economy · community · environment

WAUKESHA COUNTY

LEADING TO SUSTAIN

WAUKESHA COUNTY

SUSTAINABILITY PLAN

-JANUARY 2017 UPDATE -

The Waukesha County Sustainability Plan is a plan for furthering the sustainability of Waukesha County's internal operations and facilities.

ACKNOWLEDGMENTS

A special thanks to the staff that participated in compiling the information found in this Sustainability Plan. It was with their guidance, expertise, and hard work that this Sustainability Plan was created. The staff participating in the composition of this plan consisted of a variety of individuals from various Departments within in the County. Thank you to the following for your dedication and knowledge:

Jane Backhaus — Account Clerk II
Alan Barrows —Senior Conservation Specialist
Mike Bourquin — Conservation Biologist
Steve Brunner —Park System Manager
Dave Burch — Park System Manager
Allison Bussler — Director of Public Works
Rhiannon Cupkie — Senior Fiscal Specialist
Julianne Davan — Executive Assistant
Tony Di Frances — Administrative Associate
Gary Evans — Engineering Services Manager
Brian Gifford — Graduate Intern
Duane Grimm — Parks System Manager
Leif Hauge — Senior Civil Engineer
Mark Jatczak — Principal Risk Management Analyst
Diane Knoll — Senior Buyer
Pam Linn — Senior Landscape Architect
Rebecca Mattano — Solid Waste Supervisor
Rich Perschon — Park Foreman
Bob Rauchle — Fleet Manager
Terri Sgarlata-Lutz — Principal Human Resource Analyst
Dale Shaver — Director of Parks & Land Use
Amanda Pronschinske — Departmental Secretary
Jeremy Sprager — Golf Course Superintendent
Steven Todd — Hazardous Materials Coordinator
Shane Waeghe — Facilities Manager
Donna Walbert — Office Services Coordinator
Mike Wells — Architectural Services Technician
Jason Wilke — Senior Landscape Architect

TABLE OF CONTENTS

CHAPTER 1: INTRODUCTION

CHAPTER 2: PLAN GUIDE

CHAPTER 3: BUILDINGS

CHAPTER 4: GROUNDS & SITE MANAGEMENT

CHAPTER 5: TRANSPORTATION & FLEET

CHAPTER 6: WORKPLACE

APPENDIX: OBJECTIVES DATA

CHAPTER 1: INTRODUCTION

POLICY STATEMENT

Waukesha County seeks, in a fiscally prudent manner, to attain and maintain a place of leadership in environmental stewardship and sustainability at our facilities, in our operations and in the larger community of which we are a part.

BACKGROUND

As a "Triple AAA" rated municipality, Waukesha County prides itself on operating like a business. Our focus is delivering high quality, essential services with competence and skill. Through our sustainability efforts we carefully balance resource management with fiscal responsibility.

In 2008, Waukesha County developed a comprehensive sustainability plan for operations. This was one of the first sustainability plans by a county unit of government in Wisconsin. The intention of our sustainability planning process is to guide sustainability of Waukesha County's internal operations and facilities.

The plan focuses on four core areas:

- Buildings
- Grounds and Site Management
- Transportation and Fleet
- Workplace

WHAT IS "SUSTAINABILITY"?

When we talk about "sustainability" in this plan, we mean conducting the planning, execution, and operation of our County government in ways that "meet the needs of the present without compromising the ability of future generations to meet their own needs." (World Commission on Environment and Development, Our Common Future, 1987).

ALREADY SUSTAINABLE

For some time, departments in their own ways and on their own schedules have been thinking and acting "sustainably." Each has identified and implemented projects for energy efficiency and waste reduction that have saved money and promptly recouped investments. Most projects may be described as "low-hanging" fruit. Here are just a few examples of current practice.

- Replacement of bulb-type traffic signals with LED displays
- Use of recycled asphalt and other reclamation techniques when repaving or rebuilding highways.
- Use of environmentally-friendly "fly ash" and recycled asphalt in runway reconstruction at Waukesha County Airport.
- Use of recycled content synthetic wood for park boardwalks and floating piers.
- Use of recycled plastic for "way finding" signage at all eight parks.
- Recycling and reuse of an average of 85% of material from County building demolition projects.
- Recycling of a majority of the construction and demolition debris from a recent addition to Retzer Nature Center.
- Use of electronic equipment to ensures accurate dispensing of chemicals and to prevent over-application.
- Use of phosphorus-free fertilizer to minimize the detrimental effect on soils and surface waters.
- Plan development to preserve 80% of each major park in natural conditions. Use areas comprise the remaining 20% of each major park.
- Our current janitorial cleaning services vendor uses environmentally friendly cleaning products and is Leadership in Energy and Environmental Design (LEED) certified.

LESSONS LEARNED... FINDING A WAY FORWARD

When we talk about moving toward a more Sustainable Waukesha County we are really saying that we want to work together across departmental lines to do the business of government in a way that pays attention to the long view, which includes the environment, cultural and social resources as well as the bottom line. Making this change countywide will require resources and commitment. Just in the exercise of developing this plan, team members have recognized the need for education, communication and coordination resources that go beyond the capabilities of our individual teams.

BASELINE DATA

As part of the preparation of the Year 2010 – 2014 Waukesha County Sustainability Plan, energy consumption data was collected for the years 2003 to 2009. For baseline purposes, energy consumption data from years 2007, 2008 and 2009 were averaged. Baseline energy consumption levels are:

Electricity	15,849,414 kWh
Natural Gas	638,491 Therms
Unleaded Gasoline	209,313 Gallons
Diesel Fuel	204,591 Gallons

CHAPTER 2: PLAN GUIDE

How To Read Our Plan

The Waukesha County Sustainability Plan is formatted by the following four topics. A chapter is devoted to one topic and contains the following types of information:

- Introduction to sustainability in each facet of Waukesha County Government
- Identify "action steps" and how they are measured
- Layout of the action step goals and goal achievement

Topics

Buildings

Grounds and Site Management

Transportation and Fleet

Workplace

Action Steps

Each chapter outlines the "to do" or action item under each topic by strategy. These items are general goals for improving the sustainability in Waukesha County.

Each strategy is accompanied by one or more specific tasks to undertake in order to achieve the goals of the sustainability Plan.

Implementation Matrix

Included in the plan is a matrix which summarizes the Strategies and Action Items, and further specifies measurements and responsible departments. To gauge future success of sustainability initiatives, it is important to start with base data. Waukesha County provides a comprehensive database of the County's facilities and operations.

Metric

Each Action Item is assigned a metric, something measureable, to track future progress toward achieving goals of the Sustainability Plan.

Department(s)

Implementation of each action step will be carried out by those specifically involved with each topic area. Each Action Item is listed with the appropriate Department and/or Division.

Goals

Each strategy is accompanied by one or more action items which detail the specific tasks to undertake in order to achieve the goals of the sustainability Plan.

Impacted Resource

Symbols are used in the matrix in order to identify the resources that will be affected by implementing each action item. The symbols below provide an explanation of these impacted resources:

CONSERVES ENERGY: reduces the amount of electricity or natural gas needed to operate and maintain Waukesha County facilities.

CONSERVES WATER: reduces the amount of water used in the operation or maintenance of Waukesha County facilities.

SAVES MONEY: reduces the financial burden of operating or maintaining Waukesha County operations.

MAKES A BETTER WORKPLACE: improves the health or well-being of Waukesha County employees.

CONSERVES MATERIALS: reduces the quantity of or allows for greater recycling of the materials needed for Waukesha County operations.

Trends

Demonstrates direction in which action step is trending.

√ Goal has been met

Performance is trending in an unfavorable direction

Trend is holding

Performance is trending in a favorable direction

CHAPTER 3: BUILDINGS

INTRODUCTION

Buildings account for 40% of the nation's total energy consumption. Waukesha County builds, owns and operates a wide variety of buildings and facilities including offices, jails, park shelters, maintenance buildings, and an airport. Waukesha County operates 83 Buildings with over 2,000,000 square feet of total space. These buildings are located throughout the County, and each is unique regarding operations, maintenance, and improvements.

This chapter focuses on ways to reduce the energy and water used to operate and maintain Waukesha County facilities, minimize waste associated with operations, and make the facilities a healthier, more efficient and inspiring place to work. Many of the **strategies** and **action items** will also reduce the financial burden of operating and maintaining County facilities.

A "green" or sustainable building is one designed, built, renovated, operated or reused in an ecological and resource-efficient manner. Such buildings enhance occupant health, boost productivity, use energy, water and other resources more efficiently and reduce their overall impact on the environment.

From the outset, it is important to establish a vision that embraces sustainability principles and an integrated design approach. That means understanding how an entire building management system will help us operate our buildings more efficiently, rather than evaluating individual pieces. We will consider a full range of design and operations matters, from conceptualization through siting, construction, operation, remodeling and eventual deconstruction for reuse elsewhere.

The most advanced and well-known green benchmarks that have been developed for building design, construction and facility management, the Leadership in Energy and Environmental Design Green Building Rating System (LEED), was established by the U.S. Green Building Council in 1999. We will strive to meet these benchmarks in selected building projects and existing buildings.

STRATEGIC OBJECTIVE

Waukesha County prides itself as being an environmentally responsible county. Over the past 5 years Waukesha County has implemented their energy initiative for energy saving and sustainable projects in its buildings. This strategic objective focuses on Energy Efficiency, Water Efficiency, and Waste Reduction. The outcome of action items utilized in the strategic objective gave the County a 5.5% reduction in electrical consumption, 7.5% reduction of water consumption and a 1% increase in natural gas.

PROGRESS REPORT

STRATEGIC OBJECTIVE	HOW WE MEASURE	GOAL	GOAL MET	TREND	BENEFITED RESOURCES				
Energy Reduction - electric and natural gas (jump to objective details)	Utility TracPlus Energy Star	Reduce 5% every 5 years	√	↑	√		√		
Reduction of water consumption (jump to objective details)	Utility TracPlus	Reduce 5% every 5 Years	√	↑		√	√		
LEED-EB Standards for buildings (jump to objective details)	RFP & Bidding Process	Incorporate Language	√	↑	√	√	√	√	
Retro Commissioning in County Buildings (jump to objective details)	Utility Trac Plus Skyspark BAS	Continuous Annual Improvement	√	↑	√	√	√	√	

STRATEGIC OBJECTIVE: Energy Efficiency

To implement environmentally sustainable policies and procedures that are fiscally responsible and improve the quality of life.

OWNER: Facilities Manager

Return to Chapter 3 Progress Report

ACTION STEP	HOW WE MEASURE IT	DEPARTMENT/ DIVISIONS	TARGET COMPLETION DATE	REPORT PERIOD	GOAL	GOAL MET
Energy Reduction: Continue to monitor and benchmark energy consumption at County facilities. Evaluate data and initiate projects to increase operational efficiencies. (jump to more info)	• Utility TracPlus • Energy Star • Excel Spreadsheets	DPW Facilities Manager/PLU Park System Manager	Ongoing	Annually (March)	5% every 5 Years	
Electric Consumption (KWh) (jump to more info)	• Utility TracPlus • Energy Star • Excel Spreadsheets	DPW Facilities Manager/PLU Park System Manager	Ongoing	Annually (March)	5% every 5 Years	√
Natural Gas Consumption (Therms) (jump to more info)	• Utility TracPlus • Energy Star • Excel Spreadsheets	DPW Facilities Manager/PLU Park System Manager	Ongoing	Annually (March)	5% every 5 Years	

STRATEGIC OBJECTIVE: Water Consumption

To implement environmentally sustainable policies and procedures that are fiscally responsible and improve the quality of life.

OWNER: Facilities Manager

Return to Chapter 3 Progress Report

ACTION STEP	HOW WE MEASURE IT	DEPARTMENT/ DIVISIONS	TARGET COMPLETION DATE	REPORT PERIOD	GOAL	GOAL MET
Water reduction in County Buildings. Evaluate data and initiate projects to increase operational efficiencies. (jump to more info)	• Utility TracPlus • Energy Star • Excel Spreadsheets	DPW Facilities Manager/PLU Park System Manager	Ongoing	Annually (March)	3% every 5 Years	√

STRATEGIC OBJECTIVE: LEED-EB Standards For Buildings

To implement environmentally sustainable policies and procedures that are fiscally responsible and improve the quality of life.

OWNER: Facilities Manager

Return to Chapter 3 Progress Report

ACTION STEP	HOW WE MEASURE IT	DEPARTMENT /DIVISIONS	TARGET COMPLETION DATE	REPORT PERIOD	GOAL	GOAL MET
Incorporate LEED-EB practices and procedures that improve existing building performance (jump to more info)	RFP documents	DPW, PLU	Ongoing	Annually	Incorporate language in RFP and Bid Process	√

CHAPTER 4: GROUNDS & SITE MANAGEMENT

INTRODUCTION

Waukesha County owns and maintains 4,858 acres of park land, 2,786 acres of greenway land and 625 acres of government center facilities. Since 2009, 76.7 acres of mowed turf has been converted to no-mow native plantings/restorations and 1.6 acres of turf on the Government Center grounds converted into low maintenance groundcovers/landscape plantings. Waukesha County maintains 184 acres of asphalt parking lots, park roads and paved trails, and 3.49 acres of concrete sidewalk and patios. Since 2008, 18 permanent stormwater management Best Management Practices ("BMPs") have been installed at County parks and facilities to manage runoff from new impervious surfaces.

This chapter focuses on ways to reduce energy and water used to operate and maintain Waukesha County facilities, minimize waste associated with operations, and make the park sites and building grounds a healthier, more efficient, and inspiring place to work. Many of the strategies and action items will also reduce the financial burden of operating and maintaining County Grounds.

