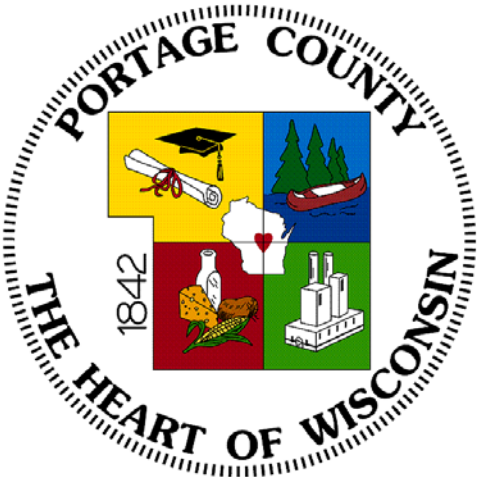


Portage County Energy Report, 2013



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Executive Summary

In 2013, Portage County spent \$1,785,638 on energy resources, as detailed in this report. In particular, the county consumed 5,510,282 kilowatt-hours (kWh) of electricity, and 262,433 therms of natural gas at a combined cost of \$640,047. The county also purchased 325,402 gallons of transportation fuels (including unleaded and diesel fuels) for county-owned vehicles and equipment, at a cost of \$1,145,591.

The 2013 utility totals represent a decline in overall utility use and costs over the past five years, especially with regard to improved heating performance of buildings during cold winter months. Over this period, the county's overall electricity use has not varied much; electricity use has varied in certain buildings and facilities more than others. Electricity has been impacted by efficiency improvements as well as variation in operations, occupancy, service demand, and weather. On the whole, the county's annual average price paid for electricity (per kilowatt-hour) has increased every year but one since 2008.

The County's efforts to reduce the use of transportation fuels have amounted to some noteworthy efficiencies. However, rising demands (notably construction and snow plowing activities) along with rising fuel prices has often outweighed efficiencies, resulting in high fuel costs in 2012 and 2013. Transportation fuel costs remain a growing concern. Even beyond ongoing exploration of renewable and alternative fuels, substantial costs may warrant thoughtful operations planning around transportation fuels.

This report recognizes the need to take weather variables and into account when evaluating building performance over time. This report notes other important considerations such as arrangements in which a facility may be owned or operated by an entity other than Portage County. It also notes some but not all of the arrangements in which a utility bill paid initially by the county is later reimbursed by another entity responsible for operations or otherwise offset by corresponding revenues. Essentially, the set of facilities owned and operated by the County is subject to change over time. This report seeks to clarify the facilities for which year-to-year comparisons are drawn, and which metrics are to be used for evaluation herein.

A considerable effort has been put into measuring and tracking our energy use. The rationale is that you can't manage what you don't measure. Underlying this report is a compilation of useful data spanning six years, going back as far as 2008 before the plan was adopted. And in this data one can observe trends. The data shows where we've made progress, thanks to leaders doing a good job within their areas of responsibility. The data also helps clarify where we need to focus to achieve the county's adopted goals. This supports continued discussion among key county department leaders and staff, continued learning, and measurable progress in energy management. It is hoped that the data and this report may help to engage more colleagues in the county's strategic energy management, and to encourage a culture of shared responsibility in strategic energy management.

Background

On April 27, 2010 the Portage County Board adopted Resolution 5-2010-2012, which established the Portage County Smart Energy Team and called for the development of a Strategic Energy Management Plan. In July, 2010 a Sustainability Specialist was hired to develop an energy baseline for the County (an analysis of existing use), and aid in plan development. This position was paid for by the Portage County Facilities Department and a UW-Extension Innovative Grant. In 2011 an Energy Specialist (from the Central Wisconsin Resiliency Project) was retained to assist with a review of transportation fuels use. Altogether, the resulting plan consists of two components: "Phase I: Electricity & Natural Gas" (adopted in April, 2011), and "Phase II: Transportation Fuels" (adopted in March, 2012). The purpose is to limit the County's energy use, to better utilize alternative energy sources, and to monitor energy consumption and costs over time. This 2013 annual energy report provides a current inventory and indicates areas of progress to date.

Natural Gas and Electricity

Overview

A Snapshot of Energy Usage, 2013

Number of Portage County government buildings:	14	(not including park shelters)
County energy use (electricity & natural gas):	45,044 MMBtu's	(42% Electricity; 58% Natural Gas)
Cost of County energy use (electricity & natural gas):	\$640,047	(74% Electricity; 26% Natural Gas)

Portage County government consumes the great majority of its electricity and natural gas energy (95% in 2012, 97% in 2013) in buildings that house its operations. There is also a small amount of energy used at County parks, as well as for the fountains, irrigation, and signage at the Portage County Business Park. In keeping with the format of the 2010 Strategic Energy Management Plan, the relatively small amount of electricity purchased by Portage County to operate a few streetlights and signs remains outside the scope of this report. Natural gas is primarily used for water heating, space heating and cooking in County buildings. Parks electricity and natural gas use consists of use at shelters and by outdoor lighting in the parks. Total energy use is shown for buildings; parks; and fountains and irrigation in the table below.

Portage County 2012 Energy Use by Type of Energy and End Use

End Use	Type of Energy Consumed	Unit	Annual Consumption	MMBtu Equivalent	Percent of Total Usage
Buildings	Electricity	kWh (kilowatt hours)	5,126,377	17,491	38.8%
	Natural Gas	therms	262,266	26,227	58.2%
		Sub-Total	N/A	43,718	97.1%
Fountains & Irrigation	Electricity	kWh (kilowatt hours)	228,419	779	1.7%
		Sub-Total	N/A	779	1.7%
Parks	Electricity	kWh (kilowatt hours)	155,486	531	1.2%
	Natural Gas	therms	167	17	0.0%
		Sub-Total	N/A	547	1.2%
		Total	N/A	45,044	100.0%

Source: Data gathered from Wisconsin Public Service, Alliant Energy, and Central Wisconsin Electric Cooperative.

Utility Costs

The largest energy expenditure in 2013 was for buildings: \$438,262 for electricity, and \$163,207 for natural gas. Together these costs make up 94% of the total costs for the County's electricity and natural gas usage. In total, the County spent \$640,046.62 on electricity and natural gas in 2013. This is \$51,567 less than 2009, and \$92,307 less than 2008.

Portage County 2013 Energy Cost by Type of Energy and End Use

End Use	Type of Energy Consumed	Dollars	Percent of Total Usage
Buildings	Electricity	\$438,262	68.5%
	Natural Gas	\$163,207	25.5%
		Sub-Total	\$601,469

Fountains & Irrigation	Electricity	\$14,578	2.3%
	Sub-Total	\$14,578	2.3%
Parks	Electricity	\$23,807	3.7%
	Natural Gas	\$192	0.0%
	Sub-Total	\$23,999	3.7%
	Total	\$640,047	100.0%

Source: Data from Wisconsin Public Service, Alliant Energy, and Central Wisconsin Electric Cooperative.

