. Mount Horeb municipal maintenance crews mow the storm water detention basins once per year in the fall.

1.5.2 - (1 POINT) Implement a tree-risk policy that includes specific plans to leave dead trees standing as nesting and foraging resources for birds when it is safe to do so. Habitat management in Stewart Lake County Park for bluebirds, red-headed woodpeckers, pileated woodpeckers and other cavity nesting species. Dane County’s oldest park, Stewart Lake County Park, is located on the northern edge of Mount Horeb. A bluebird nest box trail has been installed and maintained for 25 years at Stewart Park. The bluebird trail now comprises 31 nest boxes, in which 1020 bluebirds have fledged. Black-capped chickadees, tree swallows, and house wrens have also fledged from the nest boxes. The Stewart Lake County Park bluebird trail provides at least 3 scheduled community educational tours annually to school groups, Dane County Parks youth summer program, Dane County Parks Commission, and others. The bluebird trail is monitored weekly from April -August, providing many spontaneous educational opportunities for families and individual hikers during nesting season.

<https://www.danecountyparks.com/park/StewartLake>

? include maybe 1.8 Another action taken by your municipality: 1. Mount Horeb has a Community Garden at one of our municipal parks. There are portions of the Community Garden designated as bird and pollinator habitat.

Ensure clean water in natural waterways: 1. Mount Horeb’s state-of-the-art water pollution control Waste Water Treatment Plant facility was completed in 2021, and meets future development needs while improving water quality. It received funding from the Wisconsin Clean Water Fund Program and a grant from Focus on Energy due to implementation of energy saving features. 2. An Adaptive Management Program at the municipal Waste Water Treatment Plant includes supporting conversion of nearly 150 acres in the watershed from traditionally farmed row crops to continuous cover crops. 29 acres have been converted, and the remaining fields will be done in spring 2026. We await data from Dane County regarding

conversion of these fields, which will help us gain a better understanding of how these projects will impact water quality.

2. Threats to Birds

2 . 1 . Address disturbance by harmful species

2.1.3 - (2 POINTS) Demonstrate that your community enforces an ordinance that requires domestic cats to be kept indoors, on a leash, or in an enclosure to prevent them from preying on birds and other wildlife and spreading disease. Mount Horeb has municipal ordinances restricting cats at large, and cats which “Kills, or attempts to kill, any domestic animal or songbirds, but not including rodents such as mice, gophers or moles.” <https://ecode360.com/27692693>

2 . 3 . Address light pollution

2.3.1 - (2 POINTS): Mount Horeb has drafted a zoning code rewrite ordinance for dark sky best practices. The rewrite includes multiple sustainability-related items, including permitting solar panels in all zoning districts, the commercial landscaping point system providing 2x the points for preserving existing desirable landscaping and 1.5x the points for installing native plants and dark sky standards for lighting. The dark sky ordinance was passed by the Sustainability and Natural Resources Committee on 25 November 2025, and will be voted on by the Village Board on 7 January 2026. <https://mounthorebwi.portal.civicclerk.com/event/2613/files/report/5459>

3 . Education & Engagement

3 . 1 . Celebrate World Migratory Bird Day

***** 3.1.1 - (1 POINT) Document and describe your event that incorporates the annual WMBD theme in some fashion. If the event has not yet occurred, please share your detailed plans. (MANDATORY). This will be done in May 2026. Mt H needs to make plans by February 2026.**

Ideas to include: 1. Stewart Lake County Park maintains an updated Bird Species list that is posted at main Park entrances. Bird sightings and information are regularly posted in various birding groups by local birders (eBird, WisBirdNet, SoBA, etc), including the rare Limpkin who was at Stewart Park September - October 2023.

2.

3 . 2 . Increase awareness of birds and their habitats

3.2.2 - (1 POINT) Attach a state publication showing that there is a segment of the Great Wisconsin Birding and Nature Trail or a designated Important Bird Area within or adjacent to your community. <http://www.wisconsinbirds.org/iba/sites/military-ridge-york-prairie/>

<https://www.nature.org/en-us/get-involved/how-to-help/places-we-protect/priority-area-military-ridge-prairie-heritage-area/>

? 3.2.4 - (1 POINT) Provide a link to your community’s Bird City Wisconsin webpage, which must be visible from the main page of your municipal website (it may be located at the first level of a drop-down menu on the main page but cannot be any less visible) OR demonstrate that your Bird City

effort has a significant social media presence. I don't understand how we can do this if we have not yet been granted Bird City status.

