



CITY OF APPLETON

Department of Parks & Recreation
1819 East Witzke Blvd.
Appleton, WI 54911
p: 920-832-3919
f: 920-993-3103
www.appleton.org

CITY OF APPLETON: SUSTAINABILITY MASTER PLAN CONSULTANT JUSTIFICATION & SCOPE OF WORK

Executive Summary

The City of Appleton is pursuing funding to retain a professional sustainability and resilience planning consultant to develop a comprehensive Sustainability and Resiliency Master Plan. This initiative will serve as a foundational document guiding Appleton's transition toward a low-carbon, resource-efficient, and resilient future. The plan will provide a clear framework to reduce municipal greenhouse gas (GHG) emissions by 50% by 2035, with a stretch goal of achieving net-zero emissions by 2050. It will also define citywide resilience goals—such as reducing flood risk, safeguarding critical infrastructure, and improving emergency preparedness—to ensure the community can adapt to and recover from climate-related challenges. It will also identify practical, cost-effective strategies to improve infrastructure performance, enhance operational efficiencies, and integrate sustainability across city departments and the broader community.

This plan will guide the use of Appleton's limited time and resources by ensuring city staff and volunteer efforts are focused on projects that deliver the greatest return on investment and community benefit—preventing inefficiencies and minimizing duplicated work. By providing structured direction, the plan will help the City stay focused and avoid piecemeal progress. The planning process will also ensure coordination across City departments, integrating sustainability into operations and long-term planning.

In addition to meeting Appleton's internal energy and climate goals, the Master Plan will support the City's eligibility for major state and federal grant programs and help prioritize capital investments in alignment with the principles of sustainable development. Deliverables will include a data-driven roadmap, measurable implementation strategies, community-informed recommendations, and a financial framework to guide decision-making. The plan will also establish clear metrics for tracking performance and a communication toolkit to build awareness and support.

Background and Need

In 2019, the Appleton City Council adopted a climate action resolution that formed a task force which issued a set of general recommendations to support the City's long-term environmental stewardship goals. While these recommendations laid an important foundation, they lacked project and financial feasibility assessments needed to convert them into actionable initiatives or projects.

Since then, city staff, council, and the community have expressed growing interest in advancing sustainability and resilience efforts. However, without a unified strategy, progress has been fragmented and inconsistent due to the absence of a shared direction across departments. A coordinated plan is needed to ensure that scarce resources are used effectively and that departmental efforts are not duplicated or working at cross-purposes.

The Master Plan will be developed through cooperation with all city departments to ensure integration with departmental priorities and capital planning. The planning process will establish department-specific deliverables and compliance mechanisms, ensuring accountability and cohesion under a unified citywide sustainability and resilience framework.

Moreover, the Appleton Sustainability Advisory Panel—made up entirely of volunteers—has played a vital role in advancing the City’s environmental goals. However, to maximize their impact, the City requires financial and expert consultant support to channel these efforts effectively and develop implementable actions.

This need became even more pressing following the extreme weather and flooding events that impacted Appleton in the summer of 2024. Infrastructure was overwhelmed in several neighborhoods, stressing stormwater systems and response capacity. These events underscored the need for a proactive and integrated resiliency framework.

Consultant Scope of Work & Deliverables

The consultant will be expected to deliver a comprehensive and actionable Sustainability and Resiliency Master Plan. Deliverables must adhere to SMART (Specific, Measurable, Achievable, Relevant, and Time-bound) criteria to ensure accountability and implementation readiness.

Baseline Assessment

- Review and ensure accuracy of the current GHG inventory for all municipal operations (facilities, fleet, infrastructure) using 2024 as the baseline year.
- Conduct an energy use assessment of all major facilities and systems, identifying high-consumption assets.
- Evaluate current water use, waste generation, and land management practices.
- Assess climate vulnerability, including flood risk, heat exposure, and emergency preparedness gaps.
- Conduct a municipal fleet assessment to evaluate electric vehicle (EV) or hydrogen conversion potential by department.
- Review sustainability and resilience master plans from comparable municipalities to identify best practices, benchmarks, and potential partnership opportunities.