Note: The costs of several Fountains & Irrigation utility accounts associated with the Portage County Business Park are adjusted for the share that is reimbursed by parcel owners (cost share was about 24% county and 76% reimbursed in 2013).

The following table shows the dollar cost per MMBtu for electricity and natural gas. Electricity costs more per Btu than natural gas, making the County's expenses for electricity higher than natural gas even though more Btus of natural gas are used.

2013 Dollars per MMBtu by Energy Type

Energy Type	\$/MMBtu
Electricity (kWh)	\$25.64
Natural Gas (therms)	\$6.23
Average	\$14.13

Source: Data from Wisconsin Public Service, Alliant Energy, and Central Wisconsin Electric Cooperative.

Note: Electricity costs subject to cost-sharing (Fountains & Irrigation) are excluded from this calculation.

Detail and Discussion

Buildings

Comparing 2013 to 2012, the county spent \$7,754 less on electricity, and \$26,900 more on natural gas for its buildings. The increased natural gas use was due to having much colder winter months in 2013. Adjusting for the coldness of the winter months, buildings' performance in terms of natural gas (used predominantly for space heating) continued to improve in 2013, as it has steadily since 2010.

Over the past several years, Portage County buildings' total electricity use has not changed dramatically. Several buildings have seen more variability than others. The Moore Road materials recovery facility shows variation from year to year, and has generally increased since 2009. This is due to the volume of material processed, and the growth in the number of shifts and hours of operation of that facility. A contracted company maintains operational control over virtually all of the energy-intensive activities in that facility, and reimburses the county for 94% of the utility costs paid initially to the county. That said, as it was in the 2010 Strategic Energy Management Plan, the full energy use and cost of the Moore Road recycling and transfer facilities are included in many overall summary figures included in this report.

A subset including some of the more typical buildings operated by the county were reviewed in 2012 and again in 2013. These include the Annex, the Law Enforcement Center, the Courthouse, Ruth Gilfry, Lincoln Center, and the Health Care Center. Overall annual electricity use among these 6 buildings decreased by 4% from 2009 to 2012, while overall natural gas use has decreased by 23%. Between 2011 and 2012, these buildings' total electricity use increased 3% and natural gas use decreased 11%. Between 2012 and 2013, these buildings' electricity use dropped by 4%, while natural gas use increased by 10%. Contextual data is available to help explain part of these variations. 2012 had considerable summer heat and remarkably mild winter months. By comparison, 2013 brought a mild summer and some very cold winter

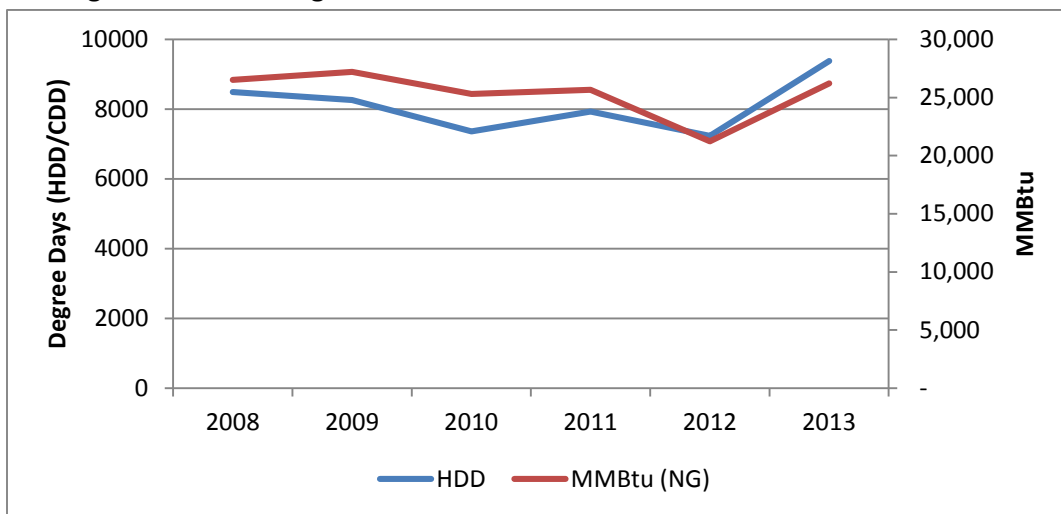
months. The cooling degree days (“CDDs”, related to the air conditioning load and electricity use) decreased while heating degree days (related to furnace loads and natural gas use) rose from 7,231 to 9,378 (up 30%)¹.

Space Heating:

Portage County buildings’ heating performance has improved fairly steadily over the course of the past five years. The heating of county buildings is powered predominantly by natural gas. Some electricity is also used to circulate warm air. Of all the natural gas consumed by county government, most is used for space heating.

Heating Degree Days (“HDDs”) are commonly used as a measure of coldness over a given time period. HDDs are calculated according to daily temperatures relative to a specified base temperature if practical interest, such as a target indoor air temperature. So HDDs are roughly proportional to furnace loads, and relate to natural gas consumption. Variation in heating load (cold winters, measured in HDDs) from year to year corresponds to natural gas use, as seen in the graph below which shows both, from 2008 through 2013.

Heating Load and Building Natural Gas Use



Energy efficiencies including insulation, elimination of air leaks, heating and ventilation systems, and responsible use (keeping doors and windows closed in the winter) are some of many other factors that also affect natural gas use. From 2009 through 2013, the amount of natural gas used per heating degree day (“HDD”) has dropped by about 12%.

Winter months were much colder in 2013 than in 2009, with HDDs totaling 9,378 in 2013, compared to 8,259 in 2009 (a difference of 13.5%)². Despite this, Portage County buildings’ natural gas use in 2013 was still 4% less than it was in 2009. While 2012 was a relatively mild winter, Portage County buildings used 22% less natural gas in 2012 than they did in 2009. Many energy efficiency improvements implemented in many county owned facilities in recent years have contributed to this improvement in building heating performance. These improvements are detailed in the appendices.

The ratio of county buildings’ annual natural gas consumption to annual Heating Degree Days provides a rough approximation of how efficiently the buildings are meeting the heating load any given year³. Actual performance in terms of space heating efficiency is determined by a building’s facilities (including a building’s structure and equipment)

¹ Estimated degree days (base =65°F) are derived from <http://www.weatherdatadepot.com/>

² Estimated degree days (base = 65°F) are derived from <http://www.weatherdatadepot.com/>

³ This might be a better approximation if one could distinguish space heating usage from all other uses of natural gas for buildings.

as well as how and when the buildings are operated. There are also factors that cannot be controlled⁴. All told, the data suggests improvement in heating efficiency among Portage County buildings overall, as shown in both the table below.