3.3. Educate and engage all ages

3.3.1 - (1 POINT) Document a substantial regular program that educates young people on any of the following topics: climate change, energy efficiency, green/bird-safe buildings, or environmental sustainability. The Mount Horeb High School has a student led Energy and Ecology Green Team which coordinates free educational events and activities with the Village Sustainability and Natural Resources Committee. The Mount Horeb High School Energy Team received a \$2500 award from Focus on Energy's "Renew Our Schools Challenge" in March 2024.

3.3.2 - (1 POINT) Demonstrate that schools in your community organizes its own substantial education and outreach program for young people. In February 2024 the Mount Horeb Middle School was awarded "Free Native Plants for Schools and Community Project" from Dane County. The Middle School established and planted raised beds for native plants; this is an ongoing effort.

3.3.4 - (1 POINT) Show that your municipality promotes and supports a bird club or other environmentally/ecologically minded club. The Mount Horeb Green Team follows the core principles of Rotary's Environmental and Sustainability Rotary Action Group (ESRAG) by implementing projects and working with local government, the chamber of commerce, and service organizations as a catalyst for resilience and sustainability. <https://esrag.org/>

3.5. Involve the community in conservation and stewardship

3.5.1 - (1 POINT) Illustrate a program that involves schools, garden clubs, or other organizations in bird-conservation activities. Mount Horeb has a 26-acre conservation park that consists of open grassland and wooded areas. The Public Services Department maintains some mowed walking trails. Local groups such as the Boy Scouts and high school classes have done a lot of work to control invasive species and encourage native vegetation. Future plans include establishing prairie areas, continuing to control invasive species, and expanding the trails throughout the park. <https://www.mounthorebwi.info/191/Parks-Information>

3.6. Promote scientific research and monitoring

3.6.1 - (1 POINT) Demonstrate that your community is represented in at least one citizen science bird-monitoring program. Mount Horeb has participated in the Christmas Bird Count since 1989 and has 36 years of continuous counting and data. The Mt H CBC is open to all participants and training is provided. We hold a post-count gathering for discussion and bird identification. We send a post-count summary to National Audubon and coordinate with Southern Wisconsin Bird Alliance.

3.7. Mobilize support / funding for community bird conservation

*****3.7.1 - (1 POINT) Attach a copy of your community's officially enacted Bird City resolution. This must be a resolution that is voted on and passed by the appropriate municipal council/board. Do not submit a proclamation. The resolution must be voted on and passed every two years; annually is preferred. (MANDATORY) This will be voted on by the Mount Horeb Sustainability and Natural Resources Committee 16 December 2025. It will be sent to the Village Board for approval on 7 January 2026.**

4. Sustainability

4 . 1 . Educate residents about climate impacts and renewable energy

4.1.1 - (2 POINTS) Describe your community's efforts to educate residents about climate change. Mount Horeb has a municipal Sustainability and Natural Resources Committee (SNR), in existence since December 2022. The SNR's official Mission Statement is "to collaborate with Village residents to create and expand sustainability practices which are inclusive, safe, and resilient, and which improve the quality of life for current and future generations who call Mount Horeb home; to advocate and promote sustainable policies and practices and seek innovative solutions while recognizing the interdependence of environmental quality, economic resilience and growth, and social equity." The SNR writes a "Sustainability Notes" semi-regular column for the local newspaper, The Mount Horeb Mail. Columns have included educational information on birds and habitat threats, native plantings and pollinators, community and homeowner solar and energy efficient achievable actions, bike friendly community, and other relevant topics.

4 . 2 . Reduce energy use and carbon emissions

4.2.1 - (1 POINT) Document an energy audit for a municipal building and show that your community is working to implement its recommendations. This will be included after our 16 Dec meeting and Slipstream presentation is finalized. Mount Horeb received an Innovation Energy Grant of \$75,000 in October 2024 from the Wisconsin Public Service Commission to develop a comprehensive municipal energy plan. The report will be finalized in December 2025.

