Wood County Renewable and Sustainable Committee

Date: Tuesday, August 20, 2019
Time: 11:00 am – or immediately following the County Board meeting
Location: Room 115, Wood County Courthouse

1) Call to order
2) Public comments
3) Review Renewable & Sustainable goals of other WI Counties
    a. Discuss creating Renewable & Sustainable goals for Wood County
4) Review example energy plans
    a. Discuss formulating energy plan for Wood County
5) Discuss solar opportunities for Wood County
6) Review information previously provided to committee
7) Discuss information included in future Committee packets
8) Future agenda items
9) Next meeting
10) Adjourn

Introduction

In early 2009 the La Crosse County Board and La Crosse Common Council adopted the *City of La Crosse & La Crosse County Strategic Plan for Sustainability*. The plan identified multiple sustainability indicators to be monitored on an ongoing basis. Some have since been added to or removed, so the set of indicators tracked in this report differs somewhat from the original. Some of these indicators apply to government operations only, while others apply to the City and/or County as a whole. In this report, most indicators are measured and reported separately for the City of La Crosse and La Crosse County.

Table 1: Sustainability Indicators Reported

City/County Government Operations
Electricity Usage
Natural Gas Usage
Facility Energy Use Intensity
Vehicle Fuel Usage
Carbon Dioxide Emissions from Energy Use
Water Usage
Paper Usage
Green Product Purchasing

Community-Wide
Electricity Usage
Natural Gas Usage
Carbon Dioxide Emissions from Energy Use
Water Usage*
Solid Waste Generation & Diversion**
Municipal Recycling Collection
MTU Bus System Ridership
Bicycle Route/Trail Lengths
Alternative Commuting Rates
Land Use**
Education Attainment
Median Household Income
Poverty Rates
Unemployment Rates

*: Tracked for City of La Crosse only
**: Tracked for La Crosse County only

For most indicators, 2007 was the earliest year for which reliable data could be gathered. The year 2007 was therefore designated as the "base year" against which future values would be compared. According to the *Strategic Plan for Sustainability*, a report was to be generated on an annual basis to monitor and highlight improvements or setbacks in the pursuit toward sustainability. This report summarizes the status of those indicators through the end of 2018.

City of La Crosse Government Operations

Facility Energy Usage

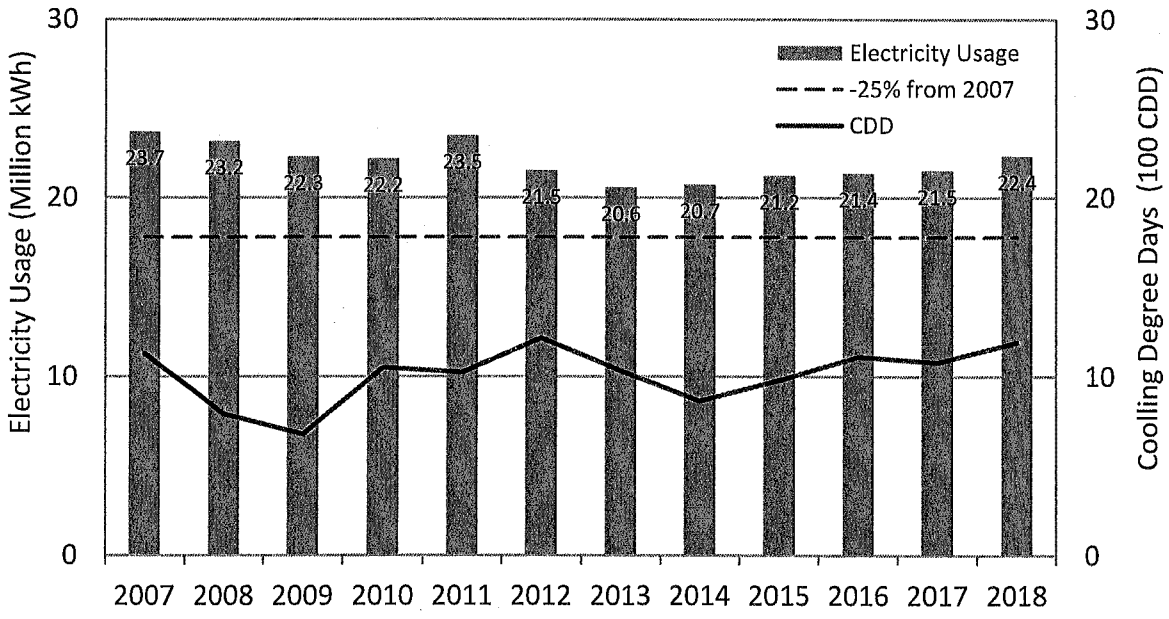
The City of La Crosse government utilizes energy in two forms to operate facilities: electricity and natural gas. Each is examined separately below. The *Strategic Plan for Sustainability* includes two long-term goals related to energy usage at City facilities:

- Goal 1A: By 2025, the City will reduce overall energy consumption as measured per square foot within City facilities from 2007 by a minimum of 25%.
- Goal 1B: By 2025, at least 25% of the City's energy needs in City facilities will be generated from renewable resources.

Electricity

The City of La Crosse government used 22.4 million kWh of electricity during 2018 – down from 23.7 million kWh in 2007 (-5.7%), but up from 21.5 million kWh in 2017 (+3.8%; see Figure 1)[1]. The City government spent an estimated $148,000 less for electricity in 2018 than if usage had remained at the 2007 level, and $2.1 million less from 2008-2018 in total.[2]

Figure 1: City of La Crosse Government Annual Electricity Usage with Cooling Degree Days



Data Source: Xcel Energy

[1] Some values have been revised from previous reports, as minor errors/omissions were discovered.

[2] Estimated savings are based on statewide annual average commercial prices for electricity (data source: US EIA).

ELEMENT 9: ENERGY & SUSTAINABILITY

Vision

Polk County utilizes its diverse resources as a leader in sustainability endeavors and creates an environment and conditions necessary for a sustainable future.

9.1 EXISTING CONDITIONS

Sustainability is a burgeoning concern worldwide. Here in Polk County issues related to sustainability surface every day. Virtually all local level plans contain language supporting environmental protection and local self-reliance - two hallmarks of sustainable development.

The State of Wisconsin requires that a comprehensive plan contain at least the nine planning elements previously addressed. Polk County has elected to add this additional element out of concern for emerging global issues that will combine to make "business as usual" untenable for future generations. Of particular importance are the related issues of peak oil and global climate change, both of which will have local impacts that must be identified and addressed to the best of our ability.

Polk County has already taken some steps toward meeting these challenges, first by establishing an Ad Hoc Renewable Energy Committee, and then by becoming the first county in the state to adopt Governor Doyle's "25 X 25" initiative, which sets the goal of a 25% reduction in the use of nonrenewable energy by the year 2025 – either through conservation or through conversion to renewable sources. The City of Amery has declared itself an eco-municipality, and the Village of Osceola and City of St. Croix Falls are both pursuing aggressive sustainability initiatives of their own.

The most widely agreed upon definition of sustainability is "meeting the needs of the current generation without compromising the ability of future generations to meet their needs." There is a grassroots movement in Polk County on sustainability formed around "study circles" meeting and discussing the framework set forth in the book *The Natural Step for Communities* by Sarah James and Torbjorn Lahti. These groups, which have already involved hundreds of county citizens, are providing the largest groundswell of support for these initiatives. The four system conditions of the Natural Step framework are:

In a sustainable society, nature is not subject to systematically increasing:

1) concentrations of substances extracted from the earth's crust
2) concentrations of substances produced by society
3) degradation by physical means

and in that society,

4) human needs are met worldwide

One of the reasons for the popularity of the Natural Step movement is that it does not dictate exactly what steps a community should take to become sustainable; rather, it uses the above framework to evaluate alternative courses of action so that every decision made is the most sustainable possible at the time.

Many of Polk County's policies and procedures already support sustainability. Examples include the Highway Department's no idling policy and the Parks, Buildings and Solid Waste Department's performance contracting with Johnson Controls to maximize operational efficiencies in county buildings. Polk County's recycling center is recognized as one of the best in the state, providing safe and economical disposal of everything from batteries to paint to unused pharmaceuticals.

There are a number of goals listed in this section that reinforce language elsewhere in this plan. That is as it should be; many issues are interrelated and don't fit neatly into one category. The desire to maintain a healthy farm economy, for example, includes goals related to culture, economy, and the environment. There are a number of actions being taken within the county to emphasize sustainable food production, such as: the numerous farmers' markets, various Community Supported Agriculture farms, buy local initiatives, etc. As another example, the protection of the County's water resources finds mentions in almost every element of this plan. While many of the goals listed below could have been integrated into other elements, there is a desire to emphasize sustainability issues by listing them separately as follows.

9.2 GOALS, OBJECTIVES, AND POLICIES

Goal 1: Promote energy efficiency and conservation for the County.

Objectives:

1) Lead by example

Policies:

1) Establish a plan to monitor the County's consumption of electricity, natural gas, liquid propane, and vehicle fuels
2) Set goals that put the County on track to meet its stated "25 X 25" goal
3) Continue performance contracts for efficient operation of county buildings

2) Assist and encourage homeowners and businesses

Policies:

1) Work with Focus on Energy and other public and private agencies to educate homeowners and businesses on ways to improve energy efficiency.
2) Develop a means of recognizing businesses that are leaders in adopting efficiency measures.
3) Adopt building codes and ordinances that encourage and reward energy conservation measures in new construction.

Goal 2: Adopt renewable energy policies and practices as part of a strategy to meet future energy needs.

Objectives:

1) Take full advantage of opportunities as they arise

Policies:

1) Utilize experienced grant writers to pursue funding available from government agencies and private foundations
2) Monitor and emulate best practices as exemplified by other counties in the state and nation
3) Investigate financing options to assist businesses and homeowners in affording renewable energy technologies

2) Plan for long-term conversion to green energy sources

Policies:

1) Ensure the viability of the Renewable Energy Committee
2) Identify "low hanging fruit", i.e., what County operations are most likely to benefit from renewable applications
3) Promote and assist to the extent possible the location of renewable energy production facilities in the County
4) Identify and take steps to remove barriers to the development of renewable energy in the County

Goal 3: Encourage food and energy independence in the County.

Objectives:

1) Promote Polk County as a place that values local food and energy production

Policies:

1) Partner with Buy Fresh, Buy Local; Focus on Energy, and other organizations and institutions working toward similar goals
2) Work with municipalities within the County to assist with zoning changes, grant applications, and other efforts designed to increase self-sufficiency
3) At every opportunity, advertise Polk County as a place that values sustainability

2) Give preference to local purchasing

Policies:

1) Investigate possibilities to purchase local food and energy for County consumption
2) Review purchasing policies to remove barriers to purchasing locally

Goal 4: Promote land uses that do not negatively impact water resources in the County.

Objectives:

1) Maintain and enhance water quality in the County

Policies:

1) Fully enforce the Shoreland Zoning Ordinance, including the establishment of buffer zones
2) Support the efforts of the Polk County Association of Lakes and Rivers

3) Adequately fund the Land & Water Resources Department
4) Closely examine and monitor potential long-term threats to groundwater from mining, large confinement farming operations, and industrial activities
5) Promote and assist with the periodic testing of private wells throughout the county

Goal 5: Utilize sustainability and local food/energy independence as tools to improve economic stability and quality of life throughout the county.

Objectives:

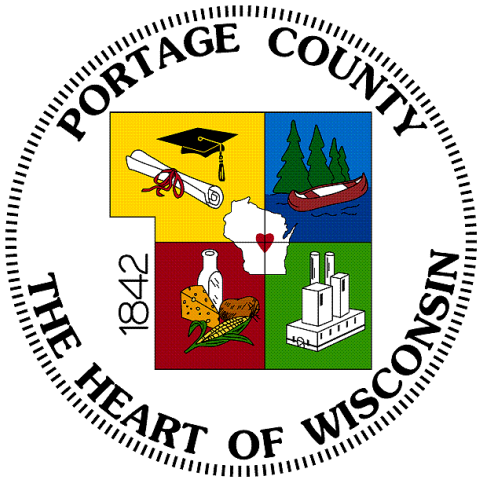
1) Promote the County as a place that welcomes, promotes, and encourages green businesses and green jobs.

Policies:

1) Investigate and take advantage of tax incentives and other means of attracting new green businesses
2) Develop programs to attract new agricultural enterprises to the County, especially small-scale, direct-market farms

2) Investigate the possibilities of barter and local currency to encourage local transactions in food and energy.

Portage County



Strategic Energy Management Plan

Phase One:
Electricity & Natural Gas
April 2011

Portage County
Strategic Energy Management Plan

Recommended by Space and Properties Committee:
April 4, 2010

Adopted by County Board of Supervisors:
April 19, 2011

Space and Properties Committee Members

Jeanne Dodge, Chair
Donald Jankowski, Vice-Chair
Lonnie Krogwold
Tom Mallison
David Medin
Andrew Halverson, City of Stevens Point (Courthouse issues only)

Smart Energy Team Members

Jeanne Dodge, County Board Supervisor, Chair of Energy Team
Phil Idsvoog, County Board Chairman, Vice-Chair of Energy Team
Al Haga Jr., County Board Supervisor
Todd Neuenfeldt, Facilities Director
Jeff Schuler, Planning & Zoning Director
Jennifer Stewart, UW-Extension Community Development Educator
Patty Dreier, County Executive

Acknowledgements

This report was developed by the Portage County Smart Energy Team and written by Joe Kottwitz, Portage County Sustainability Specialist. The plan was developed over a 6 month period beginning July, 2010.

Also thank you to:

Don Keck, Focus on Energy Advisor
Mike Resch, Wisconsin Public Service Account Representative
Sarah Wallace, Associate Planner, Portage County Planning and Zoning
All County employees who took time to fill out the survey

Table of Contents

List of Tables

List of Figures

EXECUTIVE SUMMARY

Reducing energy consumption and saving money is on the forefront for many organizations and local governments as energy prices continue to rise and budgets tighten. Planning for capital expenditures, management strategies, and education will facilitate the reduction of energy use over time for Portage County, resulting in saved tax dollars and positively impacting the environment.

This Strategic Energy Management Plan will be a cornerstone for strategic management and planning for Portage County facilities and programs for the future.