Stakeholder & Community Engagement

- Launch the planning process with internal stakeholder engagement, focusing first on the Sustainability Advisory Panel and City departments.
- Facilitate departmental workshops to gather baseline data, identify project overlaps, and establish departmental deliverables.
- Coordinate at least three public engagement sessions, including at least one focused on underserved or climate-vulnerable neighborhoods.
- Develop an online engagement platform to collect community feedback throughout the process.

Strategic Goals & Action Planning

- Identify a minimum of 25 priority projects or policy changes to reduce municipal GHG emissions.
- Propose specific targets and actions across buildings, fleet, land use, waste, and procurement.
- Provide lifecycle cost analysis for each action, including payback periods and potential funding sources.
- Recommend updates or adoption of policies, ordinances, and operational changes to embed sustainability into daily practice.
- Incorporate sustainability considerations into long-range capital improvement planning.

Resilience Planning

- Develop a resilience framework addressing stormwater infrastructure, green infrastructure, backup power, cooling shelters, and community resiliency centers.
- Include a dedicated section on flood resilience, including modeling of future flood risks due to climate change and identification of infrastructure upgrades and green mitigation strategies.
- Identify neighborhoods most at risk from climate-related impacts and recommend site-specific adaptations.
- Propose feasibility and siting criteria for a City of Appleton Resiliency Center.

Implementation Roadmap

- Provide a 10-year implementation schedule with project phasing, departmental roles, and accountability mechanisms.
- Outline funding strategies, including leveraging local, state, and federal grants (e.g., FEMA BRIC, IRA, EPA grants).
- Include measurable annual milestones, emissions tracking, and public reporting templates.

Final Report, Education, and Communication Tools

- Draft and deliver the final Sustainability Master Plan with executive summary, action matrix, and illustrative graphics.
- Create a communications toolkit (e.g., fact sheets, infographics) for internal and external outreach.
- Develop educational materials and host informational sessions for City departments, elected officials, and the public to foster awareness and alignment.

Expected Outcomes & City Benefits

The plan will yield measurable triple bottom line outcomes—benefiting the environment, economy, and social wellbeing of Appleton residents. Key benefits include:

- **Return on Investment:** Many projects identified in the plan will produce cost savings through reduced utility expenses, deferred capital costs, or lower maintenance needs. These savings are expected to significantly offset the upfront cost of the plan itself.
 - **Efficient Resource Use:** Limited staff and funding will be directed toward projects with the highest impact, based on data and lifecycle analysis.
 - **Enhanced Resilience:** The City will be better prepared for climate-related disruptions like flooding and extreme heat. A proposed Resiliency Center will provide power, shelter, and coordination during emergencies.
 - **Unified Direction Across Departments:** Coordinated planning will ensure all departments contribute to sustainability goals in a consistent and measurable way.
 - **Improved Equity:** The plan ensures that historically underserved neighborhoods receive targeted investments and adaptation resources.
 - **Stronger Grant Competitiveness:** A professionally prepared, implementation-ready plan will improve Appleton's position for state and federal funding opportunities. Agencies such as FEMA, the Department of Energy, and the Environmental Protection Agency prioritize funding for communities that have clear, data-driven plans in place. The Sustainability Master Plan will not only serve as required documentation for many grant applications, but will also provide the analytical justification, stakeholder backing, and project prioritization that make proposals more competitive and easier to implement upon award.
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Estimated Budget and Timeline

- **Estimated Cost:** \$80,000 – \$150,000 based on similar plans from peer cities
 - **Project Timeline:** 9 to 12 months from contract execution to final plan adoption
 - **Milestones:** Engagement launch, baseline completion, draft strategies, public review, final adoption
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APPENDICES

SUMMARY OF CITY OF APPLETON SUSTAINABILITY EFFORTS

Over the past four years, the City of Appleton has taken significant strides to institutionalize sustainability and build momentum for decarbonization and climate resilience. These actions form a solid foundation for the proposed Sustainability Master Plan.