4.2.2 - (2 POINTS) Show that your community has implemented a sustainability plan that improves your community's energy efficiency and/or increases the use of renewable energy. The SNR serves in an advisory capacity, and acts in the long-term interests of environmental and economic sustainability for the Village. The SNR's Charge is to advocate partnering with other communities and regional governments to leverage resources and funding for possible projects, and to reduce Mount Horeb's carbon footprint to mitigate the effects of climate change. The SNR is drafting a Village sustainability plan.

*****Can we enter the draft template from Jennifer? Also, where is it?**

4.2.3 - (2 POINTS) Demonstrate that your community participates in a community solar program or that a municipal building receives a significant percentage of its electricity from renewable energy. Mount Horeb achieved bronze certification from SolSmart in June 2024. <https://solsmart.org/>

World Migratory Bird Day Resolution

- **Whereas**, migratory birds are some of the most beautiful and easily observed wildlife that share our communities, *and*
- **Whereas**, many citizens recognize and welcome migratory songbirds as symbolic harbingers of spring, *and*
- **Whereas**, these migrant species also play an important economic role in our community, controlling insect pests and generating millions in recreational dollars statewide, *and*
- **Whereas**, migratory birds and their habitats are declining throughout the Americas, facing a growing number of threats on their migration routes and in both their summer and winter homes, *and*
- **Whereas**, public awareness and concern are crucial components of migratory bird conservation, *and*
- **Whereas**, citizens enthusiastic about birds, informed about the threats they face, and empowered to help address those threats can directly contribute to maintaining health bird populations, *and*
- **Whereas**, since 1993 World Migratory Bird Day (formerly International Migratory Bird Day) has become a primary vehicle for focusing public attention on the nearly 350 species that travel between nesting habitats in our communities and throughout North America and their wintering grounds in South and Central America, Mexico, the Caribbean, and the southern U.S., *and*
- **Whereas**, hundreds of thousands of people will observe WMBD, gathering in town squares, community centers, schools, parks, nature centers, and wildlife refuges to learn about birds, take action to conserve them, and simply to have fun, *and*
- **Whereas**, while WMBD officially is held each year on the second Saturday in May, its observance is not limited to a single day, and planners are encouraged to schedule activities on the dates best suited to the presence of both migrants and celebrants, *and*
- **Whereas**, WMBD is not only a day to foster appreciation for wild birds and to celebrate and support migratory bird conservation, but also a call to action,

NOW THEREFORE I, Ryan Czyzewski, as President of the Village of Mount Horeb, do hereby proclaim 9 May 2026 as

World Migratory Bird Day

in the Village of Mount Horeb, and I urge all citizens to celebrate this observance and to support efforts to protect and conserve migratory birds and their habitats in our community and the world at large.

Dated this draft 12 day of December in the year 2025

Signed Mount Horeb Sustainability and Natural Resources Committee recommendation for the Village Board

Title Kerry Beheler citizen member



AGENDA ITEM REPORT

MEETING DATE

December 16, 2025

PREPARED BY

Nicholas Owen, Administrator

AGENDA ITEM # 4.c

Review of Proposed Landscape Standards for Village Zoning Code Rewrite

BACKGROUND

The SNR committee will review and provide recommendations on the proposed landscape standards in the draft revised zoning code. Some changes from the previous code include: the landscape point system will be applied to the entire lot instead of just the parking lot, 2x points are given for preserving desirable existing trees and plants, and 1.5x points are given for using native plants and trees. The section includes charts with commonly-used appropriate landscaping species, samples of plan species appropriate for specific situations, and species that are prohibited or to be used selectively.

RECOMMENDATION

ATTACHMENTS

1. Landscape Standards

Section 17.08.01: Purpose

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, 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

Sections 17.08.11 to 17.08.19: Reserved

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 bufferyards.

- (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**.