The 2009 inventory of electricity and natural gas use (2009 baseline) highlight the level of energy usage in its operations. Portage County used 46,638.3 million Btu's (MMBtu's) of electricity and natural gas in 2009 at a cost of $691,613.86. In 2009, natural gas accounted for nearly 60% of the MMBtus, but only 30% of the cost. A single MMBtu cost $24.39 for electricity and $8.09 for natural gas. In previous years, Portage County implemented energy efficiency measures in coordination with Focus on Energy. Portage County spent a total of $156,681 and received $30,576, or 20% of capital investment, in incentives from Focus on Energy. Focus on Energy estimated a savings of $156,163 resulting from these projects to date. Focus on Energy estimated a net return on investment of $31,094 to date.

This goal set forth in this plan is for Portage County to reduce its electricity and natural gas consumption 10% in the calendar year of 2015 compared to the calendar year of 2009 (base year). At the goal of a 10% reduction in electricity and natural gas use, a savings of nearly $70,000 annually would be realized. Implementing all of the recommendations in this plan, at an estimated capital expense of $2.2 to $3.4 million dollars, could produce significantly more savings, potentially $100,000+ annually. Capital investment is required to implement some recommendations, while others require no investment. Not all recommendations are final. As recommendations are considered for implementation, a facility life analysis should be done to see how the return on investment of the recommendation coincides with the life of the building and if it is the right decision for Portage County. An estimated 62-72% ($1.6 to $2.6 million) of the total estimated recommendation costs is to address facilities maintenance needs. As a result of implementing these maintenance requirements with energy efficient options Portage County will realize an estimated $35,000 in annual energy savings.

This Strategic Energy Management Plan starts with an inventory of all electric and natural gas use in County facilities and parks. Relationships of energy use in each facility were analyzed. Energy use and the factors that affect energy use in each facility are documented.

Issues with Portage County's current energy use and possible solutions to improve energy management and efficiency are identified in Section 6 of this document. An employee survey, energy audits from Focus on Energy, and comments from the Facilities Director were used by the SMART Energy Team to identify issues and solutions.

The Plan also provides a set of goals, objectives, and actions that establishes a framework to implement an aggressive energy management program. The goals, objectives, and actions focus on three areas: increased energy management and efficiency, increased leadership in energy, and increased environmental protection. The Plan outlines Portage County's commitment to reducing energy consumption, stewardship of tax levy dollars and our environment, and sustainable energy management.

The Plan also provides a list of energy management and efficiency recommendations for each facility. The recommendations were prioritized in Section 8 by ease of installation, installation costs, estimated energy savings, implementation feasibility, and change in employee comfort. Then in Section 9 the recommendations were put into tables that include a budget for funding capital projects and a timeline for when the recommendations should most appropriately be completed. The recommendations include boiler replacements, whole building lighting studies and retrofits, technology upgrades for motors, pumps, and fans, control systems verifications/replacements, and more.

The Plan concludes with a section that identifies specific roles and responsibilities for carrying out on-going energy recommendations over time. Critical issues in this section include managing the financing of capital investments, tracking energy use, employee energy education, and oversight of plan recommendations.

Phase two of the Strategic Energy Management Plan will be an inventory of current gasoline and diesel fuel use and recommendations to reduce that use. This will be included in this plan by the end of 2011.

SECTION 1: INTRODUCTION

Energy conservation, defined as reduced energy consumption, is considered to be the single most effective strategy for organizations to reduce energy costs. According to the EPA, "The energy that most effectively cuts costs, protects us from climate change, and reduces our dependence on foreign oil is the energy that's never used in the first place." At the local level, for every dollar the County does not spend on energy, there is a dollar available for something else.

Municipal Governments across the nation are working hard to become more energy efficient to reduce energy consumption. In 2008, Wisconsin's overall energy bill set a new record of more than $23.5 billion, an increase of $11.5 billion since 2000 (95.8% increase). Since Wisconsin imports most of its energy resources like coal and oil, the majority of this money leaves our local economy, as much as $16 billion. It is estimated that Portage County residents spent a total of $271.5 million dollars on energy in 2008. This is money leaving Portage County residents' pockets and ending up in other states and even other countries.

Organizations and governments typically see their energy consumption rising over time pending growth within the organization. At the same time, the cost of energy has typically been rising (not necessarily the case from year to year, but over the past ten years this is true) which results in a compounding effect in their energy bills. This creates a financial burden for many operational budgets. Some organizations are finding by reducing their energy use, it counteracts the rising price of energy, resulting in a flat energy bill. This is advantageous for organizations, companies, and especially governments since there is typically little room for budgets to cover increasing energy bills.

At the end of calendar year 2009, a project was proposed to replace the boilers at the Portage County Health Care Center. The project was approved by the Portage County Space and Properties Committee, but ultimately did not make it onto the Capital Improvement project table due to a lack of additional funding required for this project. As a result of this and other similar experiences, interest increased for the County to develop a comprehensive energy management plan. This plan will facilitate energy projects by providing an analysis of need, basis for funding, and a timeline.

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. The Plan will be used to limit the County's energy use, to better utilize alternative energy sources, and to monitor energy consumption and costs over time. 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.

Purpose of the Plan

The purpose of this plan is to provide a blueprint for meeting the energy reductions goal set forth by Portage County. To do this, the plan contains an inventory of existing electricity and natural gas use across Portage County government facilities, a set of goals and objectives for energy use and conservation that apply to County operations, and energy management options and implementation strategies to monitor, manage, and reduce energy consumption in County Facilities. The plan focuses on improving energy efficiency and conservation through various means such as operational changes, building retrofits, the purchase of energy efficient equipment, the use of alternative energy resources, and by educating employees and implementing energy saving policies.

Portage County Board Resolution 5-2010-2012 also called for the County's vehicle fleet to be included in the analysis. As a result of discussions by the Smart Energy Team, the Portage County fleet vehicles were not included in this particular planning project but will be examined and added to the Strategic Energy Management Plan in 2011.

Previous Efforts

Measures to improve energy efficiency have been undertaken by Portage County government over the past 10 – 15 years. Rebate incentives were applied for from Focus on Energy for these projects. A total of $156,681 was spent on fourteen projects. To date, the implemented projects have produced an estimated cumulative return on investment of $31,094 (estimate completed by Focus on Energy).

The retrofits implemented in the past were not always the most energy efficient upgrade possible; instead, more consideration was given to what type of retrofit would have the greatest cost-benefit. For example, the steam boilers in the Courthouse were replaced with newer, more efficient steam boilers and not with hot water boilers (more efficient than steam) because the more expensive retrofit was deemed too costly and was an unapproved capital investment.

Below is a list of major energy efficiency projects that have been completed here to date. Note: Some of the projects completed were not done solely for energy savings but for general equipment replacement/maintenance. Appendix A summarizes the energy efficiency projects, showing cost of project, incentive from Focus on Energy, savings since installation, and total return on investment.

- Replaced laundry equipment in the Law Enforcement Center
- Replaced rooftop direct expansion (DX) unit at the Courthouse
- Replaced lighting with high bay fluorescents at the Materials Recovery Facility
- Installed variable frequency drive at the Library
- Replaced lighting with fluorescents at the Parks Department
- Replaced lighting with high bay fluorescents at the Highway Garage
- Completed boiler tune-up at the Library
- Replaced lighting with fluorescents at the Library
- Completed chiller tune-up at the Annex

- Replaced lighting with fluorescents at the Health Care Center
- Installed condensing hot water heaters at the Health Care Center
- Completed hot water study at the Health Care Center
- Replaced laundry equipment in the Health Care Center
- Put stickers on light switches and thermostats that remind employees to turn off the lights when not needed and to keep the thermostats at lower temperatures during the winter and higher temperatures during the summer

Planning Method

After their formation, the Portage County Energy Team initially rotated their meeting locations to the different County buildings in order to tour them to increase their first hand knowledge of the facilities. The tours were meant to familiarize the Energy Team members with the buildings and energy use within them. Overall, the Energy Team followed a seven step process to develop this strategic energy plan.

Step 1 *Developed a 2009 baseline figure for energy usage in County buildings.*

The Sustainability Specialist, working cooperatively with the County's energy service providers, developed an inventory of every County electric and natural gas meter to create a baseline (2009) for electric and gas usage.

Step 2 *Developed and distributed a survey to County employees.*

The on-line survey was meant to gather implementation recommendations, assess knowledge and feelings about energy conservation, and gain insight into energy issues in County buildings and operations.

Step 3 *Conducted energy audit evaluations on selected buildings with Energy Advisor from Focus on Energy (See Appendix D for full energy audits).*

The energy audits were used to identify and prioritize building retrofits and energy efficiency measures that could be done to specified buildings.

Step 4 *Researched and prioritized other potential energy efficiency strategies for County operations.*

The Energy Team brainstormed a list of potential energy saving operational/policy changes and other building retrofits appropriate for the County.

Step 5 *Drafted a strategic energy management plan with goals, objectives and actions, and final recommendations budget and timeline.*

The plan includes an energy baseline report, recommendations from the Energy Team, results from the employee survey, Focus on Energy audit recommendations.

Step 6 *Reviewed strategic energy management plan with all affected stakeholders including relevant committees, department heads, and building managers.*

This was done to familiarize the affected stakeholders with the plan and garner support for plan implementation. Feedback was used to revise the plan where seen fit.

Step 7 *County Board adoption.*

Setting an Energy Reduction Goal

Setting a goal for energy reduction (electricity and natural gas) is an important step in the energy planning process. The goal should be realistic and attainable but should also be large enough to represent the County's commitment to energy conservation and saving tax levy dollars.

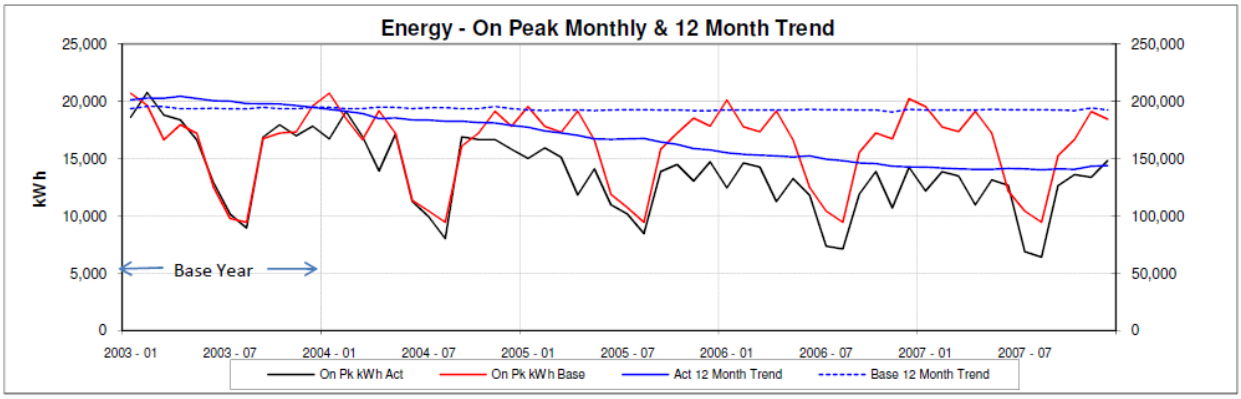
The methodology used to develop an energy reduction goal was a two step process. First, previous Portage County energy bills were examined to see how much energy was saved for different types of previously implemented projects. It was found that some projects, such as variable frequency drives and occupancy sensors on lights are not measurable on energy bills but larger projects, like lighting retrofits, are noticeable. For example, the Portage County Highway Department completed a lighting retrofit from inefficiency Metal Halide (MH) lamps to high efficiency high bay fluorescent lighting. About a 15% reduction in energy use is measureable in the department's energy bill. This example provides an idea of how much savings is possible from implementing certain types of projects which helps to identify what a realistic and attainable energy reduction goal could be.

Second, examples of other organization's and school district's energy reductions were acquired from a local energy services contractor and examined. The contractor provided real energy tracking data from organizations that are in the process of completing energy management and efficiency improvements. It was found that organizations realized around a 2% savings compared to base year in year one of the energy management program. In year two savings increased to an average of about 8% compared to the base year. In year three a 12% savings increased at typically 1% to 2% per year relative to the base year. The contractor stated that these savings percentages are similar for both electric and natural gas consumption.

For example, Figure 1 is a building in a school district that implemented energy management and efficiency strategies. The graphic shows on peak (this is typically

energy use from 7am-7pm) kilowatt-hour consumption for 2003 through 2007. The actual consumption and the modeled base year (2003) consumption are both plotted on the graphic for comparison. Also plotted are the actual 12 month trend and base year (2003) 12 month trend for comparison. A clearly measurable difference can be seen in 2005, just two years after their energy management and efficiency strategies were started.

Figure 1



Source: Wilinski Associates, 2010

With these criteria in mind the SMART Energy Team concludes that a **10% energy savings (electricity and natural gas measured in MMBtu's) in the calendar year of 2015 compared to the 2009 base year** is a realistic, attainable, and cost-effective goal. The goal represents the County's commitment to both energy conservation and saving tax dollars. A 10% savings compared to the base year equates to a reduction of 4,663.83 million Btu's (MMBtu). If Portage County's energy savings are equivalent to 10% for both gas and electric similar to savings realized by other organizations, a reduction of almost $70,000 could be realized by Portage County. If there is more electricity MMBtu's saved, the monetary savings will be greater because the current cost per MMBtu is higher for electricity than gas. If there are more savings in gas consumption than electricity consumption, the savings realized will be less because the current cost per MMBtu is lower for gas than electricity.

It is important to note that if all recommendations within this plan are implemented, a savings of over 10% is likely.

SECTION 2: INVENTORY OF CURRENT ENERGY USE (ELECTRICITY AND NATURAL GAS)

A Snapshot

Number of Portage County government buildings: 15 (not including park shelters)
County energy use (kWh & therms) in 2009: 46,638.3 MMBtu's
Cost of County energy (kWh & therms) use in 2009: $691,613.86
Average energy intensity of selected buildings: 0.136 MMBtu/ft2
County CO2 emissions (electric & natural gas) in 2009: 12,701,047 lbs.