Pesticides, herbicides, and synthetic fertilizers accumulate in natural systems, water supplies, soil, food, animals, and humans. Landscape design and maintenance of parks and open spaces should consider alternative approaches to reduce consumptive water use and pest control alternatives that can help reduce toxicity in ecosystems, water, and food.

Safeguarding important lands, water, wetlands, soil, forests as natural ecosystems also helps to preserve the productivity and diversity of life upon which human life and well-being depends. We need to educate the public about our environment along with ways to responsibly use, protect and sustain it.

Groundwater is a major concern in Waukesha County and over-pumping is occurring in the Southeastern Wisconsin region. Water conservation initiatives along with infiltration practices and rain gardens are needed for a more balanced natural system. Educating the citizens for greater understanding of our water resources is a critical component to protecting and restoring them.

Reducing the amount of wastes and by-products reduces the likelihood of pollution while also reducing disposal problems and related costs for communities and businesses alike. Communities and businesses that make use of their own or each other's excess energy, water, and materials by-products can reduce or eliminate disposal and pollution problems and save, if not generate, significant revenues. Municipalities as well as the public need information and support to promote recycling and waste reduction.

STRATEGIC OBJECTIVES

Waukesha County prides itself as being an environmentally responsible county. Since 2008 Waukesha County has implemented their suitability plan initiatives as relates to grounds, site development, and management. Its strategic objectives are: **1) Reduce fuel consumption and emissions through reducing mowed turf in parks and government center grounds, 2) Reduce water consumption, long-term maintenance and improve habitat by use of native plants, xeriscaping and integrated pest management, 3) Install and maintain stormwater management practices, 4) Utilize best management practice of salt usage for deicing.**

PROGRESS REPORT

STRATEGIC OBJECTIVE	HOW WE MEASURE	GOAL	GOAL MET	TREND	BENEFITED RESOURCES				
Reduce Fuel Consumption and Emissions through reducing Mowed Turf in Parks and Government Center Grounds [jump to objective details]	Fuel reports and inter-department charges	5 acres/year	√	↑	√	√	√		
Reduce Water Consumption, Long-term Maintenance and Improve Habitat by Use of Native Plants, Xeriscaping and Integrated Pest management [jump to objective details]	Application logs	Ongoing	√	↑		√	√		
Install and Maintain Stormwater Best Management Practices ("BMPs") [jump to objective details]	Waukesha Co. Stormwater Database	Install BMPs on new infrastructure projects	√	↑		√	√	√	
Utilize Best management Practice for Salt Usage and De-icing [jump to objective details]	BMP's Used	Ongoing		↑			√	√	

STRATEGIC OBJECTIVE: Reduce Fuel Consumption and Emissions

To implement environmentally sustainable policies and procedures that are fiscally responsible and improve the quality of life.

OWNER: Parks & Land Use

Return to Chapter 4 Progress Report

ACTION STEP	HOW WE MEASURE IT	DEPARTMENT/ DIVISIONS	TARGET COMPLETION DATE	REPORT PERIOD	GOAL	GOAL MET
Identify the portion of acreage from existing mowed turf that is needed for park activities, services, and aesthetics. Designate the remaining acres for mowing removal [jump to more info]	GIS Acres	Parks & Land Use/ Park System, Land Resources, LIS	Ongoing	Annually (December)	All Active Parklands	
Identify sites to remove from mowing each year. Develop planting plans to enhance/replace mowed turf, and apply the steps identified in the plans [jump to more info]	• PLU Ecology Group • GIS Acres • Site measurements	Parks & Land Use/ Park System, Land Resources, LIS	Ongoing	Annually (December)	5 acres/year	√
Develop adaptive management plans for each planted area, and apply the steps identified in those plans [jump to more info]	• PLU Ecology Group • Park foremen	Parks & Land Use/ Park System	Ongoing	Annually (December)	Completion	
Monitor each area for planting success. Measure amount and location of invasive species for control [jump to more info]	On-site evaluation and inspection reports with recommendations for management and improvement	Parks & Land Use/ Park System, Land Resources	Ongoing	Annually (December)	Completion	
Evaluate benefits of reduced mowing [jump to more info]	• Gallons fuel saved • Reduced labor costs • Emissions reduced	Parks & Land Use/ Park System, Land Resources	Ongoing	Annually (December)	Complete each area of vegetative conversion	√

STRATEGIC OBJECTIVE: Reduce Water Consumption, Reduce Long-Term Maintenance, and Improve Habitat via Native Plants, Xeriscaping, and Integrated Pest Management

To implement environmentally sustainable policies and procedures that are fiscally responsible and improve the quality of life.

OWNER: Parks & Land Use

Return to Chapter 4 Progress Report

ACTION STEP	HOW WE MEASURE IT	DEPARTMENT/ DIVISIONS	TARGET COMPLETION DATE	REPORT PERIOD	GOAL	GOAL MET
Identify areas [jump to more info]	Master Planning	Parks & Land Use/ Park System, Land Resources, LIS	Ongoing	In progress	Complete for annually budgeted projects	
Develop, update management plan [jump to more info]	Update Land Management Plans in Cartegraph	Parks & Land Use/ Park System, Land Resources, LIS	Ongoing	Annually	Complete annual land management recommend-ations	
Implement native plantings [jump to more info]	Update Land Managenent Plans in Cartegraph	Parks & Land Use/ Park System	Ongoing	Annually	Complete annually budgeted projects	
Management [jump to more info]	Seasonal Site Review	Parks & Land Use/ Park System	Ongoing	Annually	Continue for all projects until established	
Monitor [jump to more info]	Seasonal Site Review	Parks & Land Use/ Park System	Ongoing	Annually	Minimum management after establishment	

STRATEGIC OBJECTIVE: Install, Maintain Stormwater Management Practices

To implement environmentally sustainable policies and procedures that are fiscally responsible and improve the quality of life.

OWNER: Parks & Land Use

Return to Chapter 4 Progress Report

ACTION STEP	HOW WE MEASURE IT	DEPARTMENT/ DIVISIONS	TARGET COMPLETION DATE	REPORT PERIOD	GOAL	GOAL MET
Identify site for stormwater BMP installation at proposed County parks & facilities [jump to more info]	When significant new impervious surfaces are proposed	Parks & Land Use, Public Works	Ongoing	Annually (March MS4 Report)	100% for new construction	√
Identify BMPs needed at existing facilities based upon site conditions and downstream concerns [jump to more info]	Infiltration volumes, peak flow rates & pollutants removed	Parks & Land Use, Public Works	Ongoing	Annually (March MS4 Report)	As needed	
Design and Install BMPs [jump to more info]	Stormwater Database	Parks & Land Use, Public Works, Administration	Ongoing	Annually (March MS4 Report)	As needed	√
Monitor and Maintain BMPs to ensure continued function [jump to more info]	Infiltration rates and accumulated sediment depths	Parks & Land Use, Public Works	Ongoing	Annually (March MS4 Report)	Inspect BMPs each year	√
Provide signage to educate users of County Parks and Facilities on value of stormwater management [jump to more info]	Number of signs	Parks & Land Use	Ongoing	Annually (March MS4 Report)	Sign at least one BMP at each park	

STRATEGIC OBJECTIVE: Utilize Best Practices for Salt Usage in De-Icing

To implement environmentally sustainable policies and procedures that are fiscally responsible and improve the quality of life.

OWNER: Parks & Land Use

Return to Chapter 4 Progress Report

ACTION STEP	HOW WE MEASURE IT	DEPARTMENT / DIVISIONS	TARGET COMPLETION DATE	REPORT PERIOD	GOAL	GOAL MET
Identify current salt usage practices, calculate parking lot and sidewalk areas and calibrate de-icing equipment [jump to more info]	Map all pavement areas to be cleared and areas not to be cleared	Parks & Land Use / Park System	Oct 1 Annual	Annual	Inspect all areas and equipment	√
Identify best management practices for winter storm management [jump to more info]	Chlorides reduced damage to turf	Parks & Land Use / Park System	Oct 1 Annual	Annual	All BMP's followed	√
Track locations of reported slips and falls and determine cause and potential remedies to reduce injuries or property damage [jump to more info]	The number of reported "slip and fall" or property damage claims	• DOA / Risk Management, • Parks & Land Use / Park System	Ongoing (Oct 1—Apr 1)	Annual report by Apr 1	Zero falls due to snow or ice.	
Continue to research alternative deicing methods that are not chloride-based [jump to more info]	Recommend practices to managers for implementation	Parks & Land Use / Park System	Ongoing	Ongoing	Replace chloride-based de-icers with organic additives	√
Continue to research deicing equipment that allows for more precise applications of chloride-based materials [jump to more info]	Recommendation for improvement approved by Vehicle Replacement Committee	• Parks & Land Use / Park System, • DPW / Fleet Maintenance	Ongoing	Ongoing	Replace inefficient application equipment	√
Educate public on winter safety [jump to more info]	Annual campaign for winter safety	• DOA / Risk Management, • Parks & Land Use / Park System	Ongoing (Oct 1—Apr 1)	Annual report by April 1	Distribute weekly safety tips during winter	√

CHAPTER 5: TRANSPORTATION & FLEET

INTRODUCTION

Waukesha County owns and maintains more than 400 miles of highways, of which more than 45 miles are multi-lane rural or urban roads. In addition, Waukesha County operates 155 traffic signals, 65 bridges, and seven roundabouts. Each year, the Department of Public Works applies approximately 17,000 tons of salt to keep Waukesha County Highways snow- and ice-free.

This chapter focuses on how we can design, construct and operate highways to reduce pollutant runoff, make highway corridors and intersections more efficient, reduce operating costs at intersections, improve intersection safety, maximize the use of recycled materials in roadway construction, improve the availability of non-motorized options through bike paths and sidewalks reduce salt usage and make smart decisions when considering alternate fuels and vehicles.

Pollution produced by fossil-fuel burning vehicles is responsible for public health problems that decrease quality of life and impose significant financial costs on individuals and the community as a whole. The County's transportation and mobility policies should address how to move residents, employees, visitors, as well as materials and goods to, from, and within the community in a more sustainable manner. Such policies call for including transportation practices that reduce emissions of carbon dioxide (CO_2) and other greenhouse gasses; practices that reduce the use and waste of fossil fuels by providing alternative modes of transportation; and practices that minimize the environmental impacts, health hazards and costs of transportation.

STRATEGIC OBJECTIVE

Waukesha County prides itself as being an environmentally responsible county. Over the past 5 years Waukesha County has implemented their energy initiative for energy saving and sustainable projects in its buildings. This strategic objective focuses on Roundabouts, Traffic Signal Systems, Storm Water Management, Walk-able/Bike-able Communities, Salt Usage, Central Fleet. The outcome of action items utilized in the strategic objective gave the County a 5.5% reduction in electrical consumption, 7.5% reduction of water consumption and a %%% reduction in natural gas.

PROGRESS REPORT

STRATEGIC OBJECTIVE	HOW WE MEASURE	GOAL	GOAL MET	TREND	BENEFITED RESOURCES				
Evaluate the appropriateness of and install roundabouts at selected intersections [jump to objective detail]	• Intersection "delay" • Number of crashes • Utility costs	Reduce by 10-20%	√	↔	√		√		√
Evaluate and install traffic signal timing systems [jump to objective details]	Amount of corridor "delay"	Reduce by 20%		↔			√		√
Provide storm water best management practices on highway construction projects [jump to objective details]	Total suspended solid removal	Reduce 80%		↑		√	√		√
Increase use of recycled asphalt and concrete in paving and road constructions [jump to objective details]	• Percent of RAP in asphalt • Percent of paving program using recycle techniques • Percent of base using recycled material	• Increase 25% • Increase 60% • Increase 100%		↑		√			√
Provide bike paths and walkways [jump to objective details]	Add bike path/ sidewalk/bicycle accommodations each year	1/2 mile per year	√	↔			√	√	

PROGRESS REPORT cont.

STRATEGIC OBJECTIVE	HOW WE MEASURE	GOAL	GOAL MET	TREND	BENEFITED RESOURCES				
Reduce salt usage on highways, in parking lots, on walks [jump to objective details]	Tonnage	Reduce by 10%	√	⟷		√	√		√
Reduce municipal water usage for brine-making operations; reduce salt water runoff to municipal waste treatment plans [jump to objective details]	Reduce Expenses	Reduce to $0.00		↑		√	√		
Work to "green" Waukesha County [jump to objective details]	Hazardous material generated	0		↓		√		√	√
Evaluate alternative fuels and vehicles [jump to objective details]	Evaluate Alternate Fuels and Vehicles Study Alternate Fuel Infrastructure	•Reduce use of gas and diesel by 10% • Increase operational costs no more than 5%		⟷			√	√	

STRATEGIC OBJECTIVE: Evaluate Selected Intersections for Future Roundabouts

To implement environmentally-sustainable policies and procedures that are fiscally responsible and improve the quality of life.

OWNER: Engineering Services Manager	Return to Chapter 5 Progress Report					
ACTION STEP	HOW WE MEASURE IT	DEPARTMENT/ DIVISIONS	TARGET COMPLETION DATE	REPORT PERIOD	GOAL	GOAL MET
Energy conservation [jump to more info]	• Utility consumption • Incurred Maintenance	DPW/Engineering Services	Ongoing	Annually (March)	Reduce by 50%	
Increase safety [jump to more info]	• Injury Crash Data • Property Damage Crash Data	DPW/Engineering Services	2016	Annually (March)	Reduce by 20%	√
Decrease vehicle delay [jump to more info]	Time taken to clear intersection	DPW/Engineering Services	2016	Annually (March)	Reduce by 20%	√

STRATEGIC OBJECTIVE: Evaluate and install traffic signal timing systems

To implement environmentally-sustainable policies and procedures that are fiscally responsible and improve the quality of life.