Section 17.08.30: Landscaping Requirements

Figure 17.08.30a: Requirements for Interior Landscaping

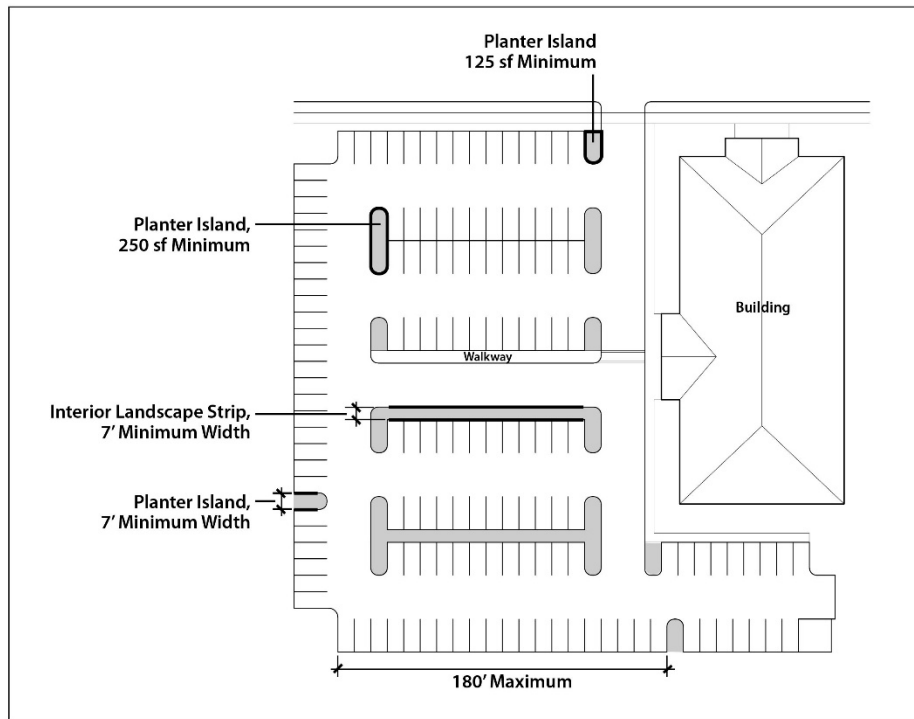
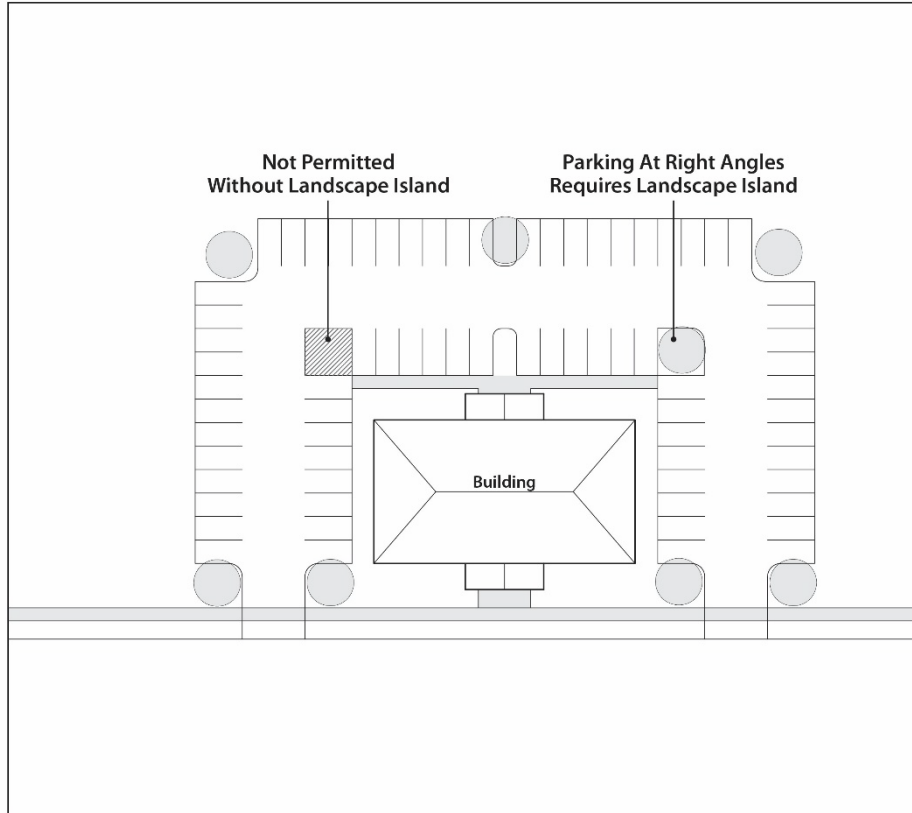
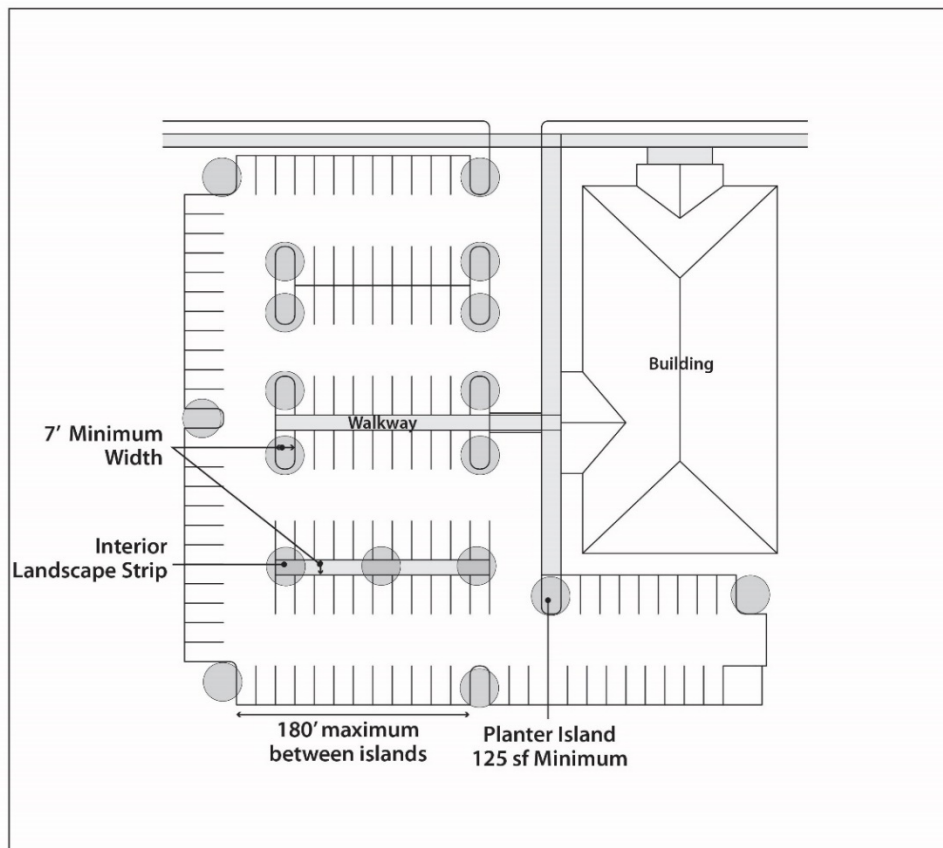