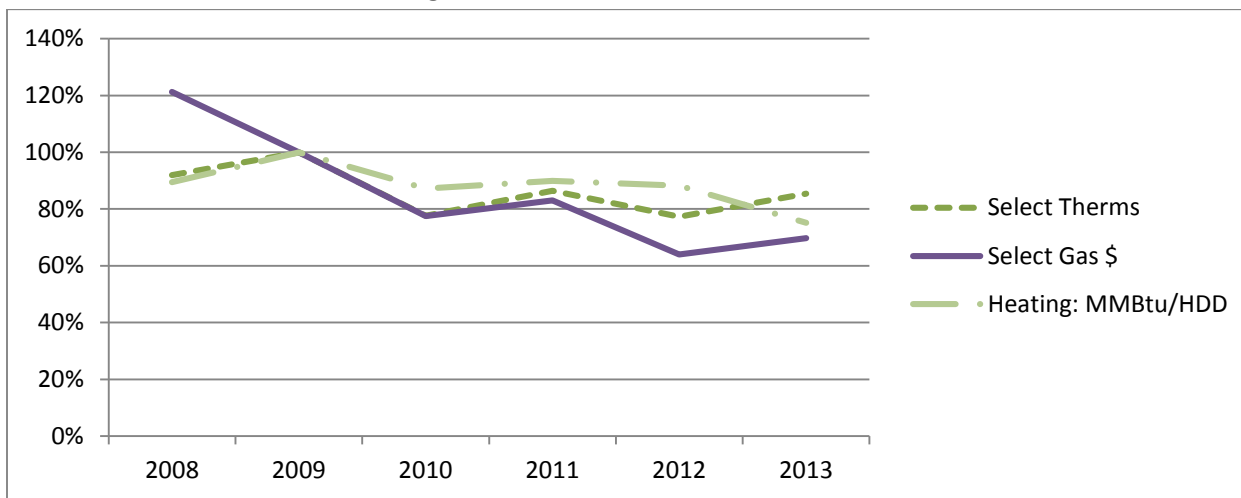
Ratio of All Portage County Buildings’ Natural Gas Consumption to HDD* (MMBtu/HDD)

	2008	2009	2010	2011	2012	2013
MMBtu/HDD	3.12	3.29	3.44	3.23	2.93	2.80

If building efficiencies, overall, had remained what they were in 2009 (in terms natural gas use per HDD), the county would have required about 564,000 more therms than it did in 2013, which would have cost about \$30,000 more in that year alone.

For the typical buildings over which Portage County has exercised most operational control, the improved heating performance is even more pronounced. For a subset of six such buildings⁵, the graph below illustrates how annual natural gas use (“Therms”), heating efficiency (as “MMBtu/HDD”), and total gas costs have changed relative to 2009 (2009 = 100%). For this subset of buildings, the natural gas demand per HDD has dropped by about 25% since 2009.

Gas Use and Cost: Selected Buildings



Space Cooling:

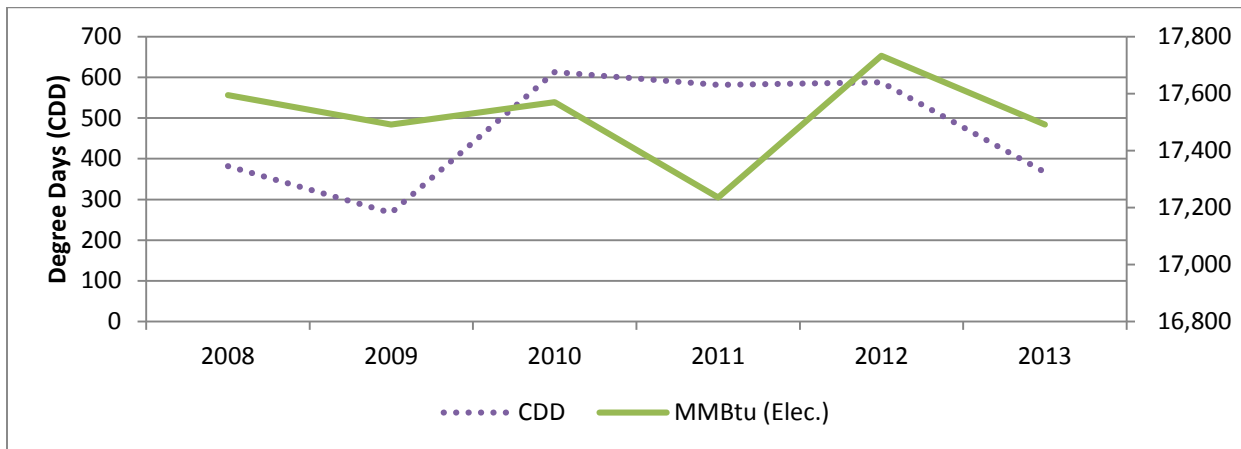
Building air conditioning is powered entirely by electricity. Many other functions are also powered by electricity, such that space cooling accounts for only part of county buildings’ energy use – an estimated ~10% regarding the Annex Building⁶. So the relationship between cooling degree days and building electricity use is not always very well pronounced regarding annual data as shown in the figure below.

⁴ For instance, if the coldest days happen to fall on a weekend when there is no need to keep an office building up to a comfortable indoor temperature, the heating load may be modest even while Heating Degree Days are rapidly accumulating.

⁵ Annex, the Law Enforcement Center, the Courthouse, Ruth Gilfry, Lincoln Center, and the Health Care Center