Current Energy Sources

Portage County obtains its natural gas and electric energy from three sources. Wisconsin Public Service (WPS) supplies electricity and natural gas to almost all County government buildings, facilities and parks while Central Wisconsin Electric Cooperative (CWEC) supplies electricity to Standing Rocks County Park and Alliant Energy supplies electricity to some of the other Parks in Portage County. WPS is an investor owned utility that serves more than 437,000 electric customers and 317,000 natural gas customers in northeast and central Wisconsin and an adjacent portion of Upper Michigan. Central Wisconsin Electric Cooperative is a small electric utility serving approximately 8,000 people. Alliant Energy is an investor owned utility that serves more than 1.4 million customers in Iowa, Minnesota, and Wisconsin.

Current Energy Use

Portage County government consumes the great majority of its electricity and natural gas energy (96%) 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. According to the U.S. Energy Information Administration (EIA), 63% of energy used in office buildings goes towards heating, cooling, and lighting. Another 16% is used for office equipment such as computers and printers. It is assumed that Portage County office buildings use energy in a similar way to the EIA's findings. 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.

In this study, electricity and natural gas use is documented in three categories; 'buildings', 'parks', and 'fountains & irrigation'. In order to better understand energy consumption by end use, all data measurements (kWh for electricity and therms for natural gas) have been converted to million BTU (MMBtu) equivalents. This allows for a true comparison of how much energy is used. The Portage County government consumed 46,638.3 million BTU's of energy in 2009. Table 1 summarizes current energy use by energy type for all County buildings, parks, fountains, irrigation, and signs.

Table 1. Portage County 2009 Energy Use by Type of Energy and End Use

End Use	Type of Energy Consumed	Unit	Annual Consumption	MMBtu	Percent of Total Usage
Buildings	Electricity	kWh (kilowatt hours)	5,126,636.0	17,492.1	37.5%
	Natural Gas	Therms	273,436.4	27,343.6	58.6%
		Sub-Total	**N/A**	**44,835.7**	**96.1%**
Parks	Electricity	kWh (kilowatt hours)	185,796.0	633.9	1.4%
	Natural Gas	therms	107.5	10.8	0.0%
		Sub-Total	**N/A**	**644.7**	**1.4%**
Fountains & Irrigation	Electricity	kWh (kilowatt hours)	339,355.0	1,157.9	2.5%
		Sub-Total	**N/A**	**1,157.9**	**2.5%**
		Total	**N/A**	**46,638.3**	**100.0%**

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

Calculations used to determine MMBtu: Electricity MMBtu = kWh * 3412/1,000,000;
Natural Gas MMBtu = therms/10

Energy Costs

The largest energy expenditure in 2009 was for buildings: $420,948.27 for electricity, followed by $221,182 for natural gas. Together they make up nearly 93% of energy costs for the County's electricity and natural gas usage. In total, the County spent $691,613.86 on electricity and natural gas.

Table 2. Portage County 2009 Energy Cost by Type of Energy and End Use

End Use	Type of Energy Consumed	Dollars	Percent of Total Dollars
Buildings	Electricity	$420,948.27	60.9%
	Natural Gas	$221,182.36	32.0%
	Sub-Total	**$642,130.63**	**92.9%**
Parks	Electricity	$25,657.64	3.7%
	Natural Gas	$158.31	0.0%
	Sub-Total	**$25,815.95**	**3.7%**
Fountains & Irrigation *	Electricity	$23,667.28	3.4%
	Sub-Total	**$23,667.28**	**3.4%**
	Total	**$691,613.86**	**100.0%**

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

* Calculated as 40% of Portage County Business Park total. 60% is paid by parcel owners.

Table 3 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 natural gas consumption on a Btu basis is greater than electricity.

Table 3. 2009 Dollars per MMBtu by Energy Type

Energy Type	$/MMBtu
Electricity (kWh)	$24.39
Natural Gas (therms)	$8.09
Average	***$14.83***

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

Projected Energy Costs if No Recommendations are Implemented

If Portage County's energy use remains the same as it is currently it's estimated that five years from now, at the end of 2015, Portage County could be spending $850,000+ on electricity and natural gas annually. Assumptions of a 3% increase in electricity rates (average commercial electricity inflation rate over the past ten years – calculated from U.S. Energy Information Administration data) and 5% increase in natural gas rates (average commercial natural gas inflation rate over the past ten years – calculated from U.S. Energy Information Administration data) were used to perform this estimate. Electricity rates have been rising steadily for many years. Natural gas rates have been flat from 1985 to 2000 but have nearly doubled over the past ten years. Natural gas prices fluctuate significantly from year to year due to supply and demand forces.

Emissions by End Use and Energy Type

Figures 1 and 2 below summarize the percent of CO2 emissions by end use. CO2 emissions are higher from parks, fountains and irrigation systems because they only use electric energy, which emits more carbon dioxide per energy unit compared to natural gas. The percent CO2 emitted is also higher for electricity than it is for natural gas because producing electricity emits a significant amount more CO2 than natural gas does.

Figure 2

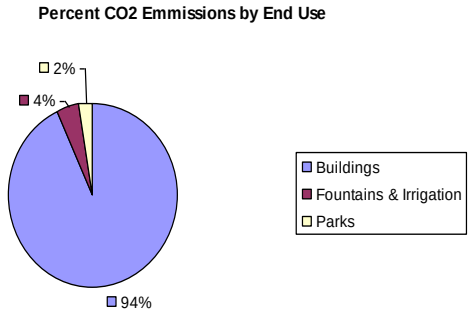
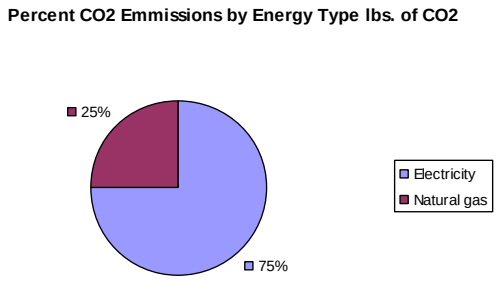


Figure 3



Weather Effects on Energy Use

It is important to note heating and cooling degree days for 2009 compared to an average of heating and cooling degree days from previous years. Degree days are the amount of degrees the actual temperature is over or under the base temperature of 65 degrees. This information provides a reference of whether 2009 was a hot or cold year compared to an average year. Making this distinction is important because the amount of heating and cooling degree days affects energy use. For example, the hotter a summer is, the more an air conditioning system will have to work to achieve proper cooling within a building.

Table 4 lists the heating and cooling degree days from 2004 to 2009. 2009 has 6.7% more heating degree days and 40% less cooling degree days than a 2004 to 2008 average does. This means 2009 was slightly colder during the winter and considerably cooler in the summer than the previous five years were. With this in mind, we expect to see the energy use for heating to be slightly higher in 2009 than an average year and energy use for cooling to be somewhat less than an average year.

You may use Table 4 to compare 2008 and 2009 heating and cooling degree days to actual electricity and natural gas energy use for each of the years. Take into consideration there are more variables then just weather playing a role in total energy use. Occupancy, equipment upgrades, and other building variables also play a role in total energy use.

2008 natural gas use is 684 MMBtu's less than in 2009 and 2008 electricity use is 169 MMBtu's more than in 2009. There are 259 more heating degree days in 2008 than there are in 2009 and 138 more cooling degree days in 2008 than there are in 2009. There is an anomaly present with natural gas use and heating degree days. Less natural gas MMBtu's were used in 2008 but there were more heating degree days. There is a correlation present with electricity use and cooling degree days. More electricity MMBtu's were used in 2008 and as expected there are more cooling degree days in 2008.

<u>2008 Energy Use (MMBtu's)</u>	
Electricity:	19,453
Natural Gas:	26,670
<u>2009 Energy Use (MMBtu's)</u>	
Electricity:	19,284
Natural Gas:	27,354

Table 4. Heating & Cooling Degree Days 2004 to 2009

Year	Heating Degree Days	Cooling Degree Days
2004	7439	342
2005	7329	683
2006	6861	576
2007	7298	601
2008	8177	457
2009	7918	319
2004 – 2008 Average	7420	532

Source: National Oceanic and Atmospheric Administration, Historical Climatological Series

SECTION 3: FACILITY ENERGY USE AND ANALYSIS

This section will examine the energy use of Portage County's buildings. The buildings have a variety of functions, from administrative offices to facilities like the Law Enforcement Center, Health Care Center, Materials Recovery Facility, Transfer Center, and Highway Garage, which all have specialized uses in most of the building but have office space as well. The Portage House is utilized for temporary housing and the Jefferson House is used for daytime mental health services. Table 5 isolates the Btu totals from the County's building facilities. For comparison, refer to Table 2 for the electric and natural gas costs for buildings.

Table 5. Portage County 2009 Building Energy Use

Energy Type	Consumption	MMBtu's	Percent of Btu's
Electricity	5,126,636.0	17,492.1	39.0%
Natural Gas	273,436.4	27,343.6	61.0%
Total		**44,835.7**	**100.0%**

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

Table 6 shows energy intensity for selected buildings in the County. Energy intensity is a measure of kWh's, therm's, or MMBtu's used in a facility compared to the floor space in square feet. Energy intensity calculations are useful to see which buildings are performing better or worse than others. A comparison can then be made between buildings taking into consideration their energy intensity, use, occupancy, function, and equipment present. The comparisons, dependent upon expected performance, may illustrate the need for energy management in different buildings. Energy retrofits and management may then be focused on buildings that are not performing as expected.

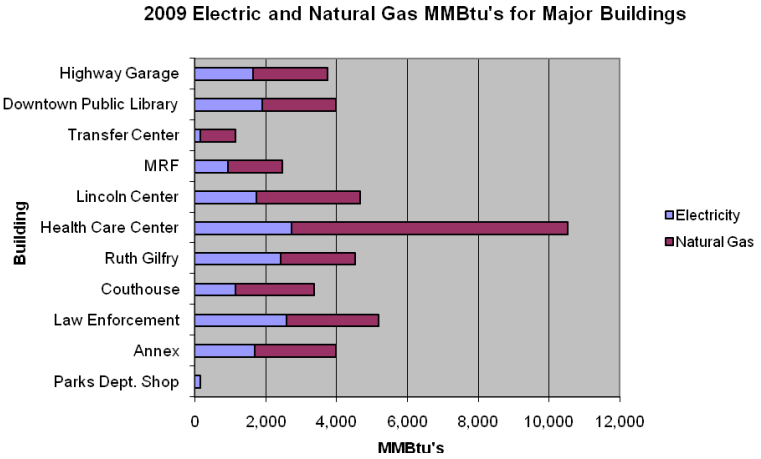
Table 6. 2009 Energy Intensity of Selected Portage County Buildings

Energy Intensity (unit/ft2)			
Building	*MMBtu/ft2*	*kWh/ft2*	*therm/ft2*
Lincoln Center	0.136	14.92	0.85
Health Care Center	0.128	9.79	0.95
Transfer Center	0.125	5.30	1.07
Jefferson House	0.124	12.76	0.81
Portage House	0.107	10.24	0.72
Ruth Gilfry Building	0.103	16.25	0.48
Law Enforcement Center	0.096	14.03	0.48
1/2 City/County Building	0.094	9.42	0.62
Public Library	0.089	12.43	0.47
Annex Building	0.083	10.41	0.48
Material Recovery Facility	0.083	9.23	0.51
Highway Garage	0.068	8.86	0.38
Parks Shop	0.024	7.14	0.00
Average	0.097	10.83	0.60

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

Figure 4 shows the Btu's of electricity and natural gas used in the selected County buildings. The Health Care Center consumes the largest amount of Btu's compared to any other County owned building. It consumes almost double the amount of Btu's compared to the next highest consumer which is the Law Enforcement Center because of the number of occupants, 24/7 occupancy hours and size of building. Figure 4 shows the natural gas consumption in the Health Care Center is very high compared to other buildings, likely due to the inefficiency of its boilers.

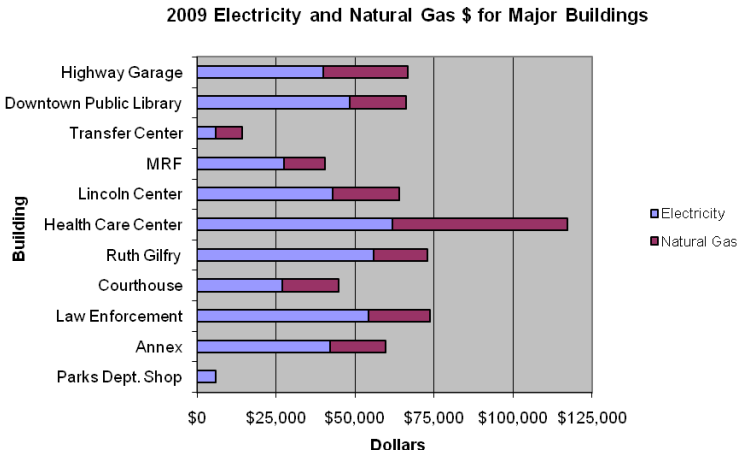
Figure 4



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

Figure 5 shows the cost of electricity and natural gas in selected County buildings. The Health Care Center is by far the most costly to the County followed by the Law Enforcement Center and Ruth Gilfry Building as a close second and third.

Figure 5



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

The Highway Garage, Library, Lincoln Center, Ruth Gilfry, Law Enforcement Center, and Annex have very similar Btu consumption and costs. The Transfer Center and Parks Department Shop are the smallest energy consumers with the least cost.

The following information describes potential factors influencing energy intensity for each building. These factors include number of occupants, occupancy hours, age of occupants, use of building, age of building, and equipment present in the building. There are also lighting and HVAC system considerations included in the discussion and whether or not they play a role in the building's energy intensity.

Lincoln Center, 1519 Water Street

The original Lincoln Center (16,344 square feet) was constructed in 1980 with an 18,000 square foot addition completed at the end of 2002 for a total of 34,330 square feet. The Lincoln Center has high occupancy hours because it is used all day for the Portage County Aging and Disability Resource Center (ADRC) and in the evenings for meetings. There is high occupancy in the building for most of the day and some evenings. Food service equipment is present in the building so meals can be prepared and served to users.

The age of the occupants who use the building (senior citizens) may have an effect on the preferred temperature within the Lincoln Center. During winter, the thermostat setting may be higher than other County buildings and during summer it may be cooler than other County buildings so users are comfortable. Although, according to the director of the Lincoln Center, it doesn't matter how high or how low the thermostats are set, there will always be rooms that are too hot or too cold. In these rooms the temperatures are set higher or lower to achieve a comfortable temperature and may

result in spaces competing against each other. This uses a great deal of energy and partially explains the high electric (kWh) and gas (therm) energy intensity.