Figure 17.08.30b: Parking Rows at Right Angles



Section 17.08.30: Landscaping Requirements

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, 2 shade trees or tall deciduous trees shall be required for each island. See **Figure 17.08.30g** for minimum planting sizes.

Section 17.08.30: Landscaping Requirements

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 17.06.05](#).
- (b) Paved area expansions (see [Section 17.08.10\(2\)](#)) shall be subject to the same landscaping formula requirements as new paved areas (see [10.08.30d](#)).
- (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).
- (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 1 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

Section 17.08.30: Landscaping Requirements

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 bufferyards 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.

Section 17.08.30: Landscaping Requirements

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	
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	Only required along certain zoning district boundaries.
Manufactured Home Res. (MH-1)	40	50	100	20	
Institutional (INST)	40	50	100	20	See Figure 17.08.40b for requirements.
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.

Section 17.08.30: Landscaping Requirements

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.

	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)	0									
	Conservancy (CON)										
	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	.4	.4	.4	.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

Section 17.08.30: Landscaping Requirements

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
0.20	62	35	N/A
	00	35	Minimum 4-foot berm
	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
0.30	10	35	Minimum 4-foot berm
	135	40	N/A
	00	40	Minimum 5-foot berm
	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
0.40	215	45	N/A
	209	50	N/A
	00	50	Minimum 6-foot berm
	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	

Section 17.08.30: Landscaping Requirements

Opacity	Required Number of Landscaping Points per 100 feet	Required Minimum Width (in feet)	Required Structure	
0.50	310	45	N/A	
	299	50	N/A	
	56	50	Minimum 6-foot berm	
	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	
0.60	374	60	N/A	
	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	
1.00	677	70	N/A	
	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
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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” diameter
Tall Deciduous Tree ¹	30	2 ½” diameter
Medium Deciduous Tree ¹	15	2” diameter
Low Deciduous Tree ¹	10	1.5” 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.