OWNER: Engineering Services Manager	Return to Chapter 5 Progress Report					
ACTION STEP	HOW WE MEASURE IT	DEPARTMENT/ DIVISIONS	TARGET COMPLETION DATE	REPORT PERIOD	GOAL	GOAL MET
Reduce Vehicle Delay [jump to more info]	Field Study	DPW/Engineering Services	Ongoing	Annually (March)	Reduce by 20%	

STRATEGIC OBJECTIVE: Provide stormwater best management practices on highway construction projects

To implement environmentally-sustainable policies and procedures that are fiscally responsible and improve the quality of life.

OWNER: Engineering Services Manager

Return to Chapter 5 Progress Report

ACTION STEP	HOW WE MEASURE IT	DEPARTMENT/ DIVISIONS	TARGET COMPLETION DATE	REPORT PERIOD	GOAL	GOAL MET
Total Suspended Solid Removal [jump to more info]	SWMM Simulations	DPW/Engineering Services	Ongoing	Annually (March)	Remove 80%	

STRATEGIC OBJECTIVE: Increase use of recycled asphalt and concrete in paving and road constructions

To implement environmentally-sustainable policies and procedures that are fiscally responsible and improve the quality of life.

OWNER: Engineering Services Manager

Return to Chapter 5 Progress Report

ACTION STEP	HOW WE MEASURE IT	DEPARTMENT/ DIVISIONS	TARGET COMPLETION DATE	REPORT PERIOD	GOAL	GOAL MET
Percent of Recycled Asphalt Pavement (RAP) in New Asphalt	Tonnage	DPW/Engineering Services	Ongoing	Annually (March)	Allow 25%	
Recycled Technologies in Paving Program	Tonnage	DPW/Engineering Services	Ongoing	Annually (March)	Use 60%	
Recycled Material in Base Course Aggregates	Tonnage	DPW/Engineering Services	Ongoing	Annually (March)	Allow 100%	

STRATEGIC OBJECTIVE: Provide bike paths and walkways

To implement environmentally-sustainable policies and procedures that are fiscally responsible and improve the quality of life.

OWNER: Engineering Services Manager

Return to Chapter 5 Progress Report

ACTION STEP	HOW WE MEASURE IT	DEPARTMENT/ DIVISIONS	TARGET COMPLETION DATE	REPORT PERIOD	GOAL	GOAL MET
Add Paved Trails [jump to more info]	Miles of trail built	DPW—Engineering/ PLU—Parks	Ongoing	Annually (March)	1/2 Mile per Year	√
Add Bicycle Accommodations to Highway Projects [jump to more info]	Percentage of Roadway Miles Built	DPW/Engineering Services	Ongoing	Annually (March)	Build 60%	√

STRATEGIC OBJECTIVE: Reduce salt usage on highways, in parking lots, on walks

To implement environmentally-sustainable policies and procedures that are fiscally responsible and improve the quality of life.

OWNER: Highway Operations Manager

Return to Chapter 5 Progress Report

ACTION STEP	HOW WE MEASURE IT	DEPARTMENT/ DIVISIONS	TARGET COMPLETION DATE	REPORT PERIOD	GOAL	GOAL MET
Study Alternative Treatment Methods [jump to more info]	Tonnage	DPW/HWY Operations	Ongoing	Annually (March)	Reduce by 10%	√

STRATEGIC OBJECTIVE: Reduce municipal water usage for brine-making operations; reduce salt water runoff to municipal waste treatment plans

To implement environmentally-sustainable policies and procedures that are fiscally responsible and improve the quality of life.

OWNER: Highway Operations Manager

Return to Chapter 5 Progress Report

ACTION STEP	HOW WE MEASURE IT	DEPARTMENT/ DIVISIONS	TARGET COMPLETION DATE	REPORT PERIOD	GOAL	GOAL MET
Investigate alternatives to municipal water use [jump to more info]	Reduce Municipal Water Cost	DPW/HWY Operations	Ongoing	Annually (March)	Reduce to $0.00	
Investigate methods to use storm water run-off to make brine [jump to more info]	Reduce Waste Disposal Cost	DPW/HWY Operations	Ongoing	Annually (March)	Reduce to $0.00	

STRATEGIC OBJECTIVE: Work to "green" Waukesha County

To implement environmentally-sustainable policies and procedures that are fiscally responsible and improve the quality of life.

OWNER: Fleet Services Manager

Return to Chapter 5 Progress Report

ACTION STEP	HOW WE MEASURE IT	DEPARTMENT/ DIVISIONS	TARGET COMPLETION DATE	REPORT PERIOD	GOAL	GOAL MET
Review and Adopt "Best Practices" for Central Fleet Application [jump to more info]	Reduced Hazardous Waste	DPW/Fleet Services	Ongoing	Annually (March)	Reduce to 0%	

STRATEGIC OBJECTIVE: Evaluate alternative fuels and vehicles

To implement environmentally-sustainable policies and procedures that are fiscally responsible and improve the quality of life.

OWNER: Fleet Services Manager

Return to Chapter 5 Progress Report

ACTION STEP	HOW WE MEASURE IT	DEPARTMENT/ DIVISIONS	TARGET COMPLETION DATE	REPORT PERIOD	GOAL	GOAL MET
Evaluate Alternate Fuels and Vehicles [jump to more info]	Reduce Gas and Diesel Fuel	DPW/Fleet Services	Ongoing	Annually (March)	Reduce by 10%	
Study the Alternate Fuel Infrastructure [jump to more info]	Operational Expenses	DPW/Fleet Services	Ongoing	Annually (March)	Increase no more than 5%	

CHAPTER 6: WORKPLACE

INTRODUCTION

Waukesha County strives to increase workplace sustainability by minimizing employee impact on the environment. Our focus on resource consumption and waste reduction helps lead to a smaller ecological footprint. Wise use of resources helps to protect the environment while increasing efficiency and reducing costs.

Providing a safe, comfortable, and sustainable workplace for employees is a priority. The success of the Sustainability Plan relies on collaboration between departments and employees, as well as continued education.

STRATEGIC OBJECTIVE

Waukesha County prides itself on being an environmentally responsible county, and continues to find ways to implement and improve sustainable workplace initiatives. Over the past ten years, Waukesha County has established numerous standards designed to reduce generated waste and improve health and safety in the workplace.

The strategic objective focuses on the following principles:

- recycling
- solid waste
- worker safety and comfort
- sustainable purchasing

Each action item supports our initiative to reduce solid waste and increase recycling tonnages collected from county facilities, as well as create a safer work environment for all employees.

CHAPTER 6: WORKPLACE

PROGRESS REPORT

STRATEGIC OBJECTIVE	HOW WE MEASURE	GOAL	GOAL MET	TREND	BENEFITED RESOURCES				
Reduce waste [jump to objective details]	Solid waste reports provided by contracted waste hauler	Reduce annual tonnage		⟷			√	√	√
Increase recycling [jump to objective details]	• Recycling Facility Tonnage reports • Collection contracts	Increase tonnage 5% every three years		⟷			√	√	√
Sustain recycling revenues [jump to objective details]	Materials recycling facility reports of tonnage and revenue	Increase revenue annually		⟷			√	√	
Use of "green" products [jump to objective details]	Purchasing and departmental reports	Increase use of green products		↑				√	√

STRATEGIC OBJECTIVE: Reduce Waste

Reduce waste generated by County Employees via in-house diversion programs for common waste projects

OWNER: Hazardous Materials Coordinator

Return to Chapter 6 Progress Report

ACTION STEP	HOW WE MEASURE IT	DEPARTMENT/ DIVISIONS	TARGET COMPLETION DATE	REPORT PERIOD	GOAL	GOAL MET
Prepare a study and proposal for development and implementation of a composting program to reduce disposal of biodegradable cafeteria products, food scraps, and paper towel waste [jump to more info]	Solid waste reports provided by contracted waste hauler	Parks & Land Use / Recycling & Solid Waste	Ongoing	Annual	Reduce Annual Tonnage	⟷
Purchase and manage centralized recycling stations for county facility use which collect the following materials: plastic bags/film, pens, and batteries [jump to more info]	Recycling reports provided by contracted waste hauler	Parks & Land Use / Recycling & Solid Waste	Ongoing	Annual	Reduce Annual Tonnage	⟷

STRATEGIC OBJECTIVE: Increase recycling at County facilities

Achieve an increase of 5% in recycling tonnages collected over three years.

OWNER: Hazardous Materials Coordinator

Return to Chapter 6 Progress Report

ACTION STEP	HOW WE MEASURE IT	DEPARTMENT/ DIVISIONS	TARGET COMPLETION DATE	REPORT PERIOD	GOAL	GOAL MET
Build and maintain education programs, including intranet polls, lunch-n-learns, county events, prizes & giveaways, campaigns [jump to more info]	• Recycling Facility Tonnage reports • Collection contracts	Parks & Land Use / Recycling & Solid Waste	Ongoing	Annual	Increase tonnage by 5% every three years	
Develop and communicate protocols for resource management, including purchasing, paper collection, etc.		Parks & Land Use / Recycling & Solid Waste	Ongoing	Annual	Increase tonnage by 5% every three years	
Streamline interdepartmental communication to promote waste reduction [jump to more info]		Parks & Land Use / Recycling & Solid Waste	Ongoing	Annual	Increase tonnage by 5% every three years	

STRATEGIC OBJECTIVE: Maintain efficient, cost-effective collection to sustain recycling revenues

Monitor collection contracts and onsite containers at county facilities

OWNER: Hazardous Materials Coordinator

Return to Chapter 6 Progress Report

ACTION STEP	HOW WE MEASURE IT	DEPARTMENT /DIVISIONS	TARGET COMPLETION DATE	REPORT PERIOD	GOAL	GOAL MET
Conduct annual audits of onsite containers [jump to more info]	• Waukesha County Recycling and Solid Waste Database • Materials Recycling Facility Tonnage and Revenue Reports	Parks & Land Use / Recycling & Solid Waste	Ongoing	Annual	Sustain recycling revenues	⟷
Educate employees to ensure efficient use of collection services [jump to more info]		Parks & Land Use / Recycling & Solid Waste	Ongoing	Annual	Sustain recycling revenues	⟷
Decrease costs for special events and emergency services through appropriate planning and administration of contracts [jump to more info]		Parks & Land Use / Recycling & Solid Waste	Ongoing	Annual	Sustain recycling revenues	⟷

STRATEGIC OBJECTIVE: Increase use of sustainable products

Focus purchasing practices on green and recycled-content products.

OWNER: Hazardous Materials Coordinator

Return to Chapter 6 Progress Report

ACTION STEP	HOW WE MEASURE IT	DEPARTMENT/ DIVISIONS	TARGET COMPLETION DATE	REPORT PERIOD	GOAL	GOAL MET
Increase use of recycled toner; track performance and cost savings [jump to more info]	Purchasing and Departmental Reports	Department of Administration / Purchasing	Ongoing	Annual	Cost savings	⟷
Increase practice of purchasing recycled and recyclable materials. Track and report environmental impact and cost savings (increased recycling, decreased disposal) [jump to more info]		Department of Administration / Purchasing	Ongoing	Annual	Increase recycling tonnage	⟷
Increase use of recycled content paper in each department. Track and report on environmental impact (amount of trees, water, energy conserved) [jump to more info]		Department of Administration / Purchasing	Ongoing	Annual	Conserve resources	⟷

APPENDIX: OBJECTIVES DATA

Return to Strategic Objective

CHAPTER 3

STRATEGIC OBJECTIVE: ENERGY EFFICIENCY

Nationwide, the consumption of electricity and natural gas in buildings is the greatest contributor to greenhouse gas emissions. The average energy consumed on an annual basis proceeding the Counties energy initiative was 2.4 million Kwh in electricity, 810,000 Therms of natural gas, and 34 million gallons of water. Energy costs at Waukesha County are well over $1 million each year. Each subsequent year after the energy initiative shows a trend in energy reduction (Chart A1).