There is some inefficient lighting in the Lincoln Center that contributes to high electricity use and costs. Most all of this lighting is being converted to energy efficiency lamps as part of the 2010 energy projects.

The Lincoln Center is owned by the City of Stevens Point. The agreement between the City of Stevens Point and Portage County states that Portage County is in physical possession of the building for purposes of maintaining and operating a senior citizen center. It states the County shall provide the operational expenses of the senior citizen center, which includes the utility expenses. Any payments for improvements exceeding $1,000 are the responsibility of the City of Stevens Point and are subject to approval through a joint committee. Any improvements costing less than $1,000 are the responsibility of Portage County.

Ruth Gilfry Building, 817 Whiting Avenue

The Ruth Gilfry Building was built in 1980. The Ruth Gilfry building has high occupancy hours because of evening meetings and some employees work hours extending into the evening. There are very high occupancy numbers in the building. The Ruth Gilfry building has the largest concentration of computers (132) of any County building due to the fact it has more employees than any other building. Computer energy use is correspondingly high. According to the Focus on Energy Advisor working with Portage County on this planning process, lighting in the building is excessive, resulting in many areas being over lit. From the employee survey, it was found that some employees are extremely cold, especially during the summer. The thermostat settings may be extreme or sensors are dysfunctional resulting in excessive air conditioning or heating.

Between the number of computers present, excessive lighting, and excessive cooling in the building there is no surprise that the electric (kWh) energy intensity is the highest of all County buildings. There are many opportunities available in this building for energy conservation/efficiency. They are documented in the recommendations section of this Plan.

Downtown Public Library, 1001 Main Street

The Library was completely reconstructed in 1992; only the north and west side facades were kept from the original building. The library has high occupancy hours; it is open 9:30am-9:00pm Monday through Thursday, 9:30am-6:00pm Friday, 9:30am-5:00pm Saturday, and 1:00pm-5:00pm Sunday. On a typical day there are a lot of occupants in the building using a number of computers, and book display and reference areas must be properly illuminated. Also, the lighting must be sufficient for people to read, which means the actual light output in the library is high. The Illuminating Engineering Society suggests that libraries be lit to 30 foot-candles for a sufficient amount of light. The basement and first floor meet this standard but the second floor does not; it's currently at 10-12 foot candles. There are large windows around the whole building which make heat loss/transfer an eminent problem.

The downtown Stevens Point location is the main library for the Portage County Library System. The building is owned by the City of Stevens Point and is leased to the County for free. The current lease is from September 1, 1992 and ending August 31, 2012. The lease agreement states that the City of Stevens Point is responsible to pay installation charges for gas, electric, telephone, water, and sewer connections. All payments for improvements not exceeding $2,000 are the responsibility of the County. All payments for improvements exceeding $2,000 are the responsibility of the City. It also states the County is responsible for all utility payments with the City reimbursing the County 50% of the charges in the first year of the lease and decreasing 5% every year until the County assumes all of the utility expenses. At the time of this writing, the County is responsible for all utility payments.

Plover Branch Public Library, 2151 Roosevelt Drive

The Plover branch of the public library system is open Tuesday through Saturday: Tuesday, Wednesday, and Thursday, 10am-8pm; Friday 10am-5pm; Saturday 9:30am-1pm. The building was formerly a church. The building must be properly lit for reading. The Illuminating Engineering Society suggests that libraries should be lit to 30 foot-candles to provide a sufficient amount of light. The upstairs and downstairs currently meet this standard.

There is a very small boiler in the basement used for baseboard heating for the basement. There are also two roof-top air handling units that both cool and heat the building. These units consume a considerable amount of energy, although are not necessarily inefficient. Two roof-top units may have been required to adequately ventilate the space to meet air circulation code requirements for public buildings.

The Plover Branch Library building is owned by the Village of Plover and leased to the County for free. The current lease is from October 8, 1991 and ending August 12, 2012. The lease agreement states that the Village of Plover is responsible to pay installation charges for gas, electric, telephone, water, and sewer connections. All payments for improvements to the building costing less than $2,000 are the responsibility of the County. All payments for improvements exceeding $2,000 are the responsibility of the Village of Plover. It also states the County is responsible for all utility payments with the Village reimbursing the County 50% of the charges in the first year of the lease and decreasing 5% every year until the County assumes all of the utility expenses. At the time of this writing, the County is responsible for all utility payments.

Health Care Center, 825 Whiting Avenue

The Health Care Center is in use 24 hours a day, 7 days a week. About 90 people at any given time are living in the Health Care Center. This results in a very high occupancy level since there are people living and working there 24/7. There are a lot of energy consuming electrical machines and computers in use due to occupant health care needs. The building uses a lot of energy for food service, producing 3 meals a day for 365 days a year. The boilers that heat the building are over 40 years old, consume large amounts of energy, nearing the end of their life, and will need to be replaced soon.

The building was built in 1931 and may have some energy efficiency issues due to its age. A ninety bed addition was built in 1964, and in 1993 an 8,850 square foot addition was built including a new activity area, beauty shop, family room, and activity kitchen. Considering the high energy use in this building (see Figure 3), it's interesting the energy intensity is not higher. This could be due to the basement, the part of the building with low energy use, being included in the energy intensity calculation. The large basement is mostly used for storage (low energy use) and adds considerably to the square feet of the building, subsequently affecting the energy intensity.

Transfer Facility, 650 Moore Road

The Transfer Facility was built in 2007. It is used as Portage County's site for solid waste disposal. The Transfer Facility has low occupancy and is occupied from 7am-5pm. There is high gas (therm) energy intensity most likely because there are large bay doors frequently opening, resulting in heat loss. The heat loss is a problem because the heating system needs to run frequently in colder months to keep the work space warm enough.

Jefferson House, 2030 Jefferson Street

The Jefferson House was built in 1966. The Jefferson House is a building that is currently used for helping people with special needs during the day. It is a place occupants can spend time, eat healthy meals, and interact with each other. The issues in the house are all relatively easy to correct. First, there is incandescent exit signs that could be replaced with LED's. Second, there are incandescent light bulbs throughout the whole house. And lastly, the windows throughout the house are out of date and transfer cold air, especially in the basement where they seem to actually be leaking air. Storm windows could be installed in all the windows to prevent air leakage.

Annex, 1462 Strongs Avenue

The Annex is occupied for most of the day, including regular work hours and meetings in the evenings. There are many people who work in the building, including County employees and tenants that rent space on the second floor. The County has 92 computers running in the building daily and the tenants on the second floor have an additional 30 computers. Currently the tenants are paying $11.50 per square foot per year for renting the space. The USDA rents 6,150 square feet for $70,725 per year. Portage County pays the utility bill for the whole building and is partially reimbursed for it through the rental payment.

The Annex is not a very old building, being built in 1998. This provides the opportunity to implement occupancy sensor HVAC controls for conference rooms; meaning the heating/cooling turns on when they are being used and shuts off when they aren't being used. This may be the only building where these controls may work. According to the energy survey (see Appendix C), ten employees responded that the building is over lit (zero responded under lit) which indicates there is more energy used for lighting than needed. Regarding energy intensity, it is in the mid-range of energy intensities for Portage County buildings.

Portage House, 1019 Arlington Place

The Portage House was built prior to 1940. The County gained ownership of the house in 1940. The Portage House is a building used to rehabilitate criminal offenders after being incarcerated. This is a very old building with a field stone foundation. Everything seems to be up to date and functioning properly in the Portage House. It is an older building with fewer options for energy efficiency.

Law Enforcement Center, 1515 Strongs Avenue

The Law Enforcement Center was built in 1991. The Law Enforcement Center is occupied 24 hours a day, 7 days a week. The building houses inmates and has law enforcement staff working there year round. The building uses energy in the food service area, producing 3 meals a day for 365 days a year. The dishwasher has an electric booster heater which is less efficient than gas. Food service will be contracted to a private service starting in 2011. The contractors will continue to use the equipment in the kitchen.

There may be issues with the hot water heaters producing water that's hotter than it needs to be. An evaluation should be completed on the domestic hot water system within this building to better understand how hot water is being used within the building and how efficiently the hot water heaters are being used to heat water for the building.

It's not clear if the HVAC system and controls are properly working in tandem to heat/cool the building as efficiently as possible. A detailed evaluation of the HVAC system should be completed by the Portage County Maintenance staff to determine whether it is operating efficiently.

There are 69 computers present in the building and a number of them are used 24/7 for emergency response. In the back of the building there is a garage for squad cars. The large bay doors in the garage make heat loss an issue for the building.

Considering all the energy use in the building, it is interesting to note that the energy intensity is not higher than it is. This may be due to the large square footage of the basement (that has a low energy intensity) being included in the energy intensity calculations. Since the basement is used mainly for storage and not much energy is consumed there, including it in the energy intensity calculations will lower the total energy intensity of the building considerably.

County/City Building (Courthouse), 1516 Church Street

The County/City Building was constructed in 1958. The County's "half" of the building has a large number of occupants throughout the day. The County's "half" of the building is the home for 84 computers. In the energy survey, four employees said the building is over lit. A number of survey respondents also said that the building is either too hot or too cold year round. The temperature of the building fluctuates in different areas of the building due to a piece-meal HVAC system. This causes a lot of inefficiency because employees are constantly opening windows, using space heaters, and changing the thermostats. Considering the HVAC problems, it is interesting to note that the energy intensity is not higher than it is.

The building is occupied by both Portage County and the City of Stevens Point. A large area of the building, equal to almost half, is leased to the City of Stevens Point by Portage County. The City and County split the maintenance costs, which includes the utility bill. Through an agreement between Portage County and the City of Stevens Point, 40.45% of the maintenance costs are charged to the City. This percentage is based on the City of Stevens Point's occupancy square footage within the building.

Material Recovery Facility, 600 Moore Road

The Material Recovery Facility was constructed in 1993. The Material Recovery Facility is occupied from 6am-5pm. The facility has low occupancy numbers. There is heavy machinery present in the building that uses energy. The energy intensity is low because there is little heating and cooling in the building. During winter it is kept warm enough for employees to work and machinery to run but is not heated to normal room temperature, which is 65 to 75 degrees; this helps explain the low energy intensity for gas (therms). During the summer only the office area is air conditioned.

SECTION 4: EMPLOYEE ENERGY SURVEY RESULTS AND EVALUATION

The 2010 employee energy survey was used to solicit practical ideas for energy conservation from employees, identify employee interest in contributing to future efforts, gauge how energy conscious/aware employees are, and gauge how comfortable employees are with temperatures in their workplaces currently. Roughly 600 surveys were sent to employees and 236 were completed. This is nearly a 40% response rate.

Please refer to the full survey report to identify energy saving strategies in County facilities (see Appendix C). Employees' responses about employee comfort levels in the summer and winter are documented as well as what the ideal temperature is in their building during summer and winter. Employees' opinions about the lighting in their workspaces are documented by building. Also documented are employees' attitudes towards participating in future energy conservation/efficiency measures and renewable energy options.

After the survey report was developed, staff took the qualitative suggestions from question #10 and culled out the suggestions that have already been done or are not feasible. The remaining suggestions were then ranked using the following parameters: feasibility, potential energy savings, employee comfort, capital expense, return on investment, and number of employees that made the suggestion. The ranked suggestions were then taken to the Energy Team for approval and are summarized below.

#10. What specific things could be done by YOUR department or by County government to conserve energy and reduce our dependence on fossil fuels (defined as heating, cooling, water usage, fuel usage, vehicle miles traveled, etc…)?

*Number of employees with response is in parenthesis after each response

- Turning off lights (18)
- Shut down PC's at night (26)

- Better management of thermostats and opening windows for heating/cooling. Consists of facilities managing the thermostats properly, programmable thermostats, setting lower/higher temps and people wearing appropriate clothes (26)
- De-lamping some areas of buildings (11)
- Motion lights in restrooms/hallways/conference rooms (19)
- Employee education (4)
- Remove personal appliances in offices (11)
- Develop engine idling policy
- Energy efficient vending machines (2)
- Heavy duty shades for south windows (7)
- Courthouse and Lincoln Center upgrades (12)
- Electric hybrid cars
- Car pooling program (5)
- Solar panels, wind, other renewable energies(3)
- Consolidate trips at work. Coordination/communication to do this(8)
- Reminder signage for employees
- Reduce mileage re-imbursement
- Eliminate or reduce lawn watering (4)
- Dual flush toilets, low flow sink nozzles (2)
- 4 day work weeks (9)
- Convert landfill to solar farm
- Reduce or eliminate supervisors' mileage reimbursement (3)

SECTION 5: ENERGY AUDIT RESULTS AND EVALUATION

An energy audit is an inspection, survey and analysis of energy flows and systems that control energy use in a building, followed by recommendations to reduce the amount of energy input into the systems without negatively affecting the output. In some cases, it is possible that the energy input into the systems may be reduced while positively affecting the output.

Focus on Energy is a state wide program created in 2001, funded by the Utility Public Benefits Fund, which is funded by utility companies. They deliver energy efficiency and renewable energy services for residential, business and government customers throughout the state. Portage County utilized the *Focus on Energy School and Government Program Advisor* to conduct energy audits of the County's selected buildings. The audits are listed in Appendix D.

Walk-throughs were done in each of the selected buildings, then reports were written with an analysis of the buildings energy use and recommendations to reduce the amount of energy used. Some buildings were not audited either because they have already been audited and large energy efficiency projects were completed or the building is simply too small to realize major energy savings. The audits were one of the tools that were used to draft the Issues Section of this Plan. Also, the recommendations from the audits were prioritized by the Focus on Energy Advisor and a point system (Appendix G). This is a critical component of the Implementation section of this Plan.

SECTION 6: ISSUES AND SUGGESTED SOLUTIONS

Some Environmental Impacts of Current Energy Use in Portage County

In addition to monetary costs, energy use has environmental costs. Environmental costs have been a major topic in government institutions for many years now. Government units, including counties, have either been mandated or choose to regulate certain practices that have an impact on our environment. Energy use is one that's currently not mandated for counties to regulate but many have chosen to do so in recent years to reduce their environmental impact and save money.

The environmental impacts of energy use are very hard to accurately quantify. The impacts can and will be different for many reasons including the source of raw materials, type of raw materials, geographic location of the energy user and power generation station, and performance of the energy infrastructure. It's hard to know exactly how the electricity used by Portage County is generated and where the resources are coming from because electricity is distributed from a grid, interconnected around the state.