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 shows below. .

Section 17.08.40: Classification of Plant Species

Figure 17.08.40a: Commonly-Used Appropriate Landscaping Species

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

Section 17.08.40: Classification of Plant Species

Plant Category	Landscaping Point Value Per Plant	Common Name	Scientific Name	Native Planting Type*
	3	Ninebark	<i>Physocarpus spp.</i>	No
	3	Azalea	<i>Rhododendron (Azalea) spp.</i>	No
	1	Weigela	<i>Weigela spp.</i>	No
	1	Cotoneaster	<i>Cotoneaster spp.</i>	No
Low Deciduous Shrubs	1	Gro-Low Sumac	<i>Rhus aromatica</i>	Yes
Medium Evergreen Shrubs	5	Juniper (Pfitzer)	<i>Juniperus x pfitzeriana</i>	No
	5	Yew (Japanese)	<i>Taxus spp.</i>	No
Low Evergreen Shrubs	2	Boxwood	<i>Buxus spp.</i>	No
	2	Juniper (Sergeant, Creeping, Andorra)	<i>Juniperus spp.</i>	No
Ornamental Grasses	1	Prairie Dropseed	<i>Sporobolus heterolepsis</i>	Yes
	1	Little Bluestem	<i>Schizachyrium scoparium</i>	Yes
	1	Karl Foerster Feather Reed Grass	<i>Calamagrostis x acutiflora 'Karl Foerster'</i>	No
	1	Sideoats Grama	<i>Bouteloua curtipendula</i>	Yes
Perennial Plantings	1	Coneflower	<i>Echinacea spp.</i>	Yes
	1	Black-Eyed Susan	<i>Rudbeckia</i>	Yes
	1	Lily	<i>Lilium spp.</i>	No
	1	Daylily	<i>Hemerocallis spp.</i>	No
	1	Columbine	<i>Aquilegia spp.</i>	Yes
	1	Aster	<i>Aster spp.</i>	Yes
	1	Blazing Star	<i>Liatris spp.</i>	Yes
	1	Peony	<i>Paeonia spp.</i>	No
	1	Pachysandra	<i>Pachysandra spp.</i>	No
	1	Stonecrops	<i>Sedum spp.</i>	Yes
	1	Astilbe	<i>Astilbe spp.</i>	No
	1	Hosta	<i>Hosta spp.</i>	No
	Pollinator Perennials	2	Butterfly Weed	<i>Asclepias tuberosa</i>
2		Smooth Blue Aster	<i>Aster laevis</i>	Yes
2		Wild Bergamot	<i>Monarda fistulosa</i>	Yes
2		Prairie Blazing Star	<i>Liatris pyconstachya</i>	Yes
2		Sweet Black-Eyed Susan	<i>Rudbeckia subtomentosa</i>	Yes
2		Smooth Penstemon	<i>Penstemon digitalis</i>	Yes
2		Showy Goldenrod	<i>Solidago speciosa</i>	Yes
2		Prairie Dropseed	<i>Sporobolus heterolepis</i>	Yes
2		Prairie Onion	<i>Allium stellatum</i>	Yes
2		Lance-leaf (sand) Coreopsis	<i>Coreopsis lanceolata</i>	Yes
2		Wild Lupine	<i>Lupinus perennis</i>	Yes
Rain Garden Mix	2	Pale Purple Coneflower	<i>Echinacea pallida</i>	Yes
	2	Purple Prairie Clover	<i>Sporobolus heterolepis</i>	Yes
	2	Boneset	<i>Eupatorium perfoliatum</i>	Yes
	2	Blue Vervain	<i>Verbena hastata</i>	Yes

Section 17.08.40: Classification of Plant Species

Plant Category	Landscaping Point Value Per Plant	Common Name	Scientific Name	Native Planting Type*
	2	Brown Fox Sedge	<i>Carex vulpinoidea</i>	Yes
	2	Wild Columbine	<i>Aquilegia canadensis</i>	Yes
	2	Blue Wood Aster	<i>Aster cordifolium</i>	Yes
	2	Tell Bellflower	<i>Campanula americana</i>	Yes
	2	Cardinal Flower	<i>Lobelia cordifolium</i>	Yes
	2	Palm Sedge	<i>Campanula mericana</i>	Yes
	2	Mountain Mint	<i>Pycnanthemum (native species)</i>	Yes
	2	Downy Wood Mint	<i>Blephilia ciliata</i>	Yes

*Wisconsin native plant species identified in this column shall be worth 1.5 times the point values identified.