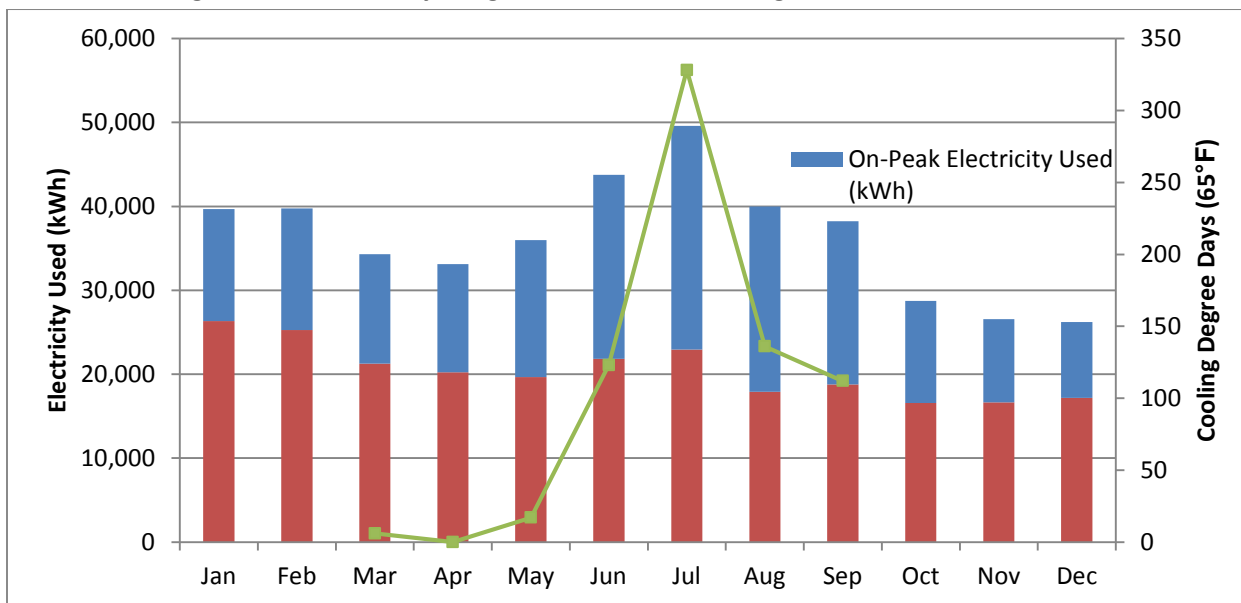
⁶ The typical share of electricity used for AC in 2012 was estimated by subtracting one representative building’s average non-summer-months’ electricity usage from each of its summer-months’ electricity usage.

Cooling Load and Building Electricity Use



More telling, the monthly data reveals a clear increase in overall electricity use particularly during the summer months, coinciding with the accumulation of hot days (measured by Cooling Degree Days per month). The figure below shows this monthly data for the Annex Building in 2012.

Air Conditioning Load on Electricity Usage: 2012, Annex Building



Parks

The county spent a total of \$23,999 on gas and electricity for county park facilities in 2013. This is down from about \$26,592 in 2012. There is substantial year-to-year variability in energy usage among these facilities. The comparison between 2009 and 2013 indicates a notable decrease in electricity use overall. Usage varies each year according to the use of parks by visitors, as well as what type of operations need to be performed each year for maintenance needs that may change. The parks' 2011 electricity usage was the lowest of any of the past 5 years, while 2012 usage was the second highest. Activities in response to the drought in 2012 may have been a contributing factor.

Energy Use, and Costs, for Portage County Parks (2011 to 2013)

	2009	2010	2011	2012	2013
Electricity (kWh)	185,796	169,546	150,108	182,398	155,486
Electricity Costs (\$)	\$25,658	\$24,269	\$22,919	\$26,388	\$23,807
Natural Gas (Therms)	108	252	262	201	167
Natural Gas Costs (\$)	\$158	\$284	\$296	\$204	\$192

Fountains and Irrigation

Portage County purchases the electricity used to run the fountains and irrigation (and some signage) for the common areas of the Portage County Business Park. A cost-share arrangement exists so that a portion of these costs are later reimbursed by parcel owners in the Business Park⁷. Initial purchase of electricity used to manage these common areas amounted to \$18,652 in 2013⁸. Based on a preliminary cost-share estimate, the corresponding cost to Portage County included in this report is just \$4,552. The electricity used by the well pump near the business park and at the Portage County Landfill on County Hwy QQ (predominantly used to power the air pump) is also included in the “Fountain and Irrigation” category in this report.

Energy Use, and Costs, for Fountains and Irrigation (2011 and 2012)

	2009	2010	2011	2012	2013
Electricity (kWh)	339,355	340,112	287,371	373,926	228,419
Electricity Costs (\$)	\$23,667	\$22,872	\$17,880	\$21,058	\$14,578

The increase in electricity used in 2012 to maintain common grounds is due to the very dry year, and the irrigation to maintain the common properties.

Strategic Energy Management: Natural Gas and Electricity

Actions taken

Numerous improvements to the building facilities have been implemented to contain costs over the past several years; many advancing energy efficiency. Some of these were recommended by the Strategic Energy Management Plan adopted in 2010, while others were based on emerging needs and opportunities identified by the facilities director. The energy-saving projects that have been implemented include improving HVAC and hot water controls, reducing air infiltration on doors, insulating AC lines, installing variable frequency drivers for water pumps, replacing lights with LEDs and custom fluorescents, replacing boilers with high performance boilers, replacing electric humidifiers with natural gas, and favoring efficient appliances where appropriate. More projects, and more details including costs and estimated payback periods for each project implemented, are given in tables (by building) in the appendices of this report. While many of these projects have been pursued since 2010, few have been reported on prior to this 2013 energy report.

Recent efforts since 2012 have included increasingly deliberate project management to implement the adopted energy plan. Considerable focus on data tracking, including and picking-up from where the original authors of the energy plan left-off. Underpinning this report, now, is a neatly compiled set of energy use data including annual totals from 2008 through 2013. While the numbers and trends do not explain themselves, practical observations and insights from all county staff were actively sought. It is through department leaders’ and other staff persons’ inputs that a clearer understanding of operations and some factors determining energy use were gained.

For the purposes of comparison and evaluation over time, it may make sense to look especially at the facilities that the county consistently exercises operational control. Notably this would be to exclude the Moore Road recycling center

⁷ These costs are reimbursed by private companies located in the business park according to the share of property owned privately. The cost ultimately born by the county decreases as more of the properties available for sale are sold to private companies. In this report, this adjustment is only applied to the costs – not electricity usage. Portage County’s share of expenses was 36.95% in 2010, 25.47% in 2011, and 24.4061% in 2012. This report uses the cost share estimates of a prior year as a proxy where estimating the County’s costs in certain years (2012 and 2013), which could result in minor discrepancies if compared to future updates.

⁸ Costs associated with the well pump near County Rd R are separate and not adjusted with respect to cost-sharing, as in the 2010 report. The full amount of that pump’s electricity usage and costs are included in this general category of Fountains and Irrigation.

which is operated by a contracted company; the recycling center has substantially increased its volume (work load) as well as its hours of operation. It also arguably (as in the “for Comparison and Evaluation” snapshots below) excludes electricity used at park shelters and campsites, since much of the plug loads come not from Portage County operations but from RVs and other users of the parks (equipment not operated by Portage County). When evaluating efficiency improvements from year to year it is generally important to focus attention on accounts consistently owned and/or controlled by the County. There was also a new utility account added for a new park facility in Dewey Marsh at the end of 2012, and the possibility of operating a snow-making machine at Standing Rocks; these and other new or disappearing accounts should be distinguished where appropriate. Parks’ revenues are outside the scope of this report.