Over 80% of Wisconsin's energy consumption is comprised of petroleum (29.2%), coal (29.9%), and natural gas (23.2%). While our state has many natural resources, virtually all of the energy we use is imported: coal from western states and the Appalachia region; oil from the Middle East and elsewhere; and natural gas from other states. Coal, imported to produce the majority of Wisconsin's electricity, is harvested from mountains in two ways; mining and physically blowing the top off of them. The latter creates sediment that washes into nearby streams, polluting them with toxins. Natural gas, used mainly for heating in Wisconsin, is pumped from the ground. A new method of natural gas capture is being explored to get harder to reach gas from the ground; it's called fracking. Fracking uses fluid at very high pressures to break open rock in order to reach the natural gas. Fracking, although very new and unstudied, may be considered harmful to the ecosystem and especially to groundwater. It is believed that the use of fracking will increase over time to reach less vulnerable pockets of natural gas.

The transportation of energy to Wisconsin from around the country requires the use of energy, resulting in emissions. The transmission of energy also affects the environment. As demand for electricity and natural gas increases, more infrastructure is required. An increase in transmission lines results in additional fragmentation of land which affects some key wildlife species negatively. An increase in natural gas pipelines results in a higher chance of a pipe blow out that could pollute surrounding land and destroy ecosystems.

Overall, the less energy one uses results in reduced pollution, fragmentation of land, and risk of accidents that could impact the environment.

Some Considerations to Highlight

Portage County buildings are the County's largest energy consumer. There are many opportunities throughout the County's facilities for energy efficiency upgrades. By

thoroughly examining the facilities and documenting these possible upgrades, the County is building capacity to retrofit their buildings to be more efficient, less costly, and more functional into the future.

In the years from 2004 to 2010 there was a lot of time and effort put into the analysis for construction of a new Justice Center. In 2008, a referendum to build a new $72 million Justice Center failed. The Justice Center would have provided the space in a new building for a number of the County's operations (courts, jail, sheriff's department, and some administration). Again, in 2010 a referendum failed which proposed the building of a new Courthouse.

The future of a new jail or new courthouse is uncertain at best. This affects the views and opinions of decision makers regarding the implementation of energy efficiency projects in currently occupied County buildings because they do not know if the County will continue to occupy these buildings. A valid concern is the possibility of investing in buildings the County may not be occupying in the future.

There may be resistance to large scale spending on renewable energy and large energy efficiency projects unless the projects need to be done for other reasons, such as failure of the current system. The high cost of the installation, long pay-back associated with the installation, or both, may be reasons decision makers are cautious to invest in buildings they are not sure the County will be occupying into the future.

In 2004 as part of the analysis for a new Justice Center, DLR Group was contracted by the County to complete a long range facilities planning study. The study outlines future facility needs and the state of current facilities to develop a road map for future capital investments. The DLR study identified that there are and will continue to be increasing space needs. The study is now seven years old but it may be referenced for relevant information regarding facilities needs.

Currently, a good number of County operations are housed in a tightly knit, four block area in downtown Stevens Point. The downtown campus includes five of the fifteen County buildings; some with the highest use and most intense occupancies. Having these County buildings located in the downtown area makes them easy to walk or bike to from anywhere in town. The location promotes less driving overall, resulting in reduced energy use by the public.

There are smart energy opportunities where buildings are located in close proximity to each other like the County buildings are downtown. A centralized geothermal heating/cooling system could be installed for the area that would distribute geothermal energy to all buildings. There are also opportunities for solar applications that could be used to heat water for all the buildings. In general, the practicality of using solar to heat water increases with the amount of hot water used in buildings; which makes a potential solar application for the downtown buildings more attractive because of the shared hot water used among the five buildings.

Identifying Energy Use Issues and Possible Solutions

Developing the energy baseline, conducting the employee survey, completing energy audits, and noting employee comments have revealed a number of issues related to energy use in County buildings and operations. The issues for each building are documented below in paragraph form for different categories. The identified issues serve as a basis for the recommendations put forth in the sections following.

- Lighting

Issue 1: Amount. There are many opportunities for energy savings when considering lighting in County buildings. Lighting is very non-prescriptive for each building, meaning there are no rules to follow about the number and orientation of lights in a room that will achieve the proper amount of light within that room. There is, however, a standard for the amount of light that should be present in different spaces, whether it's an office, hallway, foyer, or common room, which can be accomplished through many different types, numbers, and orientations of lights.

The minimum foot-candles standards set forth by the Occupational Safety & Health Administration (OSHA) are listed in the table below for different spaces. These measurements are in foot-candles, which is the *luminance on a 1-square foot surface of which there is a uniformly distributed flux of one lumen*.

Through the energy audits and employee energy survey it was found that some workspaces are significantly over-lit. The survey yielded a number of "over-lit" responses on question #5 for a number of buildings including the Annex, Ruth Gilfry Building, Courthouse, Lincoln Center, and Law Enforcement Center.

Table 7. OSHA Minimum illumination intensities: Foot-Candles

Foot-Candles	Area of Operation
3	General construction areas, concrete placement, excavation and waste areas, access ways, active storage areas, loading platforms, refueling, and field maintenance areas.
5	Tunnels, shafts, and general underground work areas.
10	General construction plant and shops (mechanical and electrical equipment rooms, shops, lofts and active storage rooms, mess halls, restrooms, and workrooms.)
20	Indoors: warehouses, corridors, hallways, and exit ways.
30	First aid stations, infirmaries, and offices.

Source: Occupational Safety and Health Administration, 1926.56(a), Table D-3.

During the audits, the Focus on Energy Advisor took foot-candle measurements with a meter and found startlingly high numbers throughout some office and conference room spaces. Some of the foot-candle measurements were as high as 130 foot candles and the standard minimum measurement for that space is 30 foot candles.

In addition to over lighting issues, some spaces within buildings have issues with the evenness of lighting due to the fixture configuration. This is the case in most of the Ruth Gilfry Building; there are too many fixtures in the center of the office space and the

fixtures don't go far enough to the outside walls to light the cubicles around the perimeter of the office space.

Possible Solution: "Overlighting" was found so frequently throughout the audits, the Focus on Energy Advisor recommended the Whole Building Lighting Program for these buildings: Annex, Law Enforcement Center, Ruth Gilfry Building, Health Care Center, Lincoln Center, and Courthouse. The Whole Building Lighting Program is meant to financially support the additional study needed to evaluate alternatives to standard lighting design and use advanced design strategies to increase energy efficiency. Lighting retrofits could be implemented that would dramatically reduce the energy consumption of the lighting and provide proper lighting throughout the space.

The Whole Building Lighting Program could consist of de-lamping, or removing some fixtures, and replacing the remaining T8 lamps with 25W 5000K lamps (T5's) and high efficiency low ballast factor ballasts. Due to the T5 lamps being brighter, there does not need to be as many. By switching to lower wattage lamps and by de-lamping there could be a reduction in lighting energy costs by 60%-70%.

Issue 2: Efficiency. Other building spaces are lit using old technology of very inefficient lighting such as Metal Halides (MH) and High Pressure Sodium (HPS) lamps. These lamps use 150w-400w per lamp. Metal Halides are still present in the Lincoln Center and Law Enforcement Center and should be replaced. There are also HPS spots located on the outside perimeter of buildings and adjacent to flag poles that could be replaced. In some buildings such as the Lincoln Center, Jefferson House, and Portage House there are incandescent bulbs still being used. These bulbs use 100w-150w per bulb.

Possible Solution: MH and HPS lamps could be replaced with fluorescent lamps that use 35w-75w a piece instead of 150w-400w per lamp. The outdoor MH and HPS lamps could be replaced with recently developed Light Emitting Diode (LED) lamps for these applications. The incandescent bulbs being used at the Lincoln Center, Jefferson House, and Portage House should be changed out with 13w-42w compact fluorescent light bulbs.

Issue 3: Duration of Use. Lights remaining ON in unoccupied spaces is another lighting issue in County buildings. Frequently unoccupied spaces in County buildings are bathrooms, conference rooms, storage rooms, basements, and some hallways. Specifically, the basement of the Law Enforcement Center and Health Care Center are lit all the time and are only occupied periodically.

Possible Solution: Motion sensors could be installed in all of the previously mentioned spaces to prevent wasted electricity and reduce costs.

- Heating, Ventilation, and Air Conditioning (HVAC)

Issue 1: General. There are many issues related to the HVAC systems in County buildings. These range from issues as large as systems being completely obsolete, like the boilers at the Health Care Center, to as little as failed steam traps. The U.S. Department of Energy website says that about 44% of a building's energy bill is heating and cooling (the largest percentage group) so maintaining and upgrading HVAC

systems to be as energy efficient as possible could result in large reductions in energy use. Another, more specific issue is the use of automatic sliding doors at the Lincoln Center. These let a large volume of air travel in and out of the building when they open.

Possible Solution: Simply fixing steam leaks by repairing failed steam traps is something that should be done in the Courthouse and Health Care Center to improve the efficiency of their HVAC systems. A revolving door could be installed at the Lincoln Center so the building envelope is not completely broken every time the door is opened.

Issue 2: Balancing. In some buildings there are extreme problems with HVAC balancing; which is the amount of air flow through the HVAC system to certain spaces and how well all the components of the HVAC system are performing together. In the Courthouse, HVAC components have been patched in through the years and as a result the system does not heat and cool spaces evenly throughout the building. Information gathered from employees through the energy survey has identified that most areas in the Courthouse and Ruth Gilfry Building have fluctuating temperatures through the year. Employees said in some spaces it will be consistently too hot in the winter and too cold in the summer and in other spaces it will be too cold in the winter and too hot in the summer. When this happens, employees set thermostat temperatures higher or lower for each room trying to achieve a comfortable temperature. When this is done the HVAC system ends up battling itself because the HVAC system may be cooling one space in the building while it's heating a different space; this wastes energy and does not provide an effective work environment for employees.

While talking with employees during the energy audits, a few concrete examples were brought up about poor HVAC performance. Some employees in the Courthouse said they open windows during the winter when they arrive in the morning because it is too hot. This is a case of overheating a space. It's also a case of heating a space too much at night, when it should not be heated. A programmable thermostat should be controlling the systems, turning them on and off properly to heat the building through the day and shut down the systems at night for energy savings. In the Ruth Gilfry building some employees actually taped over their air vents because they didn't want any cold air blowing on them. It was already cool enough in their space and the extra cool air was giving them stiff necks and headaches.

Some buildings such as the Courthouse and Health Care Center still heat by steam. The U.S. Department of Energy website states the process of creating and condensing steam is inherently less efficient than hot water systems.

Possible Solution: Converting to a hot water system would save energy in these buildings. Replacing a whole heating system is costly but could fix balancing and overheating issues within these County buildings. Some buildings such as the Lincoln Center have old versions of hot water boilers that aren't as efficient as new Energy Star hot water boilers and could be replaced to save energy.

Issue 3: Use of Outside Air. In some buildings, such as the Lincoln Center, Law Enforcement Center, and Annex, the HVAC systems seem to be cooling air when they may not need to.

Possible Solution: Further evaluation is needed on these systems to properly identify the issue. After evaluation, the proper steps should be taken to maximize efficiency.

Issue 4: Boiler Temperature. Boilers may be producing water with temperatures higher than needed.

Possible Solution: Further evaluation is needed on the boilers to properly identify the issue. Depending on the results of the evaluation, outside air temperature reset controls may be an option to manage these systems. The colder the outside air temperature is, the controls on the boiler will adjust its temperature higher.

- Water Heating

Issue 1: Type of Heaters. Water heating in County buildings is very dynamic. Some buildings such as the Ruth Gilfry Building have electric hot water heaters, which in general cost more than gas hot water heaters because of the price of electricity.

Possible Solution: The electric hot water heaters should eventually be replaced by high efficiency gas hot water heaters.

Issue 2: Temperature Control. There are also a couple buildings such as the Health Care Center and Law Enforcement Center that have their hot water heater temperatures higher than they should be. Typically, a hot water heater should be set around 120 degrees Fahrenheit according to the Focus on Energy Advisor. In these buildings it is set to 150 degrees or higher.

Possible Solution: An evaluation of hot water needs should be performed at these buildings. Where the hot water is used and the required temperature for the specified use should be identified. After evaluating the need for hot water in these buildings, a professional design for the hot water system should be drawn up that meets the needs of the specified building and maximizes energy efficiency.

- Personal Computer Power Management

Issue 1: Duration of Use. It was found that nearly half of all computers used are left ON at night. This wastes energy that could be saved throughout the night. Per the computer energy study (see Appendix E), when a computer is left on at night it goes into power save mode after a while which uses about 43% less energy than when it is not in power save mode. When a computer is shut down for the evening, it uses close to zero energy; this is a large difference that can reduce energy use and costs considerably.

Possible Solution: The County has 457 computers in operation. Of these, about half are being shut down at night and the other half are left on. This means there is quite an opportunity for energy savings. Two options to reduce PC energy use are PC power

management software or creating policy that all computers must be shut down in the evenings. The advantage of PC power management software is it shuts all computers down automatically. The advantage of policy is it doesn't cost anything. If policy was drafted and adopted, it may include provisions for IT staff to run a weekly report of those who didn't shut down their computers and a subsequent e-mail may be sent to remind employees to shut their computers down with consequences if they are non-compliant.

- Food Service

Issue 1: Efficiency of Appliances. There is food service present in three County buildings; the Health Care Center, Lincoln Center, and Law Enforcement Center. Storing and preparing meals uses energy in many ways including refrigerating, freezing, cooking, keeping food warm, and washing dishes. There are many appliances in a kitchen that can be evaluated for energy savings. After evaluating the kitchens in County buildings, opportunities have been identified for energy savings.

The Health Care Center produces the most number of meals per year compared to other County food services. They make 3 meals a day, 365 days a year, for 90-100 people. Some of the equipment issues are an inefficient electric steamer and convection oven that are not ENERGY STAR certified, as well as water heating waste from the current dishwashing machine. These are all appliances that use more energy than they should and because of the number of meals prepared there, they have a significant impact on energy use.

Possible Solution: The appliances should be replaced with ENERGY STAR certified appliances. Another very easy thing to do is install a low flow pre-rinse spray nozzle on the dish machine sprayer. This saves on the amount of hot water needed for pre-rinsing dishes.