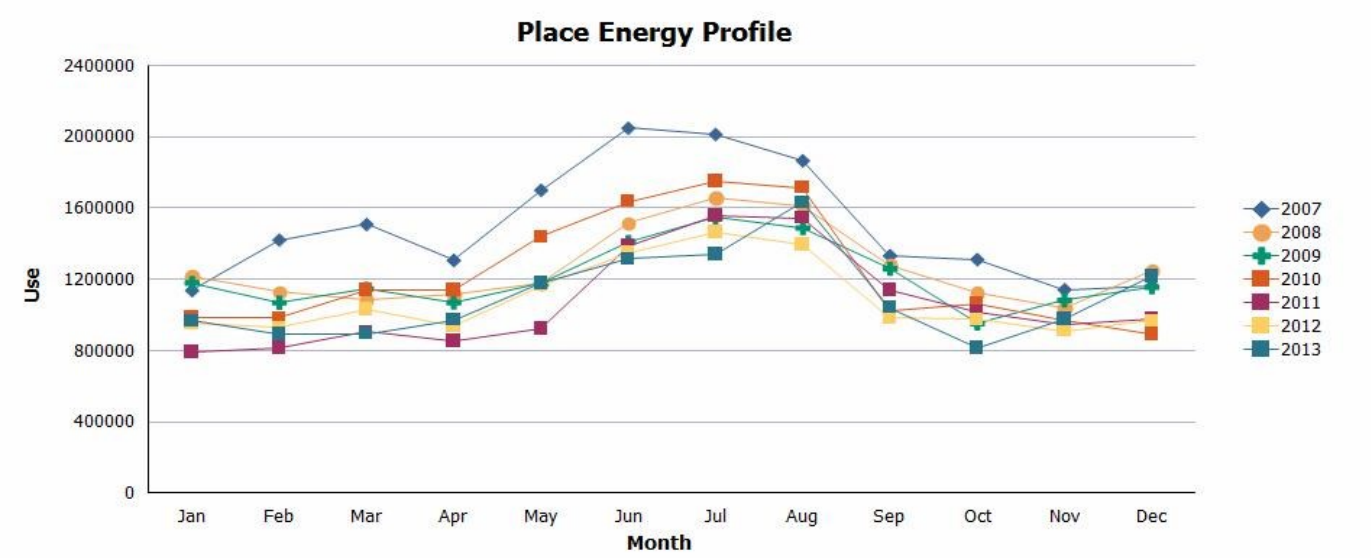


Chart A1—Energy Consumption Trend

The American Recovery and Reinvestment Act of 2009 (ARRA), Public Law 111-5, appropriates funding for the Department of Energy (DOE) to issue/award formula-based grants to states,U.S. territories, units of local government, and Indian tribes under the Energy Efficiency and Conservation Block Grant (EECBG) Program. Funding was provided to cities with populations of at least 35,000 or that are one of the top ten highest populated cities and counties with a population of over 200,000 or counties of any size population that are one of the ten highest- populated cities or counties of the State in which they are located.

The Departments of Parks and Land Use, Public Works and Administration cooperatively submitted a series of projects

under the EECBG to assist in implementing the Waukesha County Sustainability Plan completed in March 2008 and consistent with the Waukesha County Sustainability Policy adopted Through Resolution 163-R-006 by the County Board on December 16, 2008.

The Waukesha County Sustainability plan, adopted in December, 2008 and began to implement energy efficient strategies in 2010 in it's buildings, but with facilities that vary in age, size, and function, each has different energy needs and opportunities.

LEED-EB

Leadership in energy & environmental design-existing buildings language has been incorporated into Waukesha County Request for Proposal documents for all design consulting, construction, and maintenance contracts within all departments. The following are samples of language incorporated into our documents:

DESIGN CONSULTING

Integrated Design Process

Sustainability should be studied during all phases of the design process, balancing functional, economic and environmental factors. Sustainability should be incorporated into the earliest design discussions with a sustainable design charrette to kick-off the project to insure that all design and construction team members are familiar with sustainability concepts, and appropriate sustainable building materials and practices given the building type and site conditions. The charrette can be utilized to define and refine sustainable goals and priorities to aid in the design optimization process. All contracted parties will participate.

Life Cycle Cost Analysis to optimize design features

The A/E, in collaboration with the CM, will assess issues, options and tradeoffs over the projected useful life of the project, evaluating both the net present value and life cycle costing of design options. The goal is to comply with the program goals and provide a safe and secure building for its staff, customers and visitors at the least cost through the building life cycle. The team should utilize an inclusive approach to costing that incorporates life cycle operation and ongoing maintenance/support costs of design options.

LEED Green Building Guidelines

*While we **are not** requiring LEED certification, the A/E**,** in collaboration with the Construction Manager, Waukesha County Landscape Architects and/or Department of Public Works Facilities staff will set goals to meet certain LEED criteria and target a suitable rating level based on a LEED 'Can-Do' checklist. The A/E will use the LEED credits as guidelines in the five categories of New Construction: Sustainable Site Planning, Improving Energy Efficiency, Conserving Materials and Resources, Embracing Indoor Environmental Quality, and Safeguarding Water Resources. Note: If the A/E firm wishes to pursue LEED certification at their sole course and expense may do so.*

LEED-EB CONT'

Sustainable Site Planning

The A/E will collaborate with the Construction Manager, the DPW Facilities Manager and Waukesha County Landscape Architects to properly site the building and other features to best meet sustainable design goals. Facility design should respond to local climatic and ecological context by incorporating solar patterns, wind patterns, hydrology and geology into the design features. Waukesha County Landscape Architects will be in the review of site design work and the project will utilize a regional design palette for plants and other materials. Site design will use ecological design principles to mimic natural systems function.

Improving Energy Efficiency

Energy efficiency methods should be considered in all aspects of the facility design, including HVAC and lighting needs. Energy efficiency strategies should maximize solar access and aim to harvest natural on-site resources such as solar energy and daylight heat. Renewable and alternative energy generation, such as Solid Oxide Fuel cells (SOFC) should be considered. Building energy usage should reduce electricity consumption, eliminate unnecessary demand, and emphasize equipment efficiency and energy efficient control strategies. The A/E will collaborate with the Construction Manager, PLU Landscape Architects and the DPW Facilities staff to pursue grants and incentives available through WE Energies and Focus on Energy for energy efficient design and incorporating renewable energy systems.

Conserving Materials and Resources

The facility should be designed for adaptability and minimize material use with efficient planning and design detailing, engineered materials, and modular design. Design should be low maintenance and specify durable materials. Sustainable materials that minimize environmental impact should be used. Use materials with minimal packaging that is recyclable, and materials that are easily recycled once their useful life has ended. Waste reduction and recycling should be encouraged by recycling construction waste materials with a jobsite waste management plan and provision of easily accessed recycling stations.

Indoor and Outdoor Environmental Quality

The facility design should aim to reduce pollutant sources in both exterior and interior environments. The health of building occupants, maintenance staff and construction workers should be protected by selecting appropriate mechanical systems and carefully selecting materials, finishes and adhesives. Ozone depleting chemicals in mechanical systems and insulation should be avoided. Collaborate with the Construction Manager, DPW Facility Manager & PLU Landscape Architects to minimize environmental disturbance on-site.

Safeguarding Water Resources

Water conserving methods should be considered in all aspects of the facility design, including indoor and outdoor water use. The Architect should consider innovative water technologies, water efficient fixtures, cascading water use systems, grey water systems, and other means of harvesting water and reducing potable water use. The Architect will collaborate with the Construction Manager, DPW Facilities and PLU Landscape Architects to minimize site erosion, encourage infiltration and utilize innovative storm water management techniques. Water quality should be protected by avoiding the use of toxic materials on the site during development.

CHAPTER 3

ENERGY EFFICIENCY ACTION ITEMS

The implementation of the energy action items has directly reduced the consumption of electricity (KWh) and gas (Therms) by 5% each year from 2010 to 2014

- Ice Arena Heat Recovery and HVAC
- Replacement Exterior building lighting and parking lots lights with LED fixtures.
- Programmed and breakdown replacement of chillers with new magnetic chillers.
- Implement and manage Utility TracPlus a utility billing, managing, and tracking system.
- Maintain Energy Star Portfolio Manager for Waukesha County.
- Convert pneumatic HVAC controls to Direct Digital Controls.
- Retrofitting T-12 office lighting with energy efficient lamps, ballast and fixtures.

NEW ENERGY EFFICIENCY ACTION ITEMS

The first year of data is being collected for the NEW energy action items listed below:

- PLU Direct Digital Control implementation into the Building Automation System.
- Mental Health Center chiller and controls replacement/ upgrade project
- Law Enforcement Center chiller and controls replacement/ upgrade project

CHAPTER 3

STRATEGIC OBJECTIVE: WATER CONSUMPTION

Water supply and water use is a key focal point in planning for sustainable operations. As an environmentally responsible county, Waukesha County will continue to lead water efficiency efforts, including effective water demand management. The average water consumed on an annual basis proceeding the Counties energy initiative was 32,000,000 gallons of water. Each subsequent year after the energy initiative the water consumption has had significant reduction as illustrated in the chart below (Chart A2) with a five year average of 23.5 million gallons per year. This is a 8.5 million gallon reduction each year since Waukesha County adopted the Sustainability Plan.

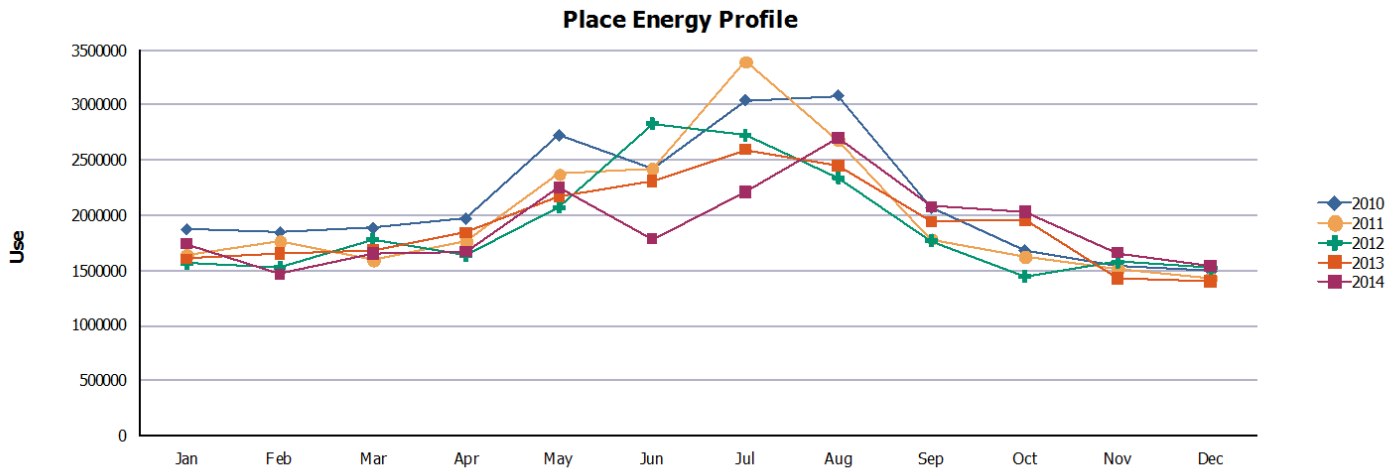


CHART A2 - WATER CONSUMPTION TREND

WATER CONSUMPTION *ACTION ITEMS*

1. *The implementation of the County Jail Solar Thermal System.*
2. *Implementation of an Ozone generator at the Jail for the washing machines.*
3. *Implementation of low-flow toilets and sink aerators.*

CHAPTER 4

STRATEGIC OBJECTIVE: REDUCE FUEL CONSUMPTION AND EMISSIONS BY REDUCING MOWED TURF IN PARKS AND GOVERNMENT CENTER

Objective Owner - Parks and Land Use

*The **Growing Not Mowing** program was developed for converting mowed turf to "no-mow" areas. To reduce the amount of mowed turf reduces emissions, costs for equipment maintenance, and consumption of fuel. Formerly mowed areas are replaced with naturalized plantings and tall grass. Diversity of selected grassland Management Units is improved by utilizing the county seed drill. This increases ecological functionality, which increases habitat for wildlife and pollinators in our parklands.*

Initiative/Action

1. As part of the park master planning process, study and select all acres within the Park System we currently mow. Then identify all locations where we must continue to mow including athletic fields, picnic areas, turf adjacent to beaches, portions of dog exercise areas, and similar areas. Determine the maximum amount of acres where we can discontinue mowed turf. Also identify appropriate fields in existing Natural Management Plans, and drill native species to add species and structural diversity.

2. Develop signage for "Growing not Mowing" and develop a list of Frequently Asked Questions. Apply other educational strategies as needed. Educate public with information about plant species (uses, function and details).

3. The Parks & Land Use Ecology Team develops planting plans for new un-mowed areas for site preparation, installation, and a three-year establishment timeline. Planting plans prescribe weed control before planting, select appropriate species for the site, and ensure native seedling establishment in the critical early years.

4. The Parks & Land Use Ecology Team develops management plans for new planted areas. These cover post-establishment and ongoing management. Integrated Pest Management minimizes herbicide use; new techniques are utilized as they become available.

5. Monitor seedling establishment and planting success and existing and new weed populations. Adjust management as needed. Mostly, a subjective approach of parks staff is used. Systematic sampling may be employed for larger areas.

6. Use past and current records to determine fuel use and emissions. We can also use cost if we simultaneously relate it to price per gallon.

Performance Measure

- Keep inventory and map of mowed turf converted to no-mow since 2008. Categorize: less frequent, completely stop, mow just annually for vegetation maintenance.
- Track Fuel volume reduction per year with emissions reduction statement.
- Sign new no-mow areas with "Growing Not Mowing" sign to encourage public education.