A table in the appendices of this report identifies who owns, and who controls, the major buildings that fall within the scope of the Portage County Strategic Energy Management Plan. It also makes sense to take into account other changes in weather, occupancy, and operations. For instance, regarding the Law Enforcement Center, changes in dispatch operations, occupancy, and meals prepared on-site may be important factors to take into account.

Progress toward achieving Goals

Overall Snapshots as Reported	2009	2012	2013	'13 as % of '09
Number of Portage County government buildings:	15	14	14	-
County electricity and natural gas use (MMBtu):	46,638	40,873	45,044	97%
<i>Electricity (kWh)</i>	5,651,787	5,753,696	5,510,282	97%
<i>Natural Gas (therms)</i>	273,544	212,419	262,433	96%
Cost of County electricity and natural gas use:	\$691,614	\$629,973	\$640,047	93%
<i>Electricity (\$)°</i>	\$470,273	\$493,462	\$476,647	101%
<i>Natural Gas (\$)</i>	\$221,341	\$136,511	\$163,400	74%
Snapshots for Comparison and Evaluation	2009	2012	2013	'13 as % of '09
Number of Portage County-controlled buildings:	12	12	12	-
County electricity and natural gas use (MMBtu):	42,140	36,188	39,058	93%
<i>Electricity (kWh)</i>	5,117,203	4,983,810	4,702,397	92%
<i>Natural Gas (therms)</i>	246,805	191,837	230,135	93%
Cost of County energy (kWh & therms) use:	\$606,683	\$534,175	\$537,850	89%
<i>Electricity (\$)°</i>	\$408,563	\$412,449	\$395,543	97%
<i>Natural Gas (\$)</i>	\$198,120	\$121,726	\$142,307	72%

Looking as far back as 2008, 2012 was the year in which the least natural gas used. In that year, the net costs of electricity and natural gas (combined) were about 8.9% lower than they were in 2009, costing the county about \$61,641 less. Regarding the natural gas component alone, a consumption decrease of 22% was complemented by a price decrease of 21% to achieve a net cost savings of 38%. Then 2013 brought winter months that were much colder than any of the previous winters, yet the performance of the buildings continued to improve. Electricity and natural gas use were both lower in 2013 than in 2009, despite the cold winter.

Focusing on the buildings and facilities operated by the county (Snapshots for Comparison and Evaluation), utility costs in 2012 and 2013 were \$72,508 and \$68,834 less than in 2009, respectively. This represents a total cost savings of about 12% and 11%, respectively.

⁹ This summary includes adjustments to certain costs (but not usage) for the Business Park.

On the whole, the county's annual average price paid for electricity (per kilowatt-hour) has increased every year but one since 2008. The greatest leap was between 2010 and 2011 when it increased by over 4% in that one year. This explains much of the increase in total electricity costs over the period. According to billing data available for the Annex, electricity rates for both on-peak and off-peak usage remained relatively stable from 2011 to 2012. There was actually a decline in variable rates themselves. And the building's total electricity use declined by 3.7%. Yet overall costs increased due to a partial shift from off-peak demand to on-peak demand (priced higher by about \$0.03/kWh) and a substantial increase in system demand charges.

Opportunities that Remain

Given the high (and often rising) cost of electricity and transportation fuels, and the County's goals to reduce its use of electricity and natural gas, it remains important to continue to seek further savings and viable alternatives in all areas.

Options for further projects and efforts include:

- Continuing to invest in energy efficiency in existing facilities, as well as in future building projects.
- Dedicating time and resources to adequately explore major energy efficiencies and renewable energy opportunities that could be realized in concert with large scale capital projects.
- Exploring further opportunities for solar energy among parks facilities.
- Exploring opportunities of "Super Windows" and simple ways to manage thermal losses and solar affects.
- Pursuing any opportunities to partner with UWSP or another higher education institution for assistance with further exploration into innovative energy management strategies, and implementation – potentially engaging faculty, staff, and/or an intern to assist Portage County.
- It may be useful to expand the use of Energy Star Portfolio Manager to facilitate more frequently monitoring the performance of certain buildings, and to engage staff in pursuing operational efficiencies.
- The increased irrigation that took place the Portage County Business Park during the drought in 2012 raises a management question. There may be an opportunity to save energy (and water) by limiting the irrigation activity to trees and high value plantings most vulnerable to drought. While companies located in the area ultimately pay most of the cost for the maintenance, it may be important to engage them in that decision.
- Continuing to assist county departments with strategic energy management.
- Examining energy costs that are part of the products and services purchased.
- Examining county government role in enabling energy efficiency in the community and savings for county residents and businesses.

Transportation Fuels

Portage County spent \$1,145,591 on fuels for county-owned vehicles and equipment in 2013, purchasing a total of 325,402 gallons of fuel. Compared to 2012, that is 26% more fuel, and 29% higher costs.

Total county department fuel purchases (for county-owned vehicles and equipment) in both 2012 and 2013 are summarized in the table below. These totals include both unleaded and diesel fuels.

	Total Gallons	Cost	Total Gallons	Cost
	2012	2012	2013	2013
Highway	167,916	\$568,548	233,487	\$811,778
Parks	9,973	\$35,362	9,808	\$33,987
Sheriffs	61,447	\$197,697	60,280	\$197,003*
Fleet	19,495	\$88,271	21,827	\$102,823*
TOTAL	258,831	\$889,879	325,402	\$1,145,591

*Share of net costs after volume discounts for retail purchases are estimated here.

A Snapshot (2012)

- MMBtu's consumed in ALL County owned vehicles and equipment: 31,925
- Dollars spent on transportation fuel for ALL County-owned vehicles and equipment: \$889,879
(Includes mowers, heavy machinery, etc.)
- Dollars spent on mileage reimbursements in 2010: \$190,716

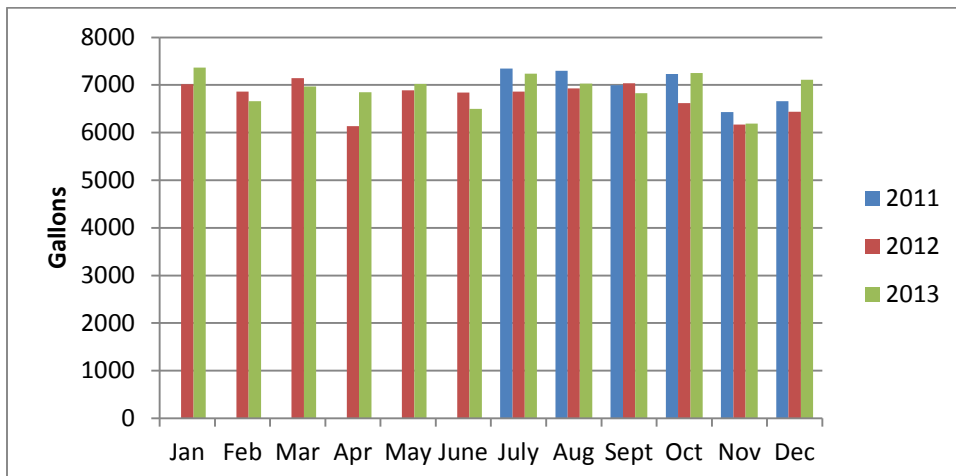
A Snapshot (2013)