Issue 2: Maintenance of Appliances. In the Lincoln Center and Health Care Center the refrigerators and freezers may not be performing as well as they should be.

Possible Solution: These refrigerators and freezers could be evaluated and any issues found could be remedied, whether it is cleaning the coils, repairing seals, or adjusting settings.

Issue 3: Update of Appliances. In the Law Enforcement Center there are some issues with the kitchen appliances and should be remedied to save a significant amount of electricity. First, the hot water booster on the dishwasher and the steamer are electric. These are more expensive to operate than gas booster heaters. Also, the hot food holding cabinet is considered inefficient according to Focus on Energy standards. Lastly, the out of date refrigerator/freezer evaporator motors should be replaced.

Possible Solution: Both the hot water booster on the dishwasher and the steamer should be replaced with gas units. The hot food holding cabinet should be replaced with an ENERGY STAR version to improve efficiency. The refrigerator/freezer evaporator motors

should be replaced with high efficiency Electronically Commutated Motor's (ECM) to save a significant amount of electricity.

- Plug Loads

Issue: Throughout many County buildings there are vending machines, refrigerators, and other appliances. Vending machines use a surprising amount of electricity to operate. There are techniques available to reduce their energy use. The leaps and bounds that have been made in domestic refrigerator technology have been drastic over the past 10-20 years and now there are very efficient refrigerators available compared to the units that are present in some County buildings.

Possible Solution: In some cases the appliances are old and should be replaced with ENERGY STAR appliances. As for vending machines, Vending Misers should be installed on some machines to raise the cooling temperature and shut off lights when there is no one around; and on other machines the lamps and ballast should simply be disconnected. This is dependent upon the occupancy hours of the building where the machine is located. If there are people always walking past the machine then it doesn't make sense to install a vending miser, but instead, the lamps and ballasts should just be disconnected.

- Fountains & Irrigation

Issue: In the Portage County Business Park there are a series of fountains for attracting customers and for aeration of the retention ponds so algae does not become a problem. There are also irrigation systems at the business park and a few other areas around County buildings. The energy use for County fountains and irrigation may be surprising, at 339,355 kWh which is about equal to half of the electricity use in the Courthouse. These pumps are very expensive to power. There is a fee structure for businesses in the Portage County Business Park so that 60% of the fountain pumps electricity costs are paid for by businesses that own parcels in the park. Portage County pays for 40% of the costs which amounts to almost $24,000 on electricity for fountains and irrigation systems.

Possible Solution: Strong consideration could be given to replacing the existing fountain pumps with aeration pumps that would be much cheaper to operate.

- Employee Behavior

The employee energy survey results made it clear that employees' self image towards energy awareness and willingness to participate in energy saving behaviors is high (69% of respondents, or 167 employees, said they do things to reduce personal energy use "most of the time" and 21.9% of respondents, or 53 employees, said they do things to reduce personal energy use "all the time"). Yet when conducting energy audits and gathering information throughout the planning process, some evidence may contradict those results. While doing walkthroughs of buildings, there were lights left on in bathrooms, hallways, and conference rooms that didn't need to be.

Possible Solution: One strategy that will improve employee behavior is energy education. A newsletter with energy facts and information could be distributed to employees. This could help improve employee behavior, save energy, and reduce costs. Another way that would improve employee behavior to be more conducive to energy stewardship is creating standard operating procedures and policies. Standard operating procedure may include provisions for employees to turn off lights in spaces when not in use, maintain certain thermostat temperatures, and more.

SECTION 7: GOALS, OBJECTIVES, AND ACTIONS

Portage County's primary goal is to decrease energy expenses for the operation of County facilities. This goal positions Portage County to become a leader in energy management and efficiency. It should be recognized that the goals, objectives, and actions set forth in this plan are not exclusive, but instead should be integrated with other Portage County plans.

Goal 1: Energy management and efficiency resulting in reduced costs. Portage County will reduce its electricity and natural gas consumption by 10% in calendar year 2015 compared to the calendar year 2009 (base year). Portage County will also incorporate gasoline and diesel fuel use into the Strategic Energy Management Plan.

Objective 1.1: Portage County will systematically implement energy efficiency improvements per the Final Recommendations Budget and Timeline section (page 36) of this Strategic Energy Management Plan.

Action a: The Portage County Executive and Space and Properties Committee will provide oversight for the evaluation and implementation of the Strategic Energy Management Plan recommendations, giving priority to projects with rapid return on investment.

Action b: The Portage County Facilities Director will provide quarterly reports to the Portage County Space and Properties Committee on new energy efficiency improvements.

Action c: The Portage County Executive will recommend a funding strategy for energy projects by June 1, 2011. The funding strategy will require approval from Space and Properties Committee, Finance Committee, Capital Improvements Committee, and County Board of Supervisors. The strategy for funding will include identifying a process to pursue grants and incentives.

Objective 1.2: Portage County will consider including standard operating procedures and policies that will improve energy conservation and efficiency within County policies.

Action a: The Portage County Executive will develop recommendations for standard operating procedures and policies by June 1, 2011, incorporating ideas and feedback from Portage County employees.

Action b: The Portage County Executive and Space and Properties Committee will write and approve standard operating procedures and policies for managing energy systems efficiently before December 1, 2011. The standard operating procedures and policies will require approval by the Space and Properties Committee and County Board.

Objective 1.3: Portage County will provide training for energy management and improve methods of energy management that will maximize the efficient use of energy.

Action a: Once per year the Portage County Facilities Director and advisors from Focus on Energy, the utility companies, etc., will develop and present an energy management training for maintenance staff.

Action b: The Portage County Facilities Director and County Executive will collaborate on the need for additional staff orientation and training to ensure the success of energy management and efficiency projects.

Action c: The Portage County Facilities Director will provide daily oversight for all energy management decisions and changes.

Action d: The Portage County Facilities Director will provide quarterly reports to Space and Properties Committee on energy management projects.

Objective 1.4: Portage County will develop Phase II: Gasoline and Diesel Fuel Use for the Strategic Energy Management Plan by December 1, 2011.

Action a: The Central Wisconsin Resiliency Project – Municipal Energy Specialist will document gasoline and diesel fuel use for 2010 for use in the Strategic Energy Management Plan by July 31, 2011.

Action b: The Energy Team will develop recommendations for gasoline and diesel fuel conservation, which when approved by the County Board, will be incorporated into the Strategic Energy Management Plan by December 1, 2011.

Objective 1.5: Portage County will monitor energy use and costs on a monthly and annual basis.

Action a: The Portage County Executive will oversee creation of a centralized energy billing and tracking process to be in place no later than December 31, 2011.

Action b: The Facilities Director will review monthly bills for abnormalities and record energy use and energy costs on tracking spreadsheets. Contingent on funding, the Central Wisconsin Resiliency Project – Municipal Energy Specialist will perform this task, reporting abnormalities to the Facilities Director.

Action c: The Facilities Director will develop an energy use report of all fuels for the previous year and present it to the Portage County Space and Properties Committee on or before the June Space and Properties Committee meeting. Contingent on funding, the Central Wisconsin Resiliency Project – Municipal Energy Specialist will prepare the report for the Facilities Director.

Action d: On or before its June meeting, the Space and Properties Committee will review the annual energy reports and monitor progress compared to the 2009 base year. Simultaneously they will update the Strategic Energy Management Plan's goals, objectives and actions as needed.

Goal 2: Leadership. Portage County Government will lead and set an example for energy management and efficiency in Portage County and Wisconsin.

Objective 2.1: Portage County will share energy management and efficiency strategies with stakeholders, employees, and the public.

Action a: The Portage County Executive will educate employees about energy management and efficiency utilizing various educational techniques, e.g., distributing a monthly employee newsletter that includes an energy section.

Action b: Portage County Department Heads and building managers will familiarize themselves and employees with the Strategic Energy Management Plan and bring forth energy management and efficiency issues and opportunities to the Facilities Director.

Action c: The Portage County Executive will engage the public by sharing energy management and efficiency progress and soliciting feedback on energy related issues and plans.

Objective 2.2: Portage County will collaborate with other municipal governments on energy management and efficiency projects.

Action a: Portage County will continue to work cooperatively on energy management and efficiency with the City of Stevens Point, Village of Plover, Village of Rosholt, and other municipal governments that co-own/co-operate buildings with Portage County.

Action b: Portage County will collaborate with other municipal governments throughout the state that are pursuing energy management and efficiency efforts.

Objective 2.3: The Portage County Executive and Space and Properties Committee will research and consider alternative energy sources.

Goal 3: Environmental Protection. Portage County will utilize energy management and efficiency to be a steward of our natural resources.

Objective 3.1: Portage County will implement the Strategic Energy Management Plan.

Objective 3.2: Portage County will pursue other actions, not included in the Strategic Energy Management Plan, that increase energy stewardship.

SECTION 8: PLAN IMPLEMENTATION

2010 Energy Projects

During the time period from July 2010 and December 2010, Focus on Energy offered a bonus incentive for customers that currently receive service under Wisconsin Public Service (WPS). The bonus incentive application form states:

- In general, only unrelated projects completed within six months of each other qualify for the bonus. Installations of multiple units of a similar type do not qualify as multiple projects. "Unrelated projects" are defined as those projects that improve the efficiency of separate energy-using systems in the facility. For example, the installation of a variable frequency drive (VFD) on an HVAC fan and a water heater retrofit are unrelated projects and do qualify for the bonus. However, the installation of a VFD on an HVAC fan and the installation of a chiller on that same HVAC system do not qualify because they both serve the same end-use system. In this context, a "project" is an individual energy-efficient technology type that Focus on Energy provides incentives on. Multiple projects must be at the same site address.
- Equipment tune-up and repair projects are excluded from this promotion and do not count toward a multi-project bonus.
- Total incentives, including the bonus incentive, will be capped at 75 percent of total project costs.
- The bonus incentive cannot exceed $25,000.

The Portage County Energy Team recommended a multi-project effort to take advantage of the Multi-Project Bonus Incentive. The Portage County Sustainability Specialist, working with the Facilities Director, Focus on Energy Advisor and the WPS Account Representative, identified and implemented multiple projects at six different site addresses owned by the County; the Courthouse, Annex, Law Enforcement Center, Health Care Center, Ruth Gilfry Building, and Lincoln Center; as well as the parks.

Most of these projects are small financial investments that will realize significant electricity savings. Some projects, such as the VFD on the Ruth Gilfry Building cooling tower, are larger projects the Facilities Director has previously identified to be completed. Now that there is a bonus incentive for multiple projects, combining the projects, completing them by the deadline, and receiving extra incentives has been identified as beneficial for the County to pursue. There are a different number of 2010 projects that were identified at each site address. Some site addresses are identified to have one project completed while other site addresses have three projects identified (this increases the bonus incentive; receiving a 50% bonus on incentives at that specific site address).

All costs associated with the following list of projects, with the exception of the VFD at the Ruth Gilfry building, are simply materials and do not include installation costs; the installations were completed by Facilities Maintenance Technicians. The projects include:

Annex (one category – 0% bonus)
6 – Occupancy sensors in restrooms
3 – Occupancy sensors in basement

Courthouse (two different categories – 25% bonus)
6 – Occupancy sensors in restrooms
1 – Vending Miser

Lincoln Center (three different categories – 25% bonus)
8 – Occupancy sensors in restrooms
1 – Vending Miser
Lighting retrofit in Holly Shoppe to MaxLite fluorescents
Lighting retrofit for "common area" – incandescent spots to LED floods lamps

Law Enforcement Center (three different categories – 25% bonus)
6 – Occupancy sensors in restrooms
4 – Occupancy sensors in basement
1 – Vending Miser

Health Care Center (two different categories – 0% bonus)
2 – Occupancy sensors in basement restrooms
2 – Occupancy sensors in basement break room

Ruth Gilfry Building (three different categories – 50% bonus)
8 – Occupancy sensors in restrooms
1 – Vending Miser
1 – VFD on cooling tower

The funding for these projects came from a previously authorized Capital Improvements project. In 2009, the Capital Improvements fund included a $100,000 appropriation for energy conservation projects and audits. As of June 2010, there was approximately $46,000 remaining from the original amount. The estimated cost for the 2010 projects is

$22,870. As a result of these projects, the estimated incentive payments in the amount of $3,530 from Focus on Energy will be returned to this fund.

Recommendations Rankings

The following recommendations were developed collaboratively from the employee survey, background research, suggestions from the Facilities Director, and recommendations made by the Focus on Energy Advisor in the building audits. The synthesis of this data and research is important to identify and prioritize changes, whether they may be physical or operational, that should be made over time in County buildings and operations to reduce energy use and costs.

There are three methods of prioritization used. First, the recommendations were assessed using a point system based upon ease of installation, installation costs, estimated energy savings, implementation feasibility, and change in employee comfort. The point assignments are available to view in full detail in Appendix G. Second, the recommendations were assessed by the Focus on Energy Advisor and he provided his expertise on which recommendations should be implemented before others and why. Third, the recommendations were assessed by the Portage County Facilities Director and he provided the availability of his staff to implement the projects, where the funding may come from and when it could be available. The recommendations with higher capital investments ended up being financed over long time frames in the Final Recommendations Budget and Timeline section of the plan. This is so large amounts of funding and project oversight do not have to be available all at once, but instead is spread out.

The section below shows the report's point system and the Focus on Energy Comments but does not show the Facilities Director's comments. Instead, the Facilities Director's comments were incorporated directly into the next section of the plan: Recommendations Budget and Timeline.

The following acronyms are used in this section:

HVAC	Heating, ventilating, and air conditioning
AC	Air conditioning
DHW	Domestic hot water
VFD	Variable frequency drive
LED	Light emitting diode
HID	High intensity discharge
CFL	Compact fluorescent light bulb
ECM	Electronically commutated motor

Annex

Focus Rec.		Points
#7	HVAC – Adjust boiler outside air temperature reset control	**18**
#8	HVAC – Adjust economizer controls	**18**
#6	HVAC – Door sweep installation	**14**
#10	HVAC – Reduce Air Infiltration – Receiving doors	**12**
#3	Insulate the AC lines on the Liebert roof-top AC unit	**12**
#5	DHW – Circulation pump time lock on domestic hot water system	**12**
#9	HVAC – Chilled water pumps variable frequency drives	**12**
#2	HVAC – VFD for boiler hot water pump	**10**
#1	Lighting – Custom Fluorescent recommendation	**10**
#4	Plug Loads – Vending Miser on vending machine	**2010 Projects**

Focus on Energy Comments:

1. Focus Recommendations #3, #5, #6, and #10. These are easy to do, very inexpensive maintenance improvements that will have a quick payback.
2. Focus Recommendation #7. Checking the boiler outside air temperature reset controls and adjusting accordingly is a top priority. If possible, add unoccupied offset controls as well to increase efficiency during unoccupied times.
3. Focus Recommendation #8. Checking into the economizer controls is also a top priority; why was the chiller running on a 55 degree day?
4. Focus Recommendation #2. Installing a VFD on boiler hot water pump is a high priority. The valves are 10-15% open; they should be 100% open and then the pump can adjust power accordingly, after a VFD is installed.
5. Focus Recommendation #9. Installing a VFD on the chilled water pumps is also a high priority.
6. Focus Recommendation #1. Address the lighting after the previous recommendations have been implemented.