CHAPTER 4

STRATEGIC OBJECTIVE: REDUCE FUEL CONSUMPTION AND EMISSIONS BY REDUCING MOWED TURF IN PARKS AND GOVERNMENT CENTER

Objective Owner - Parks and Land Use

No Mow total acres planted: 76.7

Plus 11 acres Old-Field interseed (does not include Conservation Reserve Program)

Note: M = Land Management Area

- **Waukesha County Courthouse campus**: 0.3 acres (no mow - oaks)
- **Fox River Park**: 15.2 acres (M5: 8 acres • M6: 7.2 acres)
  • Not included in above total: Area 4B - 23.3 acres planted with old seed
- **Minooka Park**: 1 acre no-mow along north side of swimming pond
  • 5A has 3 acres Old-Field interseed (planted spring 2016)
  • No mow along north and entrance roads — 3 acres Old-field interseed
- **Mukwonago Park**: 5.3 acres (M1: 1 acre • M8: 3.3 acres • no mow: 1)
  • 4A has 5 acres Old-Field interseed
  • Not included in above total: 4D has 13.4 Old-Field interseed (CRP - only about six species)
  • 3 acres no mow (2016)
- **Muskego Park**: 1 acre (M7: 1 acre)
- **Nashotah Park**: 9.7 acres (M7A: 3acres • M7B: 6.7 acres)
- **Retzer Nature Center**: 20 acres (M2A: 5.7 acres • M2B: 8.5 acres • M2C: 5.8 acres)
  • Not included in above total: M1A: six acres of Legacy Forest - Savanna that will soon have a nice half-canopy
- **Ryan Park**: 13.2 acres (M2A: 1 acre • M2B: 7.3 acres • M2C: 2.9 acres • M7: 2 acres)
  • Not included in above total: M3C has 25.4 Old-Field interseed (CRP - only about 6 species)

CHAPTER 4

STRATEGIC OBJECTIVE: REDUCE WATER CONSUMPTION, REDUCE LONG-TERM MAINTENANCE, AND IMPROVE HABITAT

Objective Owner - Parks and Land Use

- Continue to use native species in naturalized plantings rather than horticultural or non-native species in formal (higher maintenance) plantings.
- Explore more opportunities for xeri-scaping (landscaping with slow-growing, drought tolerant plants to conserve water) in new or replacement plantings within all developed areas of the park and County facilities.
- Native plantings allow for the reduction in the use of fertilizers and pesticides, and improve soil health through increasing organic content and improving soil structure which hold water and reduce runoff.

Initiative/Action

1. Continued use of 100% native trees and shrubs (or their cultivars) within the Park System, including the Legacy Forest Program. The Park System is committed to planting only grasses and forbs from within our ecosystem region at Retzer Nature Center and other non-developed areas of parkland. This policy preserves the local genotype of our native plant species and the balance of our natural communities.
2. Government Center, Golf Courses, and Ice Arenas increase use of natives and explore xeriscaping with non-native, drought-tolerant, lower maintenance groundcovers, perennials, trees and shrubs.
3. Continue to use of rain gardens with native plant species that tolerate fluctuating conditions for alternative on-site storm water management to increase infiltration. Lower maintenance once garden is established is another benefit.
4. Utilize Integrated Pest Management (IPM) techniques within manicured turf and ornamental landscaped areas to keep pest populations below economically injurious levels.

Performance Measure

- Through use of native plantings, reduce daily watering and limit to periods of drought where watering is only needed to protect investment in plantings.
- Initially plantings require more maintenance to establish the site, once established considerably less maintenance is required.
- 1.6 acres of the Government Center have already been converted from turf or high maintenance plantings to lower maintenance groundcovers and plantings.

Performance Measures (continued)

- Planting of Annuals which are high maintenance and high watering requirement has been eliminated to just the one focal point planter at the main entrance to the Courthouse.
- Utilize pesticides when there is no risk of environmental damage or when benefits outweigh the risks and only when other control practices are not available, economical or practical.

No-Mow conversion

- Before: Difficult to mow turf areas
- After: Slow-growing, drought-tolerant plants

Butterfly Garden - Fox Brook Lodge

Native Plantings

- Deep root systems require less watering
- Requires no fertilizers, pesticides
- Requires no mowing, reduces fuel/energy costs
- Provides food and habitat for wildlife, enhances workplace aesthetics

Native Plantings - 5 Park Entrance Islands

Native Landscaping - Fox Brook Lodge

CHAPTER 4

STRATEGIC OBJECTIVE: INSTALL, MAINTAIN STORMWATER BEST MANAGEMENT PRACTICES

Objective Owner - Parks and Land Use

Improve stormwater management practices at County parks & facilities to reduce runoff, increase infiltration for groundwater recharge, improve water quality and protect downstream natural resources. Stormwater Best Management Practices ("BMPs") are techniques or devises employed to avoid or minimize sediment or other pollutants carried in runoff or to reduce runoff volumes or peak flows.

Initiative/Action

1. Install Best Management Practices ("BMPs") for new impervious surfaces installed at County parks and facilities.
2. Encourage the use of infiltration BMPs where site and soil conditions are suitable.
3. Continue to install and maintain rain gardens to infiltrate roof runoff.
4. Contain and properly treat runoff from salt storage areas at highway operations substations.
5. Explore using permeable pavement and disconnecting impervious surfaces in the Park System Pavement Management Plan.
6. Continue to study opportunities for water quality improvements.

Performance Measure

- Install stormwater BMPs where significant new impervious surfaces are constructed on County property.
- Retrofit stormwater BMPs on existing buildings if funding/project opportunity.

Return to Strategic Objective

Stormwater Best Management Practices

Installed at Waukesha County Parks, Facilities Since 2008

BMP Type	Number of BMP
Bioretention Basin	9
Infiltration Basin	2
Rain Garden	2
Wet Detention Basin	2
Dry Detention Basin	1
Oil & Water Separator	1
Green Roof	1
Total	**18**

Source: stormwater.waukeshacounty.gov

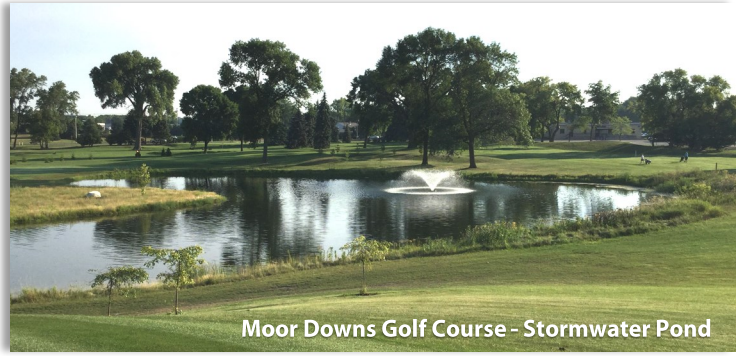
Retzer Nature Center - Permeable Pavers, Infiltration Swale

Naga-Waukee Park storage building– Rain Garden

Minooka Park restroom - Infiltration Swale

Campus Grounds Service Center - Infiltration Basin

HHS Building - Green Roof



Moor Downs Golf Course - Stormwater Pond

CHAPTER 4

UTILIZE BEST MANAGEMENT PRACTICES FOR SALT USE IN DE-ICING

Objective Owner - Parks and Land Use

Utilize best management practices to use the optimum amount salt to de-ice pavement at the Government Center and park facilities to reduce the impact of dissolved chlorides on the environment while maintaining safe conditions.

Initiative/Action

1. Identify current salt usage practices, calculate parking lots and sidewalk areas and calibrate deicing equipment.
2. Identify best management practices for salt usage.
3. Track locations of reported slips and falls and determine cause and potential remedies to reduce injuries.
4. Continue to research alternative deicing methods that are not chloride-based (salts).
5. Continue to research deicing equipment that allows more precise applications of chloride-based (salts) materials.
6. Educate the public on winter safety

Performance Measure

The primary performance measures are an overall reduction in the amount of chloride-based deicers that run off into storm drains and ultimately into local waterways and a reduction in the number of slips and falls due to snow and ice. From an environmental standpoint, chloride does not degrade and cannot be removed from surface waters. It does move with water and can eventually flush out of a water system, but if chloride inputs exceed outputs chloride will accumulate in the environment over time. From a safety perspective, reducing the number of slips and falls has a budgetary impact associated with lost time at work and medical expenses. Secondary performance measures include a reduction in turf damage adjacent to parking lots and sidewalks and an overall reduction in deicing materials used per storm event. Healthy turf adjacent to impervious surfaces helps to filter out chlorides and other pollutants contained within surface water runoff. On overall reduction in the amount of deicing materials used can be achieved through precise salt applications achieved by utilizing new equipment technologies and proper calibration.

Return to Strategic Objective

CHAPTER 4

DE-ICING BEST MANAGEMENT PRACTICES FOR WAUKESHA COUNTY PARK SYSTEM PROPERTIES

- Leave 6" buffer of unmoved snow against turf edges
- Store snow in areas where solids can be recovered after the snow melts
- Locate snow piles down-slope from storm drains to prevent contaminated snow melt from flowing through to them
- Store de-icing materials indoors
- Avoid storing snow having elevated chloride concentrations in areas of storm water infiltration
- Hold application of de-icers until precipitation has stopped
- Remove snow prior to application of de-icers
- Improved de-icing equipment for dispersing products

Salt Dispersal Control

Reduce Salt Storage Run-off

V-box Truck Salter

CHAPTER 5

EVALUATE INTERSECTIONS FOR INSTALLATION OF ROUNDABOUTS

Objective owner: Public Works / Highway Operations, Engineering

Traffic in Waukesha County currently increases 1% annually. This leads to greater inefficiencies on the roadway system — especially at intersections. These inefficiencies increase the amount of time — "delay" — that a vehicle waits at an intersection and the number of accidents at an intersection. Increased delay causes increased vehicle emissions and fuel consumption. In addition, more accidents have a direct public cost due to higher insurance rates and decreased productivity due to injuries and vehicle repairs.

Performance Measure

Maintenance

Costs to maintain a roundabout intersection are 90% less than for signal control intersections. Signalized Intersection maintenance cost (2016) is $3,500 per year, which includes electricity and signal maintenance. Unlike these "traffic signal intersections," a roundabout requires little ongoing maintenance. There are no electrical parts — poles, bulbs cameras — that require frequent inspection or replacement.

Electricity Use

At the roundabout intersection at Racine Avenue and Kelsey Drive (below), electrical use data indicates that energy costs at the roundabout total slightly more than a traffic signal intersection located a mile north of that location (Racine Avenue at Woods Road). This is due to the high number of "luminaires" installed at the roundabout versus a typical signal -14 vs 4. However, when ongoing maintenance costs are added in, traffic signal intersections become more expensive from both an equipment and labor standpoint. The result is that roundabouts do not cost 90% less than traffic signals overall; the cost to operate a roundabout is likely **50%** of the cost to operate a traffic signal.

Roundabout Electrical Use			**Traffic Signal Electrical Use**		
Racine & Kelsey			**Racine & Woods Rd.**		
Muskego, WI			**Muskego, WI**		
Meter # NZ356397			**Meter # NZ369361**		
2015	**kWh**	**Cost $**	**2015**	**kWh**	**Cost $**
	9,69	$1,485.5		8,30	$1,269.6
TOTALS:	2	4	**TOTALS:**	4	3

Delay

Average delay at an intersection is 20% less than the baseline at the intersection prior to construction of a roundabout. This goal is met both for roundabouts a signals. Average delay at roundabouts was computed at 49% less than the delay at signalized intersections (below).

Location	Pre Constr. Avg Delay AM/PM	Signal Avg Delay AM/PM	Roundabout Ave Delay AM/PM
CTH Y and CTH M	135/50	19.5/13.4	6.3/5.3
CTH V & Good Hope	Two-Way Stop	12.6/11.8	5.3/4.9
CTH M & Brookfield	192/176	21.0/23.7	11.3/19.3

Accidents

The number of accidents occurring at the roundabout is 20% less than the baseline at the intersection prior to construction of a roundabout.

Overall crashes for roundabouts are down 28% however single lane roundabouts have performed better than two-lane roundabouts which have seen a 100% increase in the number of crashes mainly due to aggressive driving and failure to yield the right of way. Severe crashes have been reduced 61% overall, 74% for single lane roundabouts and 22% for two-lane roundabout. There was one fatality before roundabouts were installed at these locations and none since.

	Before reconstruction			After Reconstruction		
Location	**Crashes**	**Fatalities**	**Injuries**	**Crashes**	**Fatalities**	**Injuries**
CTH Y and Kelsey Drive	13	1	14	15	0	4
CTH Y and CTH M	21	0	9	43	0	7
CTH V and Good Hope	19	0	13	8	0	3
Total	53	1	36	66	0	14

Crash Reduction Single lane	28.13%
Crash Reduction - 2 lane	-104.76%
Crash Reduction - all roundabouts	-24.53%
Fatality reduction - all	100.00%
Injury reduction - all	61.11%
Injury reduction - single	74.07%
Injury reduction - 2 lane	22.22%

Return to Strategic Objective

CHAPTER 5

EVALUATE AND INSTALL TRAFFIC SIGNAL TIMING SYSTEMS

Objective Owner - Public Works / Highway Operations division, Engineering

Evaluate and install coordinated traffic signal timing systems at appropriate County intersections through high traffic corridors.

As traffic in Waukesha County continues to increase, this leads to greater inefficiencies on the roadway system especially at the intersections along high-traffic corridors. Most of these corridors have existing traffic signals that work independently from each other. This causes traffic along the high-traffic corridor to stop and start at each intersection. These stops and starts and the increased delay at intersections cause increased vehicle emissions and fuel consumption. Waukesha County has installed Traffic signal interconnect systems along 3 corridors CTH Q in Menomonee Falls, CTH F in Pewaukee, and CTH O in New Berlin

Performance Measure

Reduce the vehicle delay along the mainline of the high traffic corridor by 20%. Existing baseline delay will be measured along the mainline of the high traffic corridor during initial traffic counts. Studies are still ongoing.

Storm Water Management

The widening and urbanizing of roadways often doubles the amount of impervious surface for a given section of roadway. In heavy rainfalls not only are storm water discharge rates increased but total suspended solids and other pollutants are washed off the roadway surface and transported to rivers and wetlands. As a result, the risk for increased flooding and environmental degradation of streams and wetlands is increased. The Department of Public Works has been using erosion control techniques and storm water facilities for many years to limit environmental damage from highway construction projects.