Section 17.08.40: Classification of Plant Species

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	<i>Amelanchier</i>
	Low Deciduous Tree	Flowering crabapple	<i>Malus spp.</i>
	Low Deciduous Tree	Japanese tree lilac	<i>Syringa reticulata</i>
	Tall Deciduous Shrub	Dogwood (Grey or Pagoda)	<i>Cornus</i>
Appropriate for Screening	Tall Evergreen Tree	Firs	<i>Abies spp.</i>
	Tall Evergreen Tree	Juniper (Red Cedar)	<i>Juniperus virginiana</i>
	Tall Evergreen Trees	Spruces	<i>Picea spp.</i>
	Tall Evergreen Trees	Pines	<i>Pinus spp.</i>
	Tall Evergreen Tree	Douglas fir	<i>Pseudotsuga menziesii var. glauca</i>
	Tall Evergreen Tree	Eastern hemlock	<i>Tsuga canadensis</i>
	Medium Evergreen Tree	Arborvitae	<i>Thuja occidentalis</i>
Salt Tolerant	Shade Tree	Kentucky Coffee Tree	<i>Gymnocladus dioicus</i>
	Shade Tree	Northern Red Oak	<i>Quercus rubra</i>
	Shade Tree	Swamp White Oak	<i>Quercus bicolor</i>
	Shade Tree	Honey Locust	<i>Gleditsia triacanthos</i>
	Shade Tree	White Oak	<i>Quercus alba</i>
	Tall Deciduous Tree	Ginkgos	<i>Ginkgo spp</i>
	Medium Deciduous Tree	Canadian Serviceberry	<i>Amelanchier canadensis</i>
	Low Deciduous Tree	Flowering Crabapples	<i>Malus spp</i>
	Tall Deciduous Shrub	Dogwood (Gray, Pagoda)	<i>Cornus spp</i>
	Tall Deciduous Shrub	Common Lilac	<i>Syringa vulgaris</i>
	Tall Deciduous Shrub	Viburnum	<i>Viburnum</i>
	Medium Deciduous Shrub	Black Chokeberry	<i>Aronia melanocarpa</i>
	Medium Deciduous Shrub	Forsythia	<i>Forsythia spp</i>
	Low Deciduous Tree	Japanese Tree Lilac	<i>Syringa reticulata</i>
	Low Deciduous Shrub	Potentilla	<i>Cinquefoils</i>
	Low Deciduous Shrub	Azalea	<i>Azalea spp</i>
	Low Deciduous Shrub	Snowberry	<i>Symphoricarpos</i>
	Tall Deciduous Shrub	Staghorn Sumac	<i>Rhus typhina</i>
	Tall Deciduous Shrub	Mockorange	<i>Philadelphus</i>
	Medium Evergreen Shrub	Pfitzer Juniper	<i>Juniperus x pfitzeriana</i>
Medium Evergreen Shrub	Yew (Japanese)	<i>Taxus spp</i>	
Low Evergreen Shrub	Boxwood	<i>Buxus spp</i>	