Courthouse

Focus Rec.		Points
#2	HVAC – Preventative maintenance program - Insulate AC lines	**14**
#3	HVAC – Preventative maintenance program - Check and repair steam traps	**14**
#5	HVAC – Boiler steam to hot water conversion	**10**
#1 and #4	Lighting – Custom fluorescent recommendation	**10**

Focus on Energy Advisor Comments:

1. Focus Recommendations #2 and #3. These are easy to do, very inexpensive maintenance improvements that will have a quick payback.
2. Focus Recommendation #1 and #4. Consider a whole building lighting approach to make this buildings lighting more efficient.

Lincoln Center

Focus Rec.		Points
#3	HVAC – Adjust economizer controls	**18**
#7	Food Service – Refrigeration system maintenance	**12**
#2	HVAC – Ventilation controls	**12**
#8	HVAC – Boiler replacement to high performance	**12**
#1	Lighting – Custom fluorescent recommendation	**10**
#4	Lighting – Replace HID with MaxLite fluorescent bulbs	**2010 Projects**
#5	Lighting – Replace incandescent spots with CFL	**2010 Projects**
#6	Food Service – Install ECM in coolers/freezers	**2010 Projects**

Focus on Energy Advisor Comments:

1. Focus Recommendations #2 and #3. Retro-commission the HVAC system to verify ventilation is operating properly. This could have huge payback consequences.
2. Focus Recommendations #1. Consider a whole building lighting approach to make this buildings lighting more efficient.

Law Enforcement Center

Focus Rec.		Points
#5	HVAC – Adjust economizer controls	**20**
#2	DHW – Hot water temperature study and adjustment	**16**
#3	DHW – Electric to gas conversion on booster water heater	**14**
#8	Lighting – T8 or T5 replaces HID (inside and out)	**12**
#12	HVAC – Boiler replacement to high performance	**12**
#10	Food Service – Gas ENERGY STAR steamer	**10**
#11	Food Service – ENERGY STAR hot food holder	**10**
#1	Lighting – Custom Fluorescent recommendation	**10**
#4	Plug Loads – Vending Miser on vending machine	**2010 Projects**
#6	Lighting - LED Exit Lighting	**2010 Projects**
#7	Lighting – Occupancy sensors in basement	**2010 Projects**
#9	Food Service – Install ECM in cooler/freezers	**2010 Projects**

Focus on Energy Advisor Comments:

1. Focus Recommendation #5. Simply adjusting controls may result in large savings in this building.
2. Focus Recommendation #8. Replacing the HID lights in front entrance with high efficiency fluorescent lights should be done to reduce electrical consumption.
3. Focus Recommendation #2. Evaluate water heating needs so high efficiency water heaters can operate at a lower temperature.

Ruth Gilfry Building

Focus Rec.		Points
#4	Plug Loads – Disconnect walk-in refrigerator, replace with ENERGY STAR	**16**
#3	DHW – Replace hot water heater with gas ENERGY STAR	**12**
#1	Lighting – Custom fluorescent recommendation	**10**
#2	Plug Loads – Vending Miser on vending machine	**2010 Projects**

Focus on Energy Advisor Comments:

1. Focus Recommendation #4. As I understand, this will be done shortly along with the other 2010 projects.
2. Focus Recommendation #1. Consider a whole building lighting approach to make this buildings lighting way more efficient. This is highly recommended for this building.
3. Focus Recommendation #3. Installing a gas hot water heater will decrease fuel cost for this purpose.

Jefferson House

Focus Rec.		Points
#1	Lighting – Replace all lamps with compact fluorescents	**2010 Projects**
#2	Lighting – LED exit lighting	**2010 Projects**

Focus on Energy Advisor Comments:

1. As I understand, these will be done along with the 2010 energy projects.

Health Care Center

Focus Rec.		Points
#4	DHW – Reduce water temperature on hot water heater	**18**
#1	Lighting – Reconfigure lighting layout	**14**
#2	Food Service – Refrigerator sealing maintenance	**14**
#7	Food Service – Hood fan controls	**14**
#6	Food Service – Replace dishwasher with high efficiency model	**12**
#8	Lighting – Low wattage fluorescents replacement	**10**
#10	HVAC – Replace burners on boilers with high efficiency	**10**
#11	Food Service – Replace convection oven with gas ENERGY STAR	**10**
#12	Food Service – Replace steamer with gas ENERGY STAR	**8**
#3	DHW – Booster water heater	**8**
#13	HVAC – Boiler steam to hot water conversion	**8**
#5	Plug Loads – Vending Miser on vending machine	**2010 Projects**
#9	Food Service – Install ECM on cooler/freezer	**2010 Projects**

Focus on Energy Advisor Comments:

1. Due to the high hours of operation lighting and food service have great opportunities for savings.
2. Focus Recommendation #4. Determine if water heater temperature has to be 164 degrees. Reduce to as low as 120 degrees if possible.
3. Focus Recommendation #1 and #8. Reconfigure the lighting layout and utilize low watt fluorescent lamps in all areas other than hallways and guest rooms. This is not eligible for the whole building lighting approach – not enough area to be retrofitted.
4. Focus Recommendations #3, #6, and #7. Dishwashing – booster heater conversion to natural gas and high efficiency dishwasher upgrade. Natural gas booster heater will cost 80% less in energy to operate. The dishwasher will consume 65% less hot water to wash dishes. Kitchen exhaust hood controls will prevent unnecessary loss of building heat.

Downtown Library

Focus Rec.		Points
#3	HVAC – Adjust economizer controls	**18**
#2	HVAC – Install VFD on boiler hot water pump	**12**
#4	HVAC – Install VFD on basement air handling unit	**12**
#1	Lighting – Retrofit all 3 lamp fixtures in offices and children's library	**10**
#5	HVAC – Replace chiller system with high efficiency unit	**8**
#6	HVAC – Boiler steam to hot water conversion	**8**
#7	HVAC – Insulation on roof when it's re-roofed	**8**

Focus on Energy Advisor Comments:

1. Focus Recommendation #3. Simply evaluating and adjusting the economizer controls on the HVAC system could realize significant savings.
2. Focus Recommendation #1. Retrofit lamps in children's area and offices.
3. Focus Recommendation #4. Add VFD to basement air handling unit.

Plover Branch Library

Focus Rec.		Points
#3	Lighting – Install compact fluorescent lamps	**14**
#2	HVAC – Install programmable thermostat	**14**
#5	Plug Loads – Replace refrigerator with high efficiency ENERGY STAR refrigerator	**14**
#4	DHW – Pipe insulation on DHW lines	**12**
#1	Lighting – Retrofit all 4 foot lamps with 25w low ballast factor ballasts	**10**

Focus on Energy Advisor Comments:

1. Focus Recommendation #5. Disconnect refrigerator in children's room.
2. Focus Recommendation #1 and #3. Retrofit all fluorescents with 25 watt lamps and low ballast factor ballasts. Replace incandescent lamps with compact fluorescent lamps near front desk.
3. Focus Recommendation #2. Install programmable thermostat to control space temperatures accordingly when occupied or unoccupied.

SECTION 9: RECOMMENDATIONS BUDGET AND TIMELINE

The following tables are final recommendations based on analysis done to date for each audited building. The tables include the description of the recommendation, where the funding will come from, the year the recommendation is suggested to be completed, the estimated cost and the estimated annual cost savings (completed by Focus on Energy and Portage County Facilities Director). The three methods of prioritization used to develop the tables are a points rating system, Focus on Energy Advisor's comments, and the Portage County Facilities Director's comments. The process used for prioritization is described in more detail in the previous section.

The tables below are suggested energy management and efficiency recommendations. Recommendations will be evaluated on a project by project basis. A holistic facility analysis and return on investment analysis will be done before implementing recommendations so the best decision is made for Portage County.

The payback column was calculated without Focus on Energy incentive payments included. It is likely, depending on what Focus on Energy is offering for incentives, that payback years will be less for a lot of recommendations. Some recommendation payback years will be significantly less than represented in the following tables, depending on Focus on Energy incentive payments.

Note:

Shaded rows indicate a need to complete the recommendation for reasons other than energy efficiency. The need is described in text below each table.

Annex

Focus Rec. #	Description	Funding Source	Year	Estimated Cost	Estimated Annual Savings	Payback (No Focus Incentives Included)
#7 & #8	HVAC - Verify boiler outside air temperature reset control and economizer controls	Facilities Budget	Completed in 2011	$500 Funded	$4,299	< 1
#6	HVAC – Door sweep installation	Facilities Budget	Completed in 2011	$100	$23	4 ½
#10	HVAC – Reduce air infiltration on receiving doors	Facilities Budget	2011	$250	$415	< 1
#3	HVAC – Insulate AC lines on roof-top	Facilities Budget	2011	$250	$193	1 ½
#9	HVAC – Chilled water pumps VFD's	Energy Efficiency Fund	2012	$2,550	$1,512	2

#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

- ✓ 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)
#2	HVAC – Preventative maintenance – Insulate AC lines	Facilities Budget	2011	$1,000 - 2,500	$240	4 - 10 ½
Facilities Director Rec.	DHW – Circulation pump time clock	Facilities Budget	2012	$500	$200*	2 ½
#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+
#1 & #4	Lighting – Custom fluorescent recommendation	Capital Improvements	2012 evaluation 2013 implement	$14,000 $20-75,000	$8,640	4 - 10

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

The boilers in the Courthouse are nearing the end of their life. The Facilities Department estimates the boilers should last for another five to ten years. Converting the steam system to a hot water system will make controlling the temperature within the building easier and dramatically increase the systems efficiency.

Lincoln Center

Focus Rec. #	Description	Funding Source	Year	Estimated Cost	Estimated Annual Savings	Payback (No Focus Incentives Included)
#2 & #3	HVAC – Verify ventilation controls and economizer controls	Facilities Budget	In progress & 2011	$500 **Funded**	$7,238	< 1
#7	Food Service – Refrigeration system maintenance	Facilities Budget	2011	$1,000	$31	32
Facilities Director Rec.	DHW – Circulation pump time clock	Facilities Budget	2012	$500	$200	2.5
#1	Lighting – Custom Fluorescent recommendation	Capital Improvements	2012 evaluation 2013 implement	$6,000 $20-40,000	$7,470	3 ½ – 6
#8	HVAC – Boiler replacement to high performance	Capital Improvements	2014 evaluation 2014 implement	$10,000 $100,000	$4,916	22

- ✓ 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)
#12	HVAC – Boiler replacement to high performance	Facilities Budget Capital Improvements	2011 evaluation 2011 implement	Contractor $70-$100,000	$1,840	38 - 54
#5	HVAC – Verify economizer controls	Facilities Budget	In progress & 2011	$500 **Funded**	$3,528	< 1
#2	DHW – Hot water temperature study and adjustment	Facilities Budget Capital Improvements	2011 evaluation 2012 implement	$5,000 In House	$810	6
#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
#10	Food Service – Gas ENERGY STAR steamer	Energy Efficiency Fund	2012	$10,000	$124	80

#11	Food Service – ENERGY STAR hot food holder	Energy Efficiency Fund	2012	$10,000	$103	97
Facilities Director Rec.	HVAC – Gas Conversion (boiler to dishwaser?)	Energy Efficiency Fund	2012	$10,000	Further Study	N/A
#1 & #8	Lighting – Custom fluorescent recommendation	Capital Improvements	2012 evaluation 2013 implement	$10,800 $50-75,000	$3,672	16 - 23
Facilities Director Rec.	HVAC – Chiller study and replacement	Capital Improvements	2012 evaluation 2013 implement	$5,000 $150,000	Further Study	N/A

- ✓ 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

There are four boilers in the Law Enforcement Center. Two of the boilers need to be replaced immediately as a result of failure. The Facilities Department will recommend this project for the 2011 capital improvement process and be installed in 2012. The other two boilers were replaced in 2009 and are expected to last for another fifteen years.

The chiller at the Law Enforcement Center should be replaced as soon as possible. The useful life of the chiller is twenty years and it is currently twenty years old. In 2010 a compressor failed and had to be replaced. It is possible that another compressor could fail and need replacing at the cost of $8,000. Considerable energy savings could be realized with a new energy efficiency chiller.

Ruth Gilfry Building

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

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

The boiler replacement at the Ruth Gilfry Building will be completed in 2011. The boiler has a useful life of thirty years and it is over thirty years old. Since this recommendation is already funded 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)
#4	DHW – Evaluate and reconfigure hot water heater temperature	Facilities Budget	2011	In House	$286	< 1
#2	Food Service – Refrigerator sealing maintenance	Facilities Budget	2011	$1,000	$150	6 ½
#1 & #8	Lighting – Custom fluorescent recommendation	Capital Improvements	2012 evaluation 2013 implement	$16,000 $35-60,000	$5,175	9 ½ – 15
#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
#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

- ✓ 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)
#3	HVAC – Verify economizer controls	Library Maintenance Budget	2011	In House	$1,376	< 1
#2	HVAC – Evaluate and install VFD on boiler hot water pump	Energy Efficiency Fund	2012 evaluation & implement	Contractor $2,550	$705	3 ½
#4	HVAC – Evaluate and install VFD on basement air handling unit	Energy Efficiency Fund	2012 evaluation & implement	Contractor $2,550	$843	3
#5	HVAC – Replace chiller with high efficiency unit	Capital Improvements	2012	$150,000	$3,096	48
#6	HVAC – Boiler steam to hot water conversion	Capital Improvements	2012 evaluation 2013 implement	$30,000 $150,000	$8,577	21
#1	Lighting – Custom fluorescent recommendation	Capital Improvements	2012 evaluation 2013 implement	$9,000 $50-60,000	$2,838	20 – 23
#7	HVAC – Insulation on roof when it's re-roofed	Capital Improvements	2015	$25,000	$976	25

The chiller at the Library should be replaced soon with a high efficiency unit. The useful life of the chiller is twenty years and it is already twenty years old.