Key Milestones and Affiliations

- 2020 – Achieved “25x25” goal five years early: 25% energy reduction by 2025.
- 2021 – Completed the City’s first municipal greenhouse gas (GHG) inventory.
- 2022 – Formed the Advisory Panel on Sustainability and Climate Resilience.
- 2022–2023 – Joined Wisconsin Clean Cities and Wisconsin Local Government Climate Coalition.
- Ongoing – Green Tier Legacy Community, Tree City USA, and Bird City USA.

Facility and Infrastructure Decarbonization

- LED Lighting Retrofits: Upgrades across water and wastewater plants, parking ramps, and city buildings have reduced energy usage by over 1 million kWh annually and avoided over 800 metric tons of CO₂.
- Solar Energy: Installed a 296kW solar PV system at the Municipal Services Building in 2021, producing approximately 282,000 kWh annually.
- Geothermal HVAC Projects: New geothermal systems at the Appleton Public Library and Valley Transit significantly reduce energy demand and carbon emissions, with the Library project avoiding 571 tons of CO₂ annually.

Wastewater-to-Energy Innovation

- The Appleton Wastewater Treatment Plant (AWWTP)—which accounts for over 40% of the city’s emissions—has become a leader in renewable energy integration:
 - Three biogas boilers now heat the entire plant, reducing natural gas consumption by 90% and saving over \$250,000 annually.
 - In 2024, Appleton launched an Organic Rankine Cycle (ORC) waste heat-to-power system expected to produce over 500,000 kWh/year and offset 555 metric tons of CO₂ annually.
 - Electrical distribution upgrades, capacitor bank installation, and transformer consolidation have improved power quality and achieved over \$55,000 in annual utility savings.

Fleet and Transportation Decarbonization

- Valley Transit Geothermal HVAC and Net-Zero Transition: Appleton is developing a new multi-modal transit center with a 0.9MW solar field, geothermal HVAC, BESS, microgrid, and hydrogen fuel cell integration.
- Zero Emission Bus Fleet: Efforts are underway to Appleton’s public bus system through hydrogen production and on-site clean energy.

Emissions Inventory and Avoidance

- The City’s latest Scope 1 and 2 emissions inventory reports 27,241 metric tons of CO₂e. Avoided emissions total 4,251 metric tons, achieving a net-zero ratio of 10.3%—a baseline Appleton seeks to improve through the master plan.

Sustainability Principles and Community Resilience

- All initiatives reflect Appleton's commitment to the triple bottom line—enhancing environmental health, promoting equitable access to clean infrastructure, and ensuring long-term cost-effectiveness for taxpayers.

CITY OF APPLETON DEMOGRAPHICS AND CLIMATE VULNERABILITY OVERVIEW

Demographic Profile

- **Population:** 75,644 residents (2020 Census)
- **Racial and Ethnic Composition:**
 - White: 80.1%
 - Hispanic or Latino: 7.3%
 - Asian: 6.4% (predominantly Hmong)
 - Black or African American: 3.1%
 - Two or more races: 6.5%
 - Native American: 0.9%
- **Median Age:** 36.9 years
- **Median Household Income:** \$77,450
- **Educational Attainment:**
 - High school graduate or higher: 94.2%
 - Bachelor's degree or higher: 37%
- **Foreign-Born Residents:** 7.2%

Climate Vulnerability Overview

- Appleton experiences elevated risk from extreme heat and flooding. Vulnerability assessments indicate that older adults, children, and low-income populations are more exposed to these climate stressors.
- The Wisconsin Department of Health Services identifies segments of Appleton as higher risk due to socioeconomic and health-related vulnerabilities.
- The Wisconsin State Climatology Office reports trends in increasing winter temperatures and more frequent intense rain events, highlighting the need for adaptive infrastructure.

This demographic and climate profile supports the need for equitable, resilient, and science-based planning that prioritizes vulnerable communities and prepares Appleton for a changing climate.