Section 17.08.40: Classification of Plant Species

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	<i>Ulmus spp.</i>	Prohibited	Dutch Elm Disease
	Boxelder	<i>Acer negundo</i>	Prohibited	Spread quickly, self seed and sucker aggressively, attract bugs
	Freeman Maple	<i>Acer x freemanii</i>	Prohibited	Historically over-planted
	Norway Maples	<i>Acer platanoides</i>	Prohibited	Over-planted, dense, become weedy through self seeding
	Red Maples	<i>Acer rubrum</i>	Use Selectively	Not urban tolerant, prefer acidic soil
	Sugar Maples	<i>Acer saccharum</i>	Use Selectively	Not urban tolerant, best in open space settings
	Silver Maple	<i>Acer saccharinum</i>	Prohibited	Branches drop, become weedy through self seeding and aggressive root systems
Tall Deciduous Tree	Autumn Blaze Maple	<i>Acer x freemanni</i>	Prohibited	Historically over-planted
	Ash trees	<i>Fraxinus spp.</i>	Prohibited	Emerald Ash Borer
	Black Walnut	<i>Juglans nigra</i>	Prohibited	Root toxins limit other plant growth, drops messy tennis ball sized fruit
	Bradford pears	<i>Pyrus calleryana "bradford"</i>	Prohibited	Branches tend to break
	Cottonwood	<i>Populus deltoids, populus fremontii, or populus nigra</i>	Prohibited	Weak wood and aggressive root systems, seed litter
	Poplar	<i>Populus</i>	Prohibited	Aggressive root systems, short lived weedy nature
	Willow	<i>Salix</i>	Use Selectively	Weak wooded and prone to storm damage, aggressive roots
Medium Deciduous Tree	Ailanthus, Tree of Heaven	<i>Ailanthus altissima</i>	Prohibited	Invasive non-native
	European white birch	<i>Betula pendula</i>	Prohibited	Bronze Birch Borer
	White mulberry	<i>Morus alba</i>	Prohibited	Invasive non-native
Low Deciduous Tree	Purple Leaf Cherry Plum, Japanese Purple Plum	<i>Prunus cerasifera 'Atropurpurea'</i>	Use Selectively	Drops fruit
	Purple Sandcherry	<i>Prunus x cistena</i>	Use Selectively	Short-lived
	Russian Olive	<i>Elaeagnus angustifolia</i>	Prohibited	Drops fruit, invasive, non-native
Tall Deciduous Shrub	Buckthorns	<i>Rhamnus cathartica</i>	Prohibited	Invasive, non- native
	Autumn-olive	<i>Elaeagnus umbellata</i>	Prohibited	Invasive, non- native
	Multiflora rose	<i>Rosa multiflora</i>	Prohibited	Invasive, non- native
Medium Deciduous Shrub	Japanese spirea	<i>Spiraea japonica</i>	Prohibited	Invasive (re-seed)
	Burning bush	<i>Euonymus alatus</i>	Prohibited	Invasive, non- native
	Honeysuckle	<i>Lonicera spp.</i>	Prohibited	Invasive, non- native

Sections 17.08.41 to 17.08.49: Reserved

Classification	Common Name	Scientific Name	Prohibited ² or Use Sparingly ¹	Reason
Low Deciduous Shrub	Japanese Barberry	<i>Berberis thunbergii</i>	Prohibited	Invasive
Tall Evergreen Tree	Austrian pine	<i>Pinus nigra</i>	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;

Sections 17.08.51 to 17.08.59: Reserved

- 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

Sections 17.08.61 to 17.08.99: Reserved

- 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



AGENDA ITEM REPORT

MEETING DATE

December 16, 2025

PREPARED BY

Nicholas Owen, Administrator

AGENDA ITEM # 4.d

Sustainability Plan Update

BACKGROUND

Committee Member Saltes will provide an update on his efforts to find a partner to assist with preparation of the Village Sustainability Plan.

RECOMMENDATION**ATTACHMENTS**

None



AGENDA ITEM REPORT

MEETING DATE

December 16, 2025

PREPARED BY

Nicholas Owen, Administrator

AGENDA ITEM # 4.e.1

Wisconsin Green Tier Legacy Communities (GTLC) Network

BACKGROUND

Information from Chair White:

[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.

RECOMMENDATION

ATTACHMENTS

None



AGENDA ITEM REPORT

MEETING DATE

December 16, 2025

PREPARED BY

Nicholas Owen, Administrator

AGENDA ITEM # 4.e.2

Wisconsin Local Government Climate Coalition

BACKGROUND

From Chair White:

[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 and nine of the members are in Dane County (including the Dane County government).

RECOMMENDATION

ATTACHMENTS

None



AGENDA ITEM REPORT

MEETING DATE

December 16, 2025

PREPARED BY

Nicholas Owen, Administrator

AGENDA ITEM # 4.e.3

Illuminating Engineering Society (IES) Membership

BACKGROUND

A membership to the IES is needed to have access to the standards books to enforce the Dark Sky Illumination requirements that are being proposed in the zoning code rewrite. The membership cost is \$240 annually, and the standard book is \$250, which would be a one-time upfront fee and additional purchase as standards are updated. Chair White would like the group to consider using their budget balance for 2025 to go towards this initial purchase and the annual fee going forward.

RECOMMENDATION

ATTACHMENTS

None