CHAPTER FIVE

PROVIDE STORM WATER BEST MANAGEMENT PRACTICES FOR HIGHWAY CONSTRUCTION PROJECTS

Objective Owner - DPW Engineering and Highway Engineering staff, PLU - Staff

Performance Measure

- Before 12/31/15, remove at least 80% of Total Suspended Solids during construction, compared with uncontrolled condition. After 1/1/16, limit sediment discharge during construction to 5 tons / acre / year, or less.
- Remove 80% of all post-construction Total Suspended Solids (TSS) in Best Management Practices, to the maximum extent practicable.
- Peak discharge rates reduced to pre-construction condition or lower or, where applicable, meet Milwaukee Metropolitan Sewerage District volumetric design criteria.

BMPs to remove total suspended solids have been installed on many of the Departments projects. Techniques used have included flat bottom ditches and swales, wet and dry detention ponds, Bio Swales and a rain garden. The results indicate that the goal of 80% TSS removal has not been met. However, this goal is unreasonable for Highway project and at an average of 56% TSS removal our projects exceed the goals as set forth in NR 151.

	Summary of Stormwater Management Pollutant Removal Performance					
	Waukesha County Highway Projects Since 2008					
Project	Year	Type	Impervious Surface (IS) Acres	TSS Removal %	IS * TSS	Comments
CTH Q, Colgate to CTH Y	2006	widening	8.24	80	659.3939	
CTH Y, I-43 - CTH I	2008	Intersection				
CTH V, Goodhope Rd -Intersection	2009	Intersection				< 0.5 acres added impervious
CTH M, CTH SR - Intersection	2010	Intersection				< 0.5 acres added impervious
CTH VV, Marcy Rd to CTH YY	2011	widening	12.36	72.5	896.3636	
CTH L, Lannon Dr - CTH O	2013	widening				
CTH L, CTH Y - Lannon Dr	2014	widening				
CTH VV, CTH Y - Marcy Rd	2014	widening				
CTH M, Brookfield Rd - Intersection	2014	Intersection				< 0.5 acres added impervious
CTH D, Calhoun Rd - Intersection	2015	Intersection	5.02	64.5	323.79	
		Total	25.6260606	acres		
			Weighted average		73.34516	% TSS removal

Return to Strategic Objective

CHAPTER FIVE

PROVIDE BIKE PATHS AND WALKWAYS

Objective Owner - DPW / Engineering, PLU / Parks & Planning

Walkable, Bike-able Communities

Bike paths and walkways have evolved beyond recreational uses. Many municipalities now plan their communities to include mixed-use developments so that residents can walk and bike to work or shops rather than drive. On the countywide level, both SEWRPC and Waukesha County have bike path plans. Some of these planned paths have been included in various PLU and DPW capital projects and DPW has worked with various communities to construct bike paths and sidewalks on County rights of way.

Initiative/Action

1. Examine Waukesha County/SEWPRC bicycle and pedestrian path plans to ensure they address bikeability/walkability needs as well as recreational needs.
2. Update the Waukesha County bicycle and pedestrian plan in cooperation with local municipalities. - complete
3. Include designated bike path routes in Highway Capital Plan Projects.
4. Schedule capital projects for construction of Waukesha County planned bike path routes.
5. Team with municipalities to include planned bike paths, multi-use paths or walkways in Highway capital projects.
6. Examine Waukesha County/SEWPRC bicycle and pedestrian trail plans to ensure that they address bikeability/walkability needs as well as recreational needs.
7. Update the Waukesha County Bicycle Plan to coincide with scheduled updates of the Waukesha County Park and Open Space Plan.
8. Include designated bike accommodations in the design of Highway Capital Plan Projects.
9. Schedule Capital Projects for construction of planned Waukesha County bike trail routes.
10. Work with municipalities to include planned bike trails and multi-use trails in Highway Capital Projects.

Performance Measure

1. Bike Trails – add minimum ½ mile of new paved trail per year.
2. Roadway Projects – add total bike accommodation miles equaling a minimum of 60% total new road pavement miles or road reconstruction pavement miles installed per year.

WAUKESHA COUNTY SUSTAINABILITY PLAN 2014-2016		
Transportation Element : Objective 4.5 - Provide Bike Paths and Walkways		
Bike Trail Miles Implemented: 2008-2015		
Year	**Bike Trail Project**	**Bike Trail Miles**
2008	Lake Country Trail	5.8
2010	Lake Country Trail	3.9
2011	Lake Country Trail	2.4
2013	Bugline Trail	3.6
2014	Bugline Trail	8.0
2015	Bugline Trail	2.4
	Total Bike Trail Miles (2008-2015)	**26.1**

WAUKESHA COUNTY SUSTAINABILITY PLAN 2014-2016

Transportation Element

Objective 4.5 Provide Bike Paths and Walkways

Bike/walk Accommodation Miles for 2008-2015 DPW Roadway Projects

Year	Road Project	Length (miles)	On Road bike path	Paved Shoulder Miles	Adj. Off-Rd Bike Trail Miles	Sidewalk
2008	CTH Q	2		4		
2009	CTH Y	1.2		2.4		
	CTH SR	0.3		0.6		
	CTH SR	0.1		0.2		
	CTH Y	0.2		0.4	0.1	
2010	CTH Y	0.4		0.8	0.4	
	CTH ES	1				
	CTH T	0.4				
	CTH V	3.7				
	CTH O	0.6			0.6	
	CTH X	2		4	1.5	
2011	CTH VV	1.8		3.6	1.8	
	CTH V	0.3		0.6	0.3	
	CTH Y	0.3		0.6		
2012	CTH L	1.2		2.4	2.4	2.40
	CTH D	0.2				
2013	CTH L	1.2		2.4	2.4	2.40
	CTH VV	1.5		3	1.5	
2014	CTH F	2.3				
	CTH M	0.2		0.4	0.2	
	CTH Y	0.1				
	Total for All Projects (2008-2015)	**21**		**25.4**	**11.2**	**4.8**

CHAPTER FIVE

REDUCE SALT USAGE ON HIGHWAYS, PARKING LOTS, AND WALKS

Objective Owner: Public Works / Highway Operations Division, PLU/ Park System

Approximately 17, 000 tons of salt is used by Waukesha County Department of Public Works to de-ice the County highway system. The resulting runoff can be harmful to roadside vegetation, and to rivers and streams. Reduction of its use is an economic advantage as well, for salt is a limited resource. Already in use at Waukesha County are some reduction measures:

- Pre-wet systems – mixing water with the granular salt as it leaves the truck allows salt to stick to the roadway better and begins the melting process sooner
- Spraying brine (a salt/water solution) on roadways in anticipation of a storm, which retards snow sticking to the road

Initiative/Action

1. Investigate alternatives to salt use such as use of truck-mounted pre-wet systems, brine solutions, sand / salt mixtures, calcium magnesium acetate, calcium chloride (at very low temperatures), and installation of heated sidewalks/stairways in very high foot traffic areas.
2. Reduce the spreader settings on all vehicles.
    - Study the effects of different spreader settings on roads.
    - Study the effects of different settings on sidewalks, stairs, and parking lots.
3. Use brine only as a de-icer.
4. Analyze preliminary results and make a recommendation.

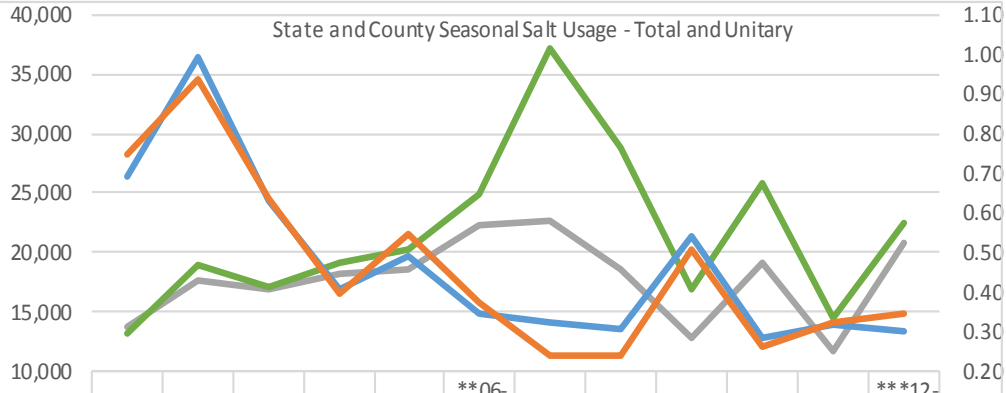
Performance Measure

Determine the average amount of salt used in a "normal" snow event and reduce that amount by 10% on roadways. This objective is essentially complete. The Highway Operations Divisions strives to investigate any all salt savings techniques and methods that are proposed.

CHAPTER FIVE

REDUCE SALT USAGE ON HIGHWAYS, PARKING LOTS, AND WALKS

Objective Owner: Public Works / Highway Operations Division, PLU/ Park System



	01-02	02-03	*03-04	04-05	05-06	**06-07	07-08	08-09	09-10	10-11	11-12	***12-13
County Salt Use (tons) - left axis	13,628	17,489	16,913	18,155	18,561	22,331	22,612	18,468	12,709	19,141	11,624	20,719
State Salt Use (tons) - left axis	13,060	18,913	17,036	18,986	20,130	24,940	37,254	28,874	16,822	25,825	14,438	22,480
State salt usage / lane mi. /in. snow (t/mi/in) -right axis	0.69	0.99	0.63	0.41	0.49	0.34	0.32	0.30	0.54	0.28	0.31	0.30
County salt usage / lane mi. /in. snow (t/mi/in) - right axis	0.75	0.94	0.63	0.39	0.54	0.37	0.24	0.24	0.51	0.26	0.32	0.34

CHAPTER FIVE

REDUCE USAGE OF MUNICIPAL WATER FOR BRINEMAKING OPERATIONS REDUCE SALTWATER RUNOFF TAKEN TO WASTE WATER TREATMENT PLANTS

Objective Owner: Public Works / Highway Operations Division, PLU/ Park System

Initiative/Action

1. Investigate alternatives to municipal water use for salt brine making operations.
   - Use salt brine runoff water or CO water (soy) for brinemaking rather than fresh municipal water.
   - Investigate methods of transporting brine runoff water to Waukesha Main Highway location for brine-making.
   - Investigate storage methods to store annual gallonage requirements to eliminate fresh water use.

2. Investigate methods to collect, pump, transport and store salt water runoff from salt dome brine containment tanks at Highway Operations and use that water in the manufacture of salt brine.
   - Study methods of transporting salt brine runoff water from substations
   - Study methods for storage of salt brine runoff for later use in brinemaking operations.
   - Reduce waste disposal costs by re-using salt brine runoff water.
   - Analyze preliminary results and make a recommendation.

Performance Measure

- Reduce waste disposal costs to $0.
- Reduce cost of municipal water use for brinemaking to $0

Central Fleet

In 2001, Waukesha County DPW Central Fleet completed an extensive review of policies, procedures, practices related to the operation of its facility. The review included ventilation, storage, handling of cleaning solvents and miscellaneous shop supplies. Outcomes of the review included

- Changing parts-cleaning machines to an aqueous-/citrus-based system rather than a solvent-based one.
- Use of Oil-Dry has been discontinued and recycled rags are purchased for spill clean-up in the facility.
- A thorough review and update of Material Safety Data Sheets (MSDS) resulted in the transition to citrus-based cleaning products and reduction in the variety of cleaners utilized in the operation.

CHAPTER FIVE

A "GREEN" WAUKESHA COUNTY

Objective Owner: Public Works / Central Fleet Division • PLU/ Environmental Health

Waukesha County "Green Initiative"

Waukesha County strives to "green" daily operations across all departments and divisions. Waukesha County leadership and staff routinely review actions to ensure that environmentally safe and recycled products, and cost saving techniques are incorporated into all processes. A culture of environmental safety exists within the staff. "Doing the right thing" for the environment is commonplace in Waukesha County.

Initiative/Action

1. Review the "best practices" of leading national repair facilities for their impact on sustainability. Adopt those practices that meet or exceed Central Fleet application or procedures. Archive

2. Collaborate with vendors to keep informed on trends in green fleet products. The Central Fleet Staff and DOA-Purchasing Division personnel are cognizant of the reduction in the hazardous footprint and generation of by-products.

3. Review the chemical product list used for "green compliance" as needed. The Parks Department's Hazardous Materials Coordinator annually reviews chemical products and storage lists as part of federally required reporting.

4. Annually train personnel on use of "green" products as needed. Archive

Performance Measure

Maintain a "ZERO hazardous waste generated" compliance status within Central Fleet. On-going – an annual requirement which is incorporated into daily practices.

CHAPTER FIVE

EVALUATE ALTERNATIVE FUELS AND VEHICLES

Objective Owner: Public Works / Central Fleet Division, Vehicle Replacement Plan Committee • All Departments with WC-owned/-leased equipment

Study the potential use of alternative fuel and alternative fuel vehicles within Waukesha County where appropriate to need. New technology and renewed interest in reducing the human impact on the environment is guiding manufacturers of fuel and equipment to explore options for lower emission vehicles and non-petroleum based fuels.

The purchasing of new vehicles and equipment is a combined process within Waukesha County. The owning department determines the specific needs based upon operational requirements and provides them to the Fleet and Purchasing Divisions for detailed review. The review process includes technical specification development, emerging technologies (including alternative fuels), budget pricing, equipment utilization, and life cycle usage. Any identified changes are presented to the Vehicle Replacement Committee for review of compliance with purchasing guidelines and alternate funding strategies (ie, via operating vs. VRP fund, grants, etc.).