- MMBtu's consumed in ALL County owned vehicles and equipment: 40,528
- Dollars spent on transportation fuel for ALL County-owned vehicles and equipment: \$1,145,591
(Includes mowers, heavy machinery, etc.)
- Dollars spent on mileage reimbursements in 2010: \$200,545

Retail (Gas Station) Fuel Purchases:

From July of 2011 to mid-December 2013 Kwik Trip was the primary vender for fuels for the Portage County Sheriff's Office and most other departments' fleet vehicles (except the highway and parks departments, which purchase bulk fuels). Schierl Companies became the county's primary vendor for fuel in mid-December. These monthly fuel sales (including both gasoline and diesel) since that time are shown in the chart below (including purchases from both Kwik Trip and Schierl Companies during the month of December 2013).

Retail Fuel Purchases, 2011-2013



Bulk Fuels (Highway and Parks Departments)

The purchase of bulk fuels occurs periodically, such that a purchase in one time period (shown in this report) doesn't necessarily reflect consumption in that period exactly.

The quantity of fuel purchases by the Highway Department was unusually high in 2012 and 2013. In 2012 this was due in part to construction activity during the summer. In 2013 the department's quantity of fuel purchased was higher still, due especially to extraordinary demand for snow plowing activity. Annual snowfall in Stevens Point area in 2013 was 87% higher than it was in 2012, and more than double what it was in 2010 (<http://www.usclimatedata.com/>). Compared to 2011, an 81% increase in the Highway Department's diesel fuel purchases in 2013 coincided with a 21% increase in average prices, resulting in more than double the cost to the department for diesel fuel.

Gasoline	2011		2012		2013	
	Gallons	Cost	Gallons	Cost	Gallons	Cost
Highway	17,403	\$56,154	15,000	\$50,331	16,512	\$50,196
Parks			5,949	\$22,670	5,752	\$19,657

Diesel	2011		2012		2013	
	Gallons	Cost	Gallons	Cost	Gallons	Cost
Highway	\$119,713	\$347,699	152,916	\$518,217	216,975	\$761,582
Parks			4,024	\$12,692	4,056	\$14,331

Strategic Energy Management: Transportation Fuels

Several implementation efforts were advanced in 2012 and 2013 to better manage fuels, included the following:

- Convened key department staff to facilitate routine management and reporting of fuel use; it is anticipated that improved tracking and reporting may be advanced in concert with a new ERP system.
- Portage County is one of 16 institutions participating in the Wisconsin Smart Fleet program, a state-coordinated alternative fuels program in which participating fleets explore strategic fuel management opportunities (<http://wismartfleet.org/>)
- Snow plow blade upgrades reduce the number of passes required for snow removal; compared to the increase in the amount of snow in 2013, the increase in highway department fuel use was not as severe.
- County workers continue to minimize or eliminate vehicle idling, as directed by key department leaders
- Departments have been encouraged to use an efficient and suitable vehicle where available (right-sizing)

Appendices

Appendix A: Facilities Improvements Checklist

The charts in this appendix are based upon a checklist of specific improvements identified in the 2010 Strategic Energy Management Plan (Phase I). More rows (projects) have been added to the tables based on emerging needs and opportunities identified by the facilities director. Checked items below tables were done by the time of the 2010 plan.

Annex

Focus Rec. #	Description	Funding Source	Year	Estimated Cost	Estimated Annual Savings	Payback (No Focus Incentives Included)	DATE COMPLETED
#7 & #8	HVAC - Verify boiler outside air temperature reset control and economizer controls	Facilities Budget	Completed in 2011	\$500 Funded	\$4,299	< 1	2011
#6	HVAC – Door sweep installation	Facilities Budget	Completed in 2011	\$100	\$23	4 ½	2011
#10	HVAC – Reduce air infiltration on receiving doors	Facilities Budget	2011	\$250	\$415	< 1	2011
#3	HVAC – Insulate AC lines on roof-top	Facilities Budget	2011	\$250	\$193	1 ½	2011
#9	HVAC – Chilled water pumps VFD's	Energy Efficiency Fund	2012	\$2,550	\$1,512	2	2013
#2	HVAC – Boiler hot water pumps VFD's	Energy Efficiency Fund	2012	\$2,550	\$1,176	2	
#1	Lighting – Custom fluorescent recommendation	Capital Improvements	2012 evaluation 2013 implement	\$9,600 \$20-40,000	\$7,224	4 - 7	Delayed

✓ Focus Recommendation #4 – Plug Loads – Vending Misers on vending machine are being completed as part of the 2010 projects

✓ Focus Recommendation #5 – Circulation pump time clock has been installed

Courthouse

Focus Rec. #	Description	Funding Source	Year	Estimated Cost	Estimated Annual Savings	Payback (No Focus Incentives Included)	DATE COMPLETED
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#2	HVAC – Preventative maintenance – Insulate AC lines	Facilities Budget	2011	\$1,000 - 2,500	\$240	4 - 10 ½	2011/2012
Facilities Director Rec.	DHW – Circulation pump time clock	Facilities Budget	2012	\$500	\$200*	2 ½	2012
#5	HVAC – Boiler steam to hot water conversion	Capital Improvements	2012 evaluation 2013 implement	\$40,000 \$500,000 – 1.5 million	\$11,130	48 - 100+	Delayed
#1 & #4	Lighting – Custom fluorescent recommendation	Capital Improvements	2012 evaluation 2013 implement	\$14,000 \$20-75,000	\$8,640	4 - 10	Delayed
Facilities Director Rec	Replace Stairwell Lights with LED Fixtures	Facilities Budget	2014	\$400.00	\$50.00	8 years	2014

✓ Focus Recommendation #3 – HVAC – Preventative maintenance (check and repair steam traps) has been completed