Initiative/Action

1. Study the availability of alternative fuels and vehicles that meet users' needs.
2. Investigate Return on Investment (ROI) and availability of Bio-Fuel for use with all Waukesha County diesel vehicles.
3. Study the ROI for alternative fuels infrastructure and support systems.

Performance Measure

- Reduce gas and diesel fuel use by 10%.
- Use of alternative fuel will add no more than 5% to the total current operational cost.
- Return on investment is reviewed with each purchase to determine validity

Return to Strategic Objective

Chapter 6

REDUCE WASTE GENERATED BY COUNTY EMPLOYEES

Develop in-house diversion programs for common waste products.

Objective Owner: PLU/ Park System

ii. Purchase and manage centralized recycling stations for county facility use which collects the following materials: plastic bags/film, pens, and batteries.

Increase diversion rates of common materials used by county employees for recycling. Items like plastic bags, pens (and other writing instruments), and batteries cannot be recycled in a desk-side or curbside recycling container, but opportunities for recycling exist within the community.

Initiative/Action

1. Establish collection points for materials in Parks and Land Use office. Expand collection points throughout other locations within county facilities.
2. Provide information to employees about these collection points, including emails and signage.
3. Designate staff to manage collection containers and recycle items in community as necessary.
4. Obtain designated recycling points in the community. For plastic film and batteries, this could be a number of retail sites. Pens (and other writing instruments) will be recycled via Terracycle through a mail-in program.

Performance Measure

- Provide reports on collected materials including weight baselines and average collection rates.
- Recycling reports provided by contracted waste hauler.

Return to Strategic Objective

Chapter 6

ACHIEVE AND SUSTAIN AN INCREASE OF 5% IN RECYCLING TONNAGES COLLECTED FROM COUNTY FACILITIES

Increase recycling and waste reduction education to County employees.

Objective Owner: PLU/ Park System

i. *Build and maintain Waukesha County education programs including, but not limited to: intranet polls, lunch n learns, county events, prizes and giveaways, campaigns, etc.*

ii. *Develop and communicate proper resource management protocols including but not limited to: purchasing, paper collection, etc...*

iii. *Streamline interdepartmental communication to promote waste reduction*

Education and effective communication is a critical component to ensure success in waste reduction throughout county facilities. Education/communication regarding recycling and waste reduction can be provided to employees through targeted campaigns in a variety of creative mediums.

Initiative/Action

1. Develop an employee education communication timeline.
2. Provide education to all employees through intranet promotions, polls, and posts, outreach at Waukesha County's annual Health and Wellness Fair, publications in *Waukesha County Beat*, and through a recycling lunch & learn presentation.
3. Coordinated and executed a *Recycling Game Day* event in November 2015. All Waukesha County Employees were welcome to attend and had the opportunity to play recycling games and win prizes.
4. Provide updated desk-side recycling information to over 1600 employees in 64 departments through new recycling decals.
5. Promotions of the Waukesha County Recycles app to employees which can provide residents with disposal information to common household items.
6. Developed purchasing guidelines for common departmental items focusing on recycled and recyclables products.

Performance Measure

- Track and report on recycling staff activities, promotions and education.
- Track and report on County purchasing of recyclable and recycled products.

Chapter 6

MAINTAIN EFFICIENT AND COST EFFECTIVE COLLECTION TO SUSTAIN RECYCLING REVENUES

Monitor collection contracts and onsite containers for County facilities.

Objective Owner: PLU/ Park System

i. Conduct annual audits on on-site container

ii. Educate employees to ensure efficient use of collection services.

iii. Decrease costs for special events and emergency services through appropriate planning and contract administration.

Initiative/Action

1. Container audits are conducted each year. The first audit was completed in July of 2015 aligned with full implementation of the new collection contract which began in April 2015.
2. In addition to the general education programs to all employees, each department has a designated contact for refuse and recycling collection which receives timely updates/memos on collection contract changes and advises use and cost of services to avoid duplication as well as higher costs based on requests (emphasize need to plan ahead and understand collection services available).
3. Submit monthly reports to designated Parks staff tracking costs to determine additional actions or correspondence necessary. The Parks department also submits these monthly reports to staff, as applicable, to increase understanding on services and associated costs.

Performance Measure

- Audit reports
- Prepare, review and submit monthly invoice totals

Return to Strategic Objective

Chapter 6

PURCHASE GREEN AND RECYCLED PRODUCTS

Establish purchasing guidelines by department for use and purchase of sustainable products.

Objective Owner: PLU/ Park System

i. Increase use of recycled toner. Track performance and cost savings.

Initiative/Action: A proposal for use of remanufactured toner cartridges for approval and implementation which was adopted on May 9, 2016.

Performance Measure: Annual report tracking cost savings

View full proposal.

ii. Increase purchase of recycled and recyclable materials purchased by department and cafeteria. Track and report on environmental impact and net cost savings.

Purchase of recycled and recyclable materials for use by employees within county facilities is a key component to "attain and maintain a place of leadership in environmental stewardship and sustainability." Purchase of these materials is key to 'closing the loop' in recycling. That is, recycling materials whenever possible, and the purchase of recyclable or recycled materials is a sustainable loop.

Initiative/Action

1. Research and compile a list of materials that can be purchased which are recycled or recyclable for use in the cafeteria.
2. Establish purchasing guidelines for each department.

Performance Measure

- Generate cumulative and annual reports on materials purchased.
- Track environmental impact and cost savings.

View list of sustainable materials.

iii. Increase use of recycled content paper purchased by each department.

Initiative/Action:

Performance Measure: Track and report cumulative and annually on total purchase and related environmental impact

Return to More Info

Remanufactured Ink & Toner Cartridge

Purchasing Proposal

Company Overview

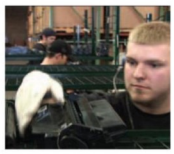
OfficeMax remanufactured toner products offers a high quality product at a substantial savings over original equipment manufacturers (OEM) imaging supplies and provides a one-stop solution for all customers' imaging supplies and recycling needs. Every cartridge that is remanufactured follows a 10 step toner quality assurance program, technical support, 100% satisfaction guarantee and full product warranty.

OfficeMax purchases through Clover Technologies Group which was founded in 1996 with 43 worldwide locations including North America, South America, Europe, Asia and Australia. All Facilities are 100% owned and operated by Clover, headquartered in Chicago with more than 6,000 employees worldwide and over $1 billion in annual revenue.

Clover manufactures over 3.0 million cartridges per month using patented manufacturing production processes with the largest empty cartridge collection in the industry (over 6 million empties per month). All facilities are ISO 9001 & ISO 14001 certified labs, processing facilities and manufacturing facilities.

Recycling and Product Development Process

1. Cartridge Evaluation



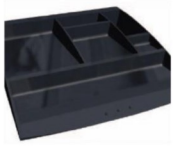
2. Cartridges Disassembled

3. Components Sorted

4. Cartridge Grinding

5. Plastic Ready for Reuse

6. New Product Development



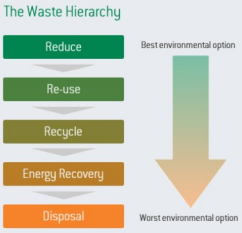
Environmentally Sustainable Solution

Closed Loop Process

Zero Waste-to-Landfill

SFI Packaging

ISO 14001 Certified Program



Economical Solution

2015 Results

Avg. Savings/Unit = $64

59% Savings

Guaranteed

100% Satisfaction

Full Warranty

Remanufactured Cartridge Purchasing Proposal

Guarantee and Warranty

All OfficeMax brand cartridges are backed by a 100% satisfaction guarantee: if a product ordered from OfficeMax does not work as expected, they will replace it. OfficeMax will also cover the costs of repairs to any printer damaged by the cartridges. OfficeMax further guarantees that use of the cartridge will not void any warranty you have on your printer.

OfficeMax Recycling Program

- No Charge Recycling
- Potential rewards to customer for selected cartridges
    - Members receive credit for qualifying ink & toner cartridges and qualifying small electronics that are not visibly damaged
    - Cartridges with no Buy-Back value can be recycled thru the program
- Backed by a Zero-Waste-to-Landfill Policy

Current and Potential Savings

In 2015 the County purchased 316 ink and toner cartridges from 67 varieties with different unit costs. A total of 152 cartridges (30 varieties) purchased were remanufactured with the average price at $78.65 (vs. $142.49) resulting in actual savings of $10,114 or 59%. The additional 164 cartridges (37 varieties) were purchased as original equipment manufacturer (OEM) with the average price for these OEM cartridges at $110.81 (vs. $62.04) equaling additional savings potential of $8,601.

According to an Office Max report, if all 2015 cartridge purchases were remanufactured instead of OEM, Waukesha County could have realized cost savings totaling $18,715.

The current and potential savings do not include County copy machines which may provide additional options/savings.

Conclusions

Waukesha County could have saved an additional $8,600 in 2015 through the purchase of remanufactured ink and toner cartridges instead of OEM brands. Purchasing remanufactured cartridges for Waukesha County printing needs is an environmentally and economically sustainable solution with minimized risks.

Proposal for a More Sustainable Cafeteria, 2014
Waukesha County Administration Center

Return to More Info

Break Room, Cafeteria, Departmental and County Event Products

County Facility Product List (Recycled/Recyclable)

In an effort to have County Facilities purchase products to increase sustainability, this is a list of items for purchase to replace current products which do not meet recycling standards. Items that are purchased for use by County Employees or for County events should be recyclable, or made of recycled materials. Recyclable plastics include numbers 1,2,4,5, and 7.

Product	Description	Store	Price	Item Number	Notes
Cold Drink Cups	Eco-Products Cold Drink Cups, 12 oz., clear, pack of 50	Office Depot	7.59/pack	269826	Product contains 25% postconsumer recycled content
Cold Drink Cups	Dixie 12 oz Clear Plastic Cold Cups, 500/case (CP12DX)	Staples	81.99/case	674212 Model: cp12dx	Strong, durable, flexible PET cups are shatter resistant and crystal clear.
Cold Drink Cups	SOLO Bare Eco-Forward, 9 oz, PET clear cups	Staples	184.99/case of 1000	1538887 Model: DCCRTP9DBARE	RTP plastic, made with a minimum of 20% post-consumer recycled content
Paper Plates	Chinet 100% Recycled Heavy-Duty Paper Plates, 7", Pack of 125	Office Depot	16.99/pack	225346	Product contains 100% total recycled content
Paper Plates	Chinet 100% Recycled Heavy-Duty Paper Plates, 8 ¾", Pack of 125	Office Depot	16.99/pack	225357	Product contains 100% total recycled content
Deli Container	GenPak AD32 7 ¼"x 6 3/8"x 2 5/8" 32 oz. Clear Hinged Deli Container – 200/case	Webstaurantstore.com	36.99/case	374AD32	Made from 50% Post-Consumer recycled material, made from PET plastic.
Deli Container	GenPak AD06 4 ¼" x 3 5/8" x 1 7/8" 6 oz. Clear Hinged Deli Container – 400/case	Webstaurantstore.com	48.99/case	374AD06	Made from 50% Post-Consumer recycled material, made from PET plastic
Napkins	Highmark 100% Recycled Paper Napkins, 11 ½" x 12 ½", White, Pack of 400	Office Depot	4.49/pack	508338	Contains 100% total recycled content with a minimum of 70% postconsumer recycled content
Napkins	Georgia-Pacific Easy Nap Embossed Dispenser Napkins, 6 ½" x 9 4/5", 100% Recycled, White, 250 Napkins per pack, Case of 24 packs	Office Depot	69.99/case	864853	Product contains 100% total recycled content, including 50% postconsumer content
Forks	Eco-Products Polystyrene Forks, Black, 100% Recycled, Box of 1,000	Office Depot	61.59/carton	821122	Performs like traditional plastic cutlery while using no virgin petroleum, made of postconsumer recycled polystyrene, a minimum of 100% postconsumer recycled content

Proposal for a More Sustainable Cafeteria, 2014
Waukesha County Administration Center

Return to More Info

Introduction

Over the past ten years, there have been recurring, staff-driven efforts to end the use of disposable polystyrene plastics in the Waukesha County Administration Center (AC) cafeteria. The initiative of County staff in proposing alternatives to the use of polystyrene for dishware and cutlery have been thwarted by the expense and complications associated with their proposals, which focused on installing a dishwasher and exclusively using reusable plates and cutlery. Although past proposals also addressed the potential of using compostable dishware, this alternative was dismissed due to barriers associated with expense, the limited availability of such products at that time, and the complications associated with sourcing an organics hauler or composting these materials onsite. Now, several years later, the barriers to replacing the use of polystyrene with compostable materials have diminished (but have not completely dissolved), and now, **the introduction of compostable materials is the most appealing and sustainable alternative to the continued use of polystyrene products.**

Many in the environmental community perceive the use of polystyrene products as the premiere symbol of unsustainable practices. Indeed, the use of polystyrene dishware in the AC cafeteria is antithesis to the County's policy of seeking "to attain and maintain a place of leadership in environmental stewardship and sustainability at our facilities." Reverting to the use of compostable dishware and cutlery would have less of an impact on the environment and would provide a concrete message to employees and visitors, alike, that Waukesha County is committed to sustainability.

In addition, switching to a compostable dishware product aligns with the Waukesha County Sustainability Plan , 2010 – 2014, *Objective 6.2 Develop a Sustainable Purchasing Program*, which reads:

> *Develop a Sustainable Purchasing Program (SPP) to purchase recycled content products, energy-efficient products and renewable energy technologies, alternative fuel vehicles and alternative fuels, bio-based products, environmentally preferable products and services (example: low-volatile organic content products), and non-ozone depleting substances*. (p. 25)

This report considers three scenarios for the provision of dishware in the AC cafeteria: *Status Quo*, *Compostable,* and *Dishwasher*. An overview, advantages, disadvantages, and cost analysis table. For the *Compostables* and *Dishwasher* scenarios, calculations of simple payback and return on investment are also provided.

Return to More Info

Status quo

Overview

All dining room dishware needs are currently fulfilled using polystyrene for forks, knives, and spoons and polystyrene foam clamshells, plates, bowls, and cups. All of these products, which make up the majority of the cafeteria's waste volume, are used once and are then disposed of as solid waste; their final destination is a landfill.

Advantages

Polystyrene is durable, and it can be used for both hot and cold applications. However, the factor driving its popularity for disposable dishware is that it is very inexpensive. *There is no other product on the market that can compete with polystyrene on price.*

Disadvantages

Polystyrene does not decompose, so it continues to take up space within a landfill, forever. Although polystyrene can be recycled in new products, there are no local programs for recycling this material, the process is prohibitively expensive, and once polystyrene foam gets dirty, it can no longer be recycled. Thus, collecting used polystyrene foam dishware for recycling is not a viable option. Additionally, polystyrene is not a practical feedstock for "waste-to-energy" production, as it releases toxins and very little energy when it is burned.

The costs for disposing of the cafeteria's large volume of polystyrene waste also pose a disadvantage to its continued use. However, the County's solid waste disposal costs for the AC are very low because the County contract excludes the payment of disposal fees, which would otherwise amount to approximately $60 per ton. The County only pays for hauling, per pull. Thus, solid waste hauling costs associated with the continued use of polystyrene are not necessarily a deterrent for the continued use of these products.

Status Quo

Dishware	Annual Total Count	Monthly Cost - Polystyrene	Annual Cost - Polystyrene
large plates (9")	4,000	$20.08	$241
small plates (6")	6,000	$15.00	$180
bowls/soup cups 8 oz	3,500	$9.75	$117
bowls/soup cups 12 oz	3,000	$10.00	$120
condiment cups	5,000	$3.67	$44
large lid	4,000	$6.17	$74
small lid	500	$1.67	$20
forks	9,000	$8.33	$100
spoons	3,000	$2.67	$32
soup spoons	7,000	$6.92	$83
knives	6,000	$5.67	$68
12 oz cup cold	6,000	$6.25	$150
20 oz cup cold	9,000	$11.00	$400
To-Go Clamshells (6X6)	10,584	$59.50	$702
To-Go Clamshells (9X9)	14,100	$115.00	$1,385
To-Go Clamshells (9X9) 3-comp	1,050	$8.92	$107
napkins	126,00	$91.75	$1,101
	Totals	$382.35	**$4,924**

Other Operational Costs	Per month cost	Per year cost
Grease trap service	$97.50	$1,170
Dishwashing Chemicals	$23.34	$280
Waste hauling	$328.50	$3,942
Totals	$449.34	**$5,392**

Total Annual Operational Costs	**$10,316**

2

Return to More Info

Compostables

Overview

Compostable dishware and utensils are now readily available. These products match the functionality of the polystyrene, and therefore, the compostables could effectively replace products currently used by the cafeteria. Partnered with the introduction of compostables would be the collection and hauling of these materials from the cafeteria to a composting facility. This would also include the collection of food scraps –*pre-consumer* (from the kitchen) and *post-consumer* (from patrons' plates). (Composting uses the natural process of decomposition to recycle certain materials into a valuable soil conditioner.)

Because compostable dishware and utensils cost much more than polystyrene products, this scenario should involve the introduction of a surcharge ($0.20) on meals purchased "take-out." Meals ordered for take-out are served in a clamshell, which is and would continue to be the most expensive disposable, dishware item used by the cafeteria. Not only would the surcharge help offset the cost of the compostable dishware; it may also help to encourage dining-in and, thus, using the less expensive compostable plates, to avoid paying the surcharge.

Advantages

This scenario involves simply replacing the use of polystyrene with compostable materials, and as such, there is no significant investment necessary for implementation, and the impact on the cafeteria's current practices would be minimal.

The collection and eventual composting of all food scraps, in addition to compostable dishware and utensils, elevates the sustainability profile of this scenario by allowing for their diversion from landfills and by providing an opportunity for community education on organics collection and composting. Indeed, we could use the experience of implementing this composting program as an opportunity to promote the composting of food scraps and compostable dishware by other institutions and restaurants in the county.

Disadvantages

Compostable dishware and utensils are more expensive than polystyrene. Thus, making the switch from polystyrene to compostables represents an increase in the cafeteria's operational expenses versus the status quo. Although the proposed $0.20 surcharge on take-out would offset the increased cost for dishware.

Also, this scenario would require contracting with a new hauler that handles food wastes and other compostables. (Thus far, *Sanimax* is the most likely candidate, as they seem to be the only hauler offering this service in Waukesha.) Although the costs that commercial establishments pay for the hauling of organics and solid waste are often very similar and, thus, the costs for implementing organics collection reduces the costs for solid waste hauling by an equal amount, this may not be true, in our case. Waukesha County has a very good contract for solid waste hauling with no waste disposal fee ($60/ton), making the potential costs for organics hauling seem expensive in comparison (volume for volume). If the County, rather than the cafeteria contractor, continued to shoulder the cost of all waste hauling for the cafeteria, then organics hauling would represent a new operational expenditure. Alternatively, the cafeteria contractor could absorb this expense or share it with the County under a new contract.

Estimated Annual Operationing Cost	$19,388
Capital Costs/ Investment	$0.00
Savings/Year	($9,072)
ROI	NA
Payback (years)	-0.9
10 year Savings	($90,718)

Return to More Info

Compostables

Dishware	Annual Total Count	Cost Per Month	Annual Cost
large plates (9")	4,000	$30.00	$360
small plates (6")	6,000	$19.00	$228
bowls/soup cups 8 oz	3,500	$24.21	$291
bowls/soup cups 12 oz	3,000	$29.00	$348
Lid for 8 oz. Bowl	4,000	$23.33	$280
Lid for 12 oz. Bowl	5,000	$47.08	$565
2 oz. condiment cups	500	$1.25	$15
forks	9,000	$40.50	$486
spoons	3,000	$13.25	$159
soup spoons	7,000	$30.92	$371
knives	6,000	$26.00	$312
12 oz cup cold	3,000	$26.75	$321
16 oz cup cold	4,500	$48.00	$576
Lid for 12/16 oz. cold cup	*6,500*	$19.50	$234
12 oz hot cup	3,000	$22.50	$270
16 oz hot cup	4,500	$38.25	$459
To-Go Clamshells (6X6)	10,584	$111.13	$1,334
To-Go Clamshells (9X9)	14,100	$340.75	$4,089
To-Go Clamshells (9X9) 3-comp	1,050	$25.29	$303
napkins	126,00	*$100.00*	*$1,200*
	Totals	$1,016.71	**$12,201**

Note: *italics=estimate*

Other Operational Costs	Monthly Cost (est.)	Annual Cost (est.)
Waste Hauling Cost*	$131.42	$1,577
Compost Hauling Cost	$346.67	$4,160
Grease trap service	$97.50	$1,170
Dishwashing Chemicals	$23.34	$280
Totals	$598.93	**$7,187**

**Assumes a 3/5 reduction in waste*

Total Operational Costs	**$19,388**

Related revenues	Monthly Revenue (est.)	Annual Revenues (est.)
Surcharge revenues @ $0.20 per take-out	$429	$5,148

(directly correlated with #s of clamshells used)

Supporting actions for transitioning to compostables

Capture other compostables while providing additional receptacles for compostables. This scenario presents an opportunity to also collect the AC's bathroom paper towels for composting. The use of compostable paper towels in the bathroom dispensers (the current product *may* be compostable) and containers for their disposal (the current trash bins would work fine) would further facilitate the capture of the clamshells and food scraps from take-out meals. Staff could place compostable clamshells with any food scraps in them into the bins for paper towels in the bathrooms rather than carry them back to the cafeteria for disposal, as opposed to placing them in the trash can at their work station. (Small trash cans would be a necessary addition to each bathroom for non-compostable items.) Of course, this would take composting outside the realm of the cafeteria, and the implications of doing that would need to be taken into consideration.

Education and training would be essential for cafeteria staff and cafeteria patrons. Cafeteria staff would need to establish and learn new systems for handling food waste in the kitchen and for managing the removal and storage of compostables for hauling. Cafeteria patrons would need to grasp what can be placed in the composting bin and what cannot. Although much of the work of educating the cafeteria's patrons can be accomplished through well-executed signage, an internal, educational and promotional campaign to bring all county staff onboard with the conversion to composting and to train county staff on the new system would prove beneficial.

Return to More Info

Dishwasher

Overview

Conceivably, a dishwasher could be installed in the cafeteria's kitchen, and then reusable dishware and flatware could be used, instead of polystyrene. The installation of a dishwasher would necessitate multiple structural modifications, including the position of sinks and prep areas, and the installation of a new grease trap and some countertops. Also, additional equipment would need to be purchased to store and move the dishware and cutlery, and additional cafeteria staff time would need to be dedicated to washing dishes.

Advantages

The installation of a dishwasher and the use of reusable dishware and cutlery have the potential to reduce the cafeteria's overall use of polystyrene by *as much as half*, under the current mode of operation.

Disadvantages

The introduction of reusable dishware and a dishwasher requires a significant level of investment. However, it is unlikely that there would be a return on that investment due to the popularity of the cafeteria's option for take-out. Although a return on investment would be possible if all cafeteria patrons "ate in" and, thus, used reusable dishware, this would most likely not be the case. It is estimated that at least half of all meals served in the cafeteria are "take-out," requiring the use of a clamshell container.

Reusable clamshells were considered for use by in-house staff, but upon analysis, this would not be feasible. Using reusable clamshells would require (1) a large volume of clamshells (around three times the number used on an average day would need to be in circulation, at all times), (2) the purchase of replacements on an ongoing basis, and (3) the allocation of labor necessary to wash the clamshells, which take up much more space and, thus, require the dishwasher to be loaded and run many more times than an equal number of plates. In the end, take-out would still require that the cafeteria stock *disposable* clamshells, not to mention disposable cups, lids, bowls, and utensils.

The continued use of disposable, polystyrene products would be in opposition to the goal of making the cafeteria a more sustainable operation. Of course, compostable products could be used in the place of polystyrene. However, this would require contracting with an organics waste hauler in order to fully utilize the environmental benefits of using these products (see *Compostables*). Organic waste hauling would substantial increase the operational costs associated with this scenario.

In addition, the introduction of a dishwasher to the cafeteria kitchen would require that the kitchen be re-arranged, requiring structural modifications to sinks and counter tops and likely resulting in a loss of prep space. There also would be need for a new grease trap and, possibly, new venting, depending on the dishwasher installed. These alterations each represent further costs and complications that make this scenario unappealing.

Estimated Annual Operationing Cost	$20,463
Capital Costs/ Investment	$7,484
Savings/Year	($10,147)
ROI	-110%
Payback (years)	-0.9
10 year Savings	($101,470)

Return to More Info

Dishwasher

Capital Costs

Dishware Costs:

Dishware	Count	Per Unit Cost	Total Cost
large plates	240	$2.33	$559
small plates	144	$0.83	$120
bowls/soup cups 8 oz	98	$1.60	$157
bowls/soup cups 12 oz	84	$1.90	$160
condiment cups	48	$0.83	$40
forks	240	$0.44	$106
spoons	60	$0.32	$19
soup spoons	72	$0.68	$49
knives	180	$0.91	$164
12 oz cup cold	72	$0.83	$60
20 oz cup cold	156	$1.67	$261
coffee mugs	60	$3.98	$239
Total			**$1,932**

Equipment for dishwashing:

Equipment	Count	Per unit Cost	Total Cost
Bus tubs w/ divider	6	$12.00	$72
Utility cart (200 lb capacity)	2	$230.00	$230
Dish cart (storage and transport)	1	$3,240.00	$3,240
Silverware Storage (6 hold)	2	$5.00	$10
Installation of Equipment	1	$4,000.00	$4,000.00[§]
2 comp sink and drainboards		$2,000.00	$2,000
Total			**$5,552**

Total Investment	**$7,484**

[§]Does not include the cost of altering the kitchen to accommodate a dishwasher, including the cost of installing a new grease trap.

Operating Costs

Expense	Monthly cost	Annual cost
To-Go Clamshells (6X6)**	$59.50	$702
To-Go Clamshells (9X9)**	$115.00	$1,385
To-Go Clamshells (9X9) 3-comp**	$8.92	$107
bowls/soup cups 8 oz**	$4.88	$59
bowls/soup cups 12 oz**	$5.00	$60
cond. Cups**	$1.83	$22
large lid**	$3.08	$37
small lid**	$0.83	$10
forks**	$4.17	$50
spoons**	$1.33	$16
soup spoons**	$3.46	$42
knives**	$2.83	$34
12 oz cup cold**	$6.25	$75
20 oz cup cold**	$16.67	$200
napkins**	$91.75	$1,101
Dishwasher Lease (Hobart Am 15VL)	$100.00	$1,200
Grease trap service	$167.00	$2,000
Dishware replacements (yearly)	$25.00	$300
Additional Kitchen staff ($8/hr, 29 hrs/wk)	$1,005.33	$12,064
Dishwashing Chemicals	$83.00	$1,000
Waste hauling	$219.00	$2,628*
Totals	$1,924.83	**$20,463**

**Polystyrene/plastic/disposable

*Assumes waste will be reduced by one third with an equal reduction in the current waste