Lincoln Center

Focus Rec. #	Description	Funding Source	Year	Estimated Cost	Estimated Annual Savings	Payback (No Focus Incentives Included)	DATE COMPLETED
#2 & #3	HVAC – Verify ventilation controls and economizer controls	Facilities Budget	In progress & 2011	\$500 Funded	\$7,238	< 1	2011
#7	Food Service – Refrigeration system maintenance	Facilities Budget	2011	\$1,000	\$31	32	2011
Facilities Director Rec.	DHW – Circulation pump time clock	Facilities Budget	2012	\$500	\$200	2.5	2012
#1	Lighting – Custom Fluorescent recommendation	Capital Improvements	2012 evaluation 2013 implement	\$6,000 \$20-40,000	\$7,470	3 ½ – 6	Delayed
#8	HVAC – Boiler replacement to high performance	Capital Improvements	2014 evaluation 2014 implement	\$10,000 \$100,000	\$4,916	22	Not scheduled

Facilities Director Rec.	Replace Art Work Spot Lights with LED Bulbs	Facilities Budget	2013	\$500.00	100.00	5	2012
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- ✓ Focus Recommendation #4 – Lighting - Replace HID with fluorescent lighting are being completed as part of the 2010 projects
- ✓ Focus Recommendation #5 – Lighting - Replace incandescent spots with CFL's are being completed as part of the 2010 projects
- ✓ Focus Recommendation #6 – Food Service - Install ECM in coolers/freezers are being completed as part of the 2010 projects

Law Enforcement Center

Focus Rec. #	Description	Funding Source	Year	Estimated Cost	Estimated Annual Savings	Payback (No Focus Incentives Included)	DATE COMPLETED
#12	HVAC – Boiler replacement to high performance	Facilities Budget Capital Improvements	2011 evaluation 2011 implement	Contractor \$70- \$100,000	\$1,840	38 - 54	2011
#5	HVAC – Verify economizer controls	Facilities Budget	In progress & 2011	\$500 Funded	\$3,528	< 1	2011
#2	DHW – Hot water temperature study and adjustment	Facilities Budget Capital Improvements	2011 evaluation 2012 implement	\$5,000 In House	\$810	6	2011/ 2013
#3	DHW – Electric to gas conversion on booster water heater	Facilities Budget Capital Improvements	2011 evaluation 2012 implement	\$1,000 \$10,000	Further Study	N/A	Not Completed
#10	Food Service – Gas ENERGY STAR steamer	Energy Efficiency Fund	2012	\$10,000	\$124	80	Not Completed
#11	Food Service – ENERGY STAR hot food holder	Energy Efficiency Fund	2012	\$10,000	\$103	97	Not Completed
Facilities Director Rec.	HVAC – Gas Conversion (boiler to dishwasher?)	Energy Efficiency Fund	2012	\$10,000	Further Study	N/A	Not Completed
#1 & #8	Lighting – Custom fluorescent recommendation	Capital Improvements	2012 evaluation 2013 implement	\$10,800 \$50-75,000	\$3,672	16 - 23	Not Completed
Facilities Director Rec.	HVAC – Chiller study and replacement	Capital Improvements	2012 evaluation 2013 implement	\$5,000 \$150,000	Further Study	N/A	Delayed

Facilities Director Rec.	Replace outdoor light fixtures with LEDF fixtures	Capital Improvements	2013 Implement	\$1500.00	Further Study	N/A Minimal	2013
Facilities Director Rec.	Replace Electric Humidifiers with Natural Gas	Carry Over Funds	2013 Implement	\$27,000	Further Study	N/A Substantial	2013

- ✓ Focus Recommendation #4 – Plug Loads – Vending Misers on vending machine are being completed as part of the 2010 projects
- ✓ Focus Recommendation #6 – Lighting – LED exit lighting are being completed as part of the 2010 projects
- ✓ Focus Recommendation #7 – Lighting – Occupancy sensor in basement are being completed as part of the 2010 projects
- ✓ Focus Recommendation #9 – Food Service – Install ECM in coolers/freezers are being completed as a part of the 2010 projects

Ruth Gilfry Building

Focus Rec. #	Description	Funding Source	Year	Estimated Cost	Estimated Annual Savings	Payback (No Focus Incentives Included)	DATE COMPLETED
#4	Plug Loads – Disconnect walk-in refrigerator and replace with ENERGY STAR kitchen refrigerator	Facilities Budget	Completed in 2011	\$1,000	\$491	2	2011
Facilities Director Rec.	Plug Loads – Dispose of boiler room refrigerator	Facilities Budget	2011	\$25	\$75	< 1	2012
#3	DHW – Replace hot water heater with gas ENERGY STAR	Facilities Budget Energy Efficiency Fund	2011 evaluation 2012 implement	Contractor \$10,000	\$546	18	Cancelled
#1	Lighting – Custom fluorescent recommendation	Capital Improvements	2012 evaluation 2013 implement	\$8,800 \$20-60,000	\$9,360	3 - 7	Delayed
Facilities Director Rec.	HVAC – Boiler replacement	Capital Improvements	2011 implement	Funded	Further Study	N/A	2011
Facilities Director Rec / Program Needs	Take walk-in Cooler Out of Service	Facilities Budget	2012	No Hard Costs – Utilizing existing Refrigerator	Further Study Required	<1	2012

- ✓ Focus Recommendation #2 – Plug Loads – Vending Miser on vending machine are being completed as part of the 2010 projects

Note: Since the boiler was already funded at the time of the 2010 report, it is not included in budget calculations.

Jefferson House

- ✓ Focus Recommendations – #1 compact florescent light bulb installations, #2 including LED exit lighting, and #4 storm windows for the basement, are being completed as part of the 2010 projects.

Health Care Center

Focus Rec. #	Description	Funding Source	Year	Estimated Cost	Estimated Annual Savings	Payback (No Focus Incentives Included)	DATE COMPLETED
#4	DHW – Evaluate and reconfigure hot water heater temperature	Facilities Budget	2011	In House	\$286	< 1	2012
#2	Food Service – Refrigerator sealing maintenance	Facilities Budget	2011	\$1,000	\$150	6 ½	2011
#1 & #8	Lighting – Custom fluorescent recommendation	Capital Improvements	2012 evaluation 2013 implement	\$16,000 \$35-60,000	\$5,175	9 ½ – 15	Delayed
#10 & #13	HVAC – Evaluate boiler system and implement steam to hot water conversion, new boilers	Capital Improvements	2013 evaluation & implement	\$35,000 \$500,000	\$10,880	49	Delayed
#3, #7, #6, #11 & #12 (lumped together to achieve capital improvement status)	Food Service – Install hood fan controls, replace dish washer with high efficiency model, replace convection oven and steamer with gas ENERGY STAR models, and install gas booster hot water heater	Capital Improvements	2014	\$80,000	\$3,214	25	Delayed
Facilities Director Rec.	Replace Bathroom lights with Led Bulbs as party of the Fire Sprinkler installation Project	Capital Improvements	2012/2013	<\$2000.00	Further Study Required	N/A	2013

- ✓ Focus Recommendation #5 – Plug Loads – Vending Misers on vending machine are being completed as part of the 2010 projects
- ✓ Focus Recommendation #9 – Food Service – Install ECM on coolers/freezers are being completed as part of the 2010 projects

The boilers at the Health Care Center are in excess of fifty years old. They have a useful life of fifty years. Converting the steam system to a hot water system will make controlling the temperature in the building easier and dramatically increase energy efficiency.

Library

Focus Rec. #	Description	Funding Source	Year	Estimated Cost	Estimated Annual Savings	Payback (No Focus Incentives Included)	DATE COMPLETED
#3	HVAC – Verify economizer controls	Library Maintenance Budget	2011	In House	\$1,376	< 1	2011
#2	HVAC – Evaluate and install VFD on boiler hot water pump	Energy Efficiency Fund	2012 evaluation & implement	Contractor \$2,550	\$705	3 ½	Delayed
#4	HVAC – Evaluate and install VFD on basement air handling unit	Energy Efficiency Fund	2012 evaluation & implement	Contractor \$2,550	\$843	3	Delayed
#5	HVAC – Replace chiller with high efficiency unit	Capital Improvements	2012	\$150,000	\$3,096	48	Delayed
#6	HVAC – Boiler steam to hot water conversion	Capital Improvements	2012 evaluation 2013 implement	\$30,000 \$150,000	\$8,577	21	Delayed
#1	Lighting – Custom fluorescent recommendation	Capital Improvements	2012 evaluation 2013 implement	\$9,000 \$50-60,000	\$2,838	20 – 23	Delayed
#7	HVAC – Insulation on roof when it's re-roofed	Capital Improvements	2015	\$25,000	\$976	25	Not in Schedule

Plover Branch Library

Focus Rec. #	Description	Funding Source	Year	Estimated Cost	Estimated Annual Savings	Payback (No Focus Incentives Included)	DATE COMPLETED
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#3	Lighting – Install compact fluorescent lamps throughout building	Library maintenance budget	2011	In House	\$114	< 1	2011
#2	HVAC – Install programmable thermostat	Library maintenance budget	2011	\$1,000	\$114	8 ½	2011
#5	Plug Loads – Dispose of children’s room refrigerator	Library maintenance budget	2011	\$25	\$34	< 1	2011
#4	DHW – Pipe insulation on DHW lines	Library maintenance budget	2011	\$500	\$36	13	Delayed
#1	Lighting – Custom fluorescent recommendation	Capital Improvements	2012 evaluation 2013 implement	\$1,000 \$10,000	\$617	17	Delayed

Summary of Budget for Recommendations with Need

The following table is recommendations extracted from the previous tables that will need to be completed due to possible failure of equipment and equipment that is at the end of its useful life...

Focus Rec. #	Description	Funding Source	Year	Estimated Cost	Estimated Annual Savings	Payback (No Focus Incentives Included)	DATE COMPLETED
Courthouse							
#5	HVAC – Boiler steam to hot water conversion	Capital Improvements	2012 study 2013 implement	\$40,000 \$500,000 – 1.5 million	\$11,130	48 - 100+	Delayed
Law Enforcement Center							
#12	HVAC – Boiler replacement to high performance	Facilities Budget Capital Improvements	2011 study 2011 implement	Contractor \$70- \$100,000	\$1,840	38 - 54	2012
Facilities Director Rec.	HVAC – Chiller study and replacement	Capital Improvements	2012 study 2013 implement	\$5,000 \$150,000	Further Study	N/A	Delayed
Ruth Gilfry							
Facilities Director Rec.	HVAC – Boiler replacement	Capital Improvements	2011 implement	Funded	Further Study	N/A	2011
Health Care Center							

#10 & #13	HVAC – Evaluate boiler system and implement steam to hot water conversion, new boilers	Capital Improvements	2013 study & implement	\$35,000 \$500,000	\$10,880	49	Delayed
Library							
#5	HVAC – Replace chiller with high efficiency unit	Capital Improvements	2012	\$150,000	\$3,096	48	Delayed
#6	HVAC – Boiler steam to hot water conversion	Capital Improvements	2012 study 2013 implement	\$30,000 \$150,000	\$8,577	21	Delayed
Total				\$1,630,000 to \$2,660,000	\$35,523 +	45 - 75	

Appendix B: Buildings Owned and Operated

	BUILDINGS	OWNER	OPERATOR	
*	Annex	Portage County	Shared; mainly Portage County	
*	Law Enforcement Center	Portage County	Portage County	
*	City/County Courthouse (1/2)	Portage County	Shared w/ C. Stevens Point	i
*	Ruth Gilfry Building	Portage County	Portage County	
*	Health Care Center	Portage County	Portage County	
*	Lincoln Center	City of Stevens Point	Portage County	
	Jefferson House	Portage County	Midstate Independent Living Consultants	
	Portage House	Portage County	Portage County	
	Recycling Center (Materials Recovery Facility)	Portage County	Contracted service provider	
	Transfer Center	Portage County	Contracted service provider	
	Public Library in Stevens Point	City of Stevens Point	Portage County	
	Plover Branch Library	Village of Plover	Portage County	
	Hwy Garage	Portage County	Portage County	
	County Rd Y Shop Prk Dept.	Portage County	Portage County	
	825 Whiting Ave Shop	Portage County	Portage County	
	OTHER FACILITIES			
	Parks (most typical accounts)...	Portage County	Shared w/ RVs, park visitors	ii
	Landfill	Portage County	Portage County; escrow	iii
	Business Park Common Grounds...	Portage County	Portage County; cost-share	iv

Notes:

* Asterisks here indicates inclusion in the subset of six typical buildings examined in the “Details and Discussion” section.

i. As in prior inventories (2009, 2010), this report includes 50% of this building's energy use.

ii. Included in past inventories, and in total; but not included in certain comparisons over time in this report. RVs/users change each year and are not controlled by Portage County. New facilities such as Dewey Marsh Shooting Range, and the potential Standings Rocks Snow-Making machine might also be distinguished for purposes of comparison and evaluation over time.

iii. As in prior inventories (2009, 2010), the full costs (and usage) for the landfill were included in this report among "pumps, fountains, and irrigation".

iv. These facilities fall under the “fountains and irrigation” category. In prior inventories (2009, 2010), the costs (not usage) particularly for these business park accounts were "Calculated as 40% of Portage County Business Park total. 60% is paid by parcel owners". Since that time, as more parcels have been purchased by businesses, the county's share of costs under the cost-share arrangement decreased to about 25% and 24% by 2011 and 2012 respectively, and their costs were adjusted accordingly in this report.