The boiler replacement and steam to hot water conversion should be completed soon as well. The boilers have a useful life of thirty years and are already twenty years old. The tubes in one boiler have already failed and needed to be replaced. Converting the steam system to a hot water system will make it easier to control temperatures in the building and increase the energy efficiency of the system.

The City of Stevens Point is responsible for all improvements over $2,000 in the Library. All projects will need to be coordinated with the City of Stevens Point in City owned buildings.

Plover Branch Library

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

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. The extracted recommendations are some of the most costly recommendations in the plan. It is essential to budget ahead of time for costly recommendations such as these because they require high capital investment.

Focus Rec. #	Description	Funding Source	Year	Estimated Cost	Estimated Annual Savings	Payback (No Focus Incentives Included)
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+
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
Facilities Director Rec.	HVAC – Chiller study and replacement	Capital Improvements	2012 study 2013 implement	$5,000 $150,000	Further Study	N/A
Ruth Gilfry						
Facilities Director Rec.	HVAC – Boiler replacement	Capital Improvements	2011 implement	Funded	Further Study	N/A
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
Library						
#5	HVAC – Replace chiller with high efficiency unit	Capital Improvements	2012	$150,000	$3,096	48
#6	HVAC – Boiler steam to hot water conversion	Capital Improvements	2012 study 2013 implement	$30,000 $150,000	$8,577	21
Total				**$1,630,000 to $2,660,000**	**$35,523 +**	**45 - 75**

Summary of Total Budget

The following tables describe how much funding is needed each year and from what source the funding should come from. The last table describes the total amount of funding that's needed for each year from 2011 to 2015 and also shows the total amount of funding needed through the years 2011 to 2015. The capital expenses shown below are for all energy management and efficiency recommendations.

Recommendations will be evaluated on a project by project basis. A holistic facility analysis and return on investment analysis will be done before implementing recommendations so the best decision is made for Portage County.

Facilities Budget	2011	$12,125 to $13,625
	2012	$1,000
	Total	**$13,125 to $14,625**

Energy Efficiency Fund*	2011	$0
	2012	$50,200
	Total	**$50,200**

Capital Improvements	2011	$70,000 to $100,000
	2012	$310,200
	2013	$1,560,000 to $2,720,000
	2014	$190,000
	2015	$25,000
	Total	**$2,155,200 to $3,345,200**

Library Budget	**Year**	**Project Costs**
	2011	$1,525
	Total	**$1,525**

Sum by Year And Totals	**Year**	**Project Costs**	**Estimated Savings****
	2011	$83,650 to $115,150	$20,483
	2012	$361,400	$9,315
	2013	$1,560,000 to $2,720,000	$71,036
	2014	$190,000	$8,130
	2015	$25,000	$976
	Total	**$2,220,050 to $3,411,550**	**$109,940**

Recommendations based on Facilities maintenance needs: $1.6 – $2.6 million
Recommendations based on energy efficiency opportunities: $.6 - $.8 million

*Fund not established as of January, 2011. Refer to Objective 1.1: Action C

****Numbers under this column represent the estimated annual savings resulting from the projects implemented in that year.

Summary of Roles and Responsibilities

Planning often unites different groups and brings everyone together around a common vision. Going through a planning process brings to the table issues that need to be resolved with goals, objectives, and recommendations which take manpower and resources to accomplish. Establishing the roles and responsibilities of each party involved with the implementation of the plan will help set expectations for time and resource commitments.

Portage County Executive

- Convene with the Finance Director and Facilities Director to develop the details of the funding strategy, including the Capital Improvements Plan and Energy Efficiency Fund.
- Work to get energy recommendations that include capital purchases passed through the capital improvement plan.
- Work with relevant committees and all employees to develop standard operating procedures and policies for improving energy conservation and efficiency.
- Develop a centralized system for utility bills that will simplify the tracking process for energy use and costs.
- Educate employees about energy efficiency and conservation utilizing various educational techniques, including a monthly employee newsletter with an energy section.
- Engage the public by sharing energy management and efficiency progress and soliciting feedback on energy related issues.
- Research and consider alternative energy sources.

Portage County Facilities Director

- Oversee all changes to energy consuming systems in buildings.
- Use training and oversight to manage the energy consuming systems appropriately.
- Work with the City on energy efficiency upgrades and management in buildings that the City and County collaboratively own and operate.
- Convene with the County Finance Director and County Executive to develop the details of the funding strategy, including the Capital Improvements Plan and Energy Efficiency Fund.
- Oversee the implementation of the Strategic Energy Management Plan.
- Utilize energy improvement fund dollars to purchase equipment and materials for implementing projects per the recommendations section of this plan.
- Work with a Focus on Energy Advisor to apply for all eligible rebates.
- Respond to energy issues that are raised by monitoring energy use and costs.
- Work with Focus on Energy Advisor to develop and conduct energy management training for maintenance staff once per year.
- In the absence of a Central Wisconsin Resiliency Project – Municipal Energy Specialist, the Portage County Facilities Director will be responsible to:
    - Monitor monthly energy use and costs, utilizing the new centralized energy billing and tracking process to be developed by the Portage County Executive.
    - Develop a yearly energy report every January and present it to Space and Properties Committee on or before their June meeting.

- Report progress of recommendation implementation and management strategies to Space and Properties Committee.

Portage County Maintenance Technicians

- Complete projects as assigned by the Facilities Director.
- Report to Portage County Facilities Director for any changes to systems that may affect the use of energy in those systems.

Portage County Space and Properties Committee

- Develop a process for centralizing and maintaining all contracts and agreements related to energy use in County facilities in the Facilities Department.
- Provide oversight for energy management and energy efficiency improvements in Portage County facilities.
- Review and if needed, amend the Strategic Energy Management Plan on or before the June meeting of every year.

Portage County Finance Director

- Convene with Facilities Director and County Executive to develop the details of the funding strategy, including the Capital Improvements Plan and Energy Efficiency Fund.
- Oversee and manage Energy Efficiency Fund into the future.

Portage County Building Managers

- Become familiar with the Strategic Energy Management Plan.
- Consider and incorporate the Strategic Energy Management recommendations into the everyday work environment in their buildings.
- Instill energy management and efficiency education into employees that work in their building.

Portage County Employees

- Become familiar with the Strategic Energy Management Plan.
- Work to implement smart energy conservation behavior on a daily basis.

Portage County Board of Supervisors

- Consider and approve funding required for energy management and efficiency projects.

Portage County Library System

Plover Branch

- Work with Portage County Facilities Department and Library Director to implement recommendations and management strategies in the Plover Branch Library building.

Rosholt Branch

- If Portage County becomes the responsible party for paying the library's energy bills in the future, they should work with the Portage County Facilities Department and Library Director to develop and implement energy management and efficiency recommendations in the Rosholt Branch Library.

Almond Branch

- If Portage County becomes the responsible party for paying the library's energy bills in the future, they should work with the Portage County Facilities Department and Library Director to develop and implement energy management and efficiency recommendations in the Almond Branch Library.

Central Wisconsin Resiliency Project – Municipal Energy Specialist

- Document fleet vehicle energy use and costs as well as develop recommendations to reduce fleet vehicle energy use for incorporation into the Strategic Energy Management Plan.
- Monitor monthly energy use and costs utilizing the new centralized energy billing and tracking process to be developed by the Portage County Executive.
- Develop a yearly energy report every January and present to Space and Properties Committee on or before their June meeting.

Focus on Energy Advisor

- Work with the Facilities Director to develop and conduct energy management training for maintenance staff once per year.
- Work with Portage County on energy projects and rebate applications as energy projects are implemented by Portage County staff.

City of Stevens Point

- Work with Portage County on energy efficiency upgrades and management in buildings that the City and County collaboratively own and operate including the County/City Building, Lincoln Center, and downtown Stevens Point Library.

Glossary

Ballast	A device intended to limit the amount of current in an electric circuit.
Boiler	An enclosed vessel in which water is heated and circulated for heating spaces within buildings. Either hot water is used or it is converted to steam.
Economizer Controls	Mechanical devices intended to reduce energy consumption, or to perform another useful function like preheating a fluid. Also called free cooling.
Energy Conservation	The act of not using energy by reducing thermostat temperatures, turning off lights, etc.
Energy Efficiency	The act of reducing energy consumption through technology improvements such as installing energy efficient boilers, water heaters, light bulbs, etc.
Energy Intensity	A measure of the amount of energy used within a certain space, typically measured in units of energy per square foot.
Chiller	A machine that removes heat from a liquid via a vapor-compression or absorption refrigeration cycle.
Compressor	A HVAC component that compresses a refrigerant from a saturated vapor to a superheated vapor which then goes to the condenser
Condensor	A HVAC component that condenses a superheated vapor to a saturated liquid, dispensing heat, which after goes into the evaporator.
Evaporator	A HVAC component that allows the saturated liquid to evaporate, therefore removing heat from the air which is then sent through the HVAC system to cool spaces.
Hot Water Heater	An enclosed vessel in which water is heated to be used directly as domestic hot water or process hot water.
Lumen	A measure of the power of light perceived by the human eye.
On Peak	The time of day with the highest use of energy, typically 7am-7pm.
Off Peak	The time of day with the lowest use of energy, typically 7pm-7am.
Time Clock	A device used to control systems within buildings based on need corresponding to the time of day. Shuts down systems to save energy during the times of day when they are not used.
Variable Frequency Drive (VFD)	A system for controlling the rotational speed of an electric motor by controlling the frequency of electrical power supplied to the motor.

Portage County Focus on Energy Projects

	Year	Project Cost	Incentive	Cost Savings/Year	Savings Since Installation
Health Care Center – DHW Heater	**2006**	$26,327	$2,240	$5,744	$22,976
Health Care Center – Lighting	**2006**	$16,733	$720	$5,326	$21,304
Health Care Center – Hot Water Study	**2006**	$2,110	$1,055	$0	$0
Health Care Center – Laundry Equipment	**2007**	$41,900	$5,460	$18,195	$54,585
Facility Dept. – Chiller Tune Up	**2007**	$1,376	$680	$4,080	$12,240
Library – Lighting	**2007**	$4,006	$2,000	$5,833	$17,499
Justice Center – Laundry Equipment	**2008**	$20,240	$1,428	$3,570	$7,140
Courthouse – Rooftop DX Unit	**2008**	$7,571	$809	$153	$305
Material Recovery – Lighting	**2008**	$10,221	$5,559	$4,658	$9,315
Parks Department – Lighting	**2009**	$3,633	$1,890	$1,583	$1,583
Highway Garage – Lighting	**2009**	$8,769	$5,040	$4,244	$4,244
Library – Heating Tune-up/Boilers	**2009**	$427	$200	$1,943	$1,943
Library – Variable Frequency Drives	**2009**	$6,368	$3,000	$3,028	$3,028
Highway Garage – Lighting	**2010**	$7,000	$495	$606	$0
	Totals	**$156,681**	**$30,576**	**$58,963**	**$156,163**

Total Project Costs		**$156,681**
Total Incentive Payments	+	**$30,576**
Energy Savings to Date	-	**$156,163**
Total Return on Investment		**$31,094**

These projects have produced a positive return on investment since they were implemented
These projects will continue to save energy and money resulting in an increased ROI

The cost savings represented here are projections.

Appendix B

RESOLUTION NO. 5-2010-2012 AMENDED

RE: ESTABLISHING THE **PORTAGE COUNTY SMART ENERGY TEAM**

TO THE HONORABLE CHAIRMAN AND MEMBERS OF THE PORTAGE COUNTY BOARD OF SUPERVISORS

WHEREAS, Portage County has many facilities that use energy, including electricity, natural gas, and petroleum products; and

WHEREAS, the county is aware of how energy use affects its budget and the environment; and

WHEREAS, many counties in Wisconsin have undertaken energy planning and realized financial and environmental benefits; and

WHEREAS, the Facilities Management Department and Space and Properties Committee support the development of a comprehensive Portage County Energy Management Plan; and

WHEREAS, a team composed of the County Board Chairman, the County Executive, the Chairpersons of the Finance Committee and Space and Properties Committee, the Directors of the Planning and Zoning Department, Facilities Management Department and the UW-Extension Community Development Educator are best suited to oversee the creation of an Energy Management Plan and comprise the **PORTAGE COUNTY SMART ENERGY TEAM.**

FISCAL NOTE: Monies to fund the initial work of the TEAM will be utilized from the capital improvement account designated for this purpose, in an amount up to $12,000.00. These monies may be utilized to hire and or contract for the use of subject matter expert consultants. It is anticipated that the **SMART ENERGY TEAM** will make budgetary and monetary recommendations for long term energy efficient investments in the future consistent with the goals of set forth in this resolution.

ADMINISTRATIVE NOTE: An ad-hoc team is not, by definition, a permanent standing committee of the Portage County Board of Supervisors and therefore is not to be listed in section 3.1 of the Portage County Code.

NOW, THEREFORE, BE IT RESOLVED by the Portage County Board of Supervisors that an ad-hoc committee is hereby established and authorized, to be known as the **PORTAGE COUNTY SMART ENERGY TEAM**, with a charter to document energy consumption and costs associated with county operations and to develop an energy management plan, with reports, options and plans to be filed and overseen by SPACE AND PROPERTIES COMMITTEE and other county board committees as needed, with further coordination with county and city officials, with the committee to cease operations no later than December 31, 2011, subject to future resolutions.

BE IT FURTHER RESOLVED that the **TEAM** shall consist of the County Board Chairman, the County Executive, the Chairpersons of the Finance Committees and Space and Properties Committees, the Directors of the Planning and Zoning Department, Facilities Management Department and the UW-Extension Community Development Educator. The Facilities Management Administrative Assistant is designated as the secretary of the **TEAM**. The **TEAM** shall utilize the resources and personnel of county staff wherever possible. County Board Supervisor members of the Team shall receive per diem payments.

BE IT FURTHER RESOLVED THAT THE GENERAL CHARTER, DUTIES, AND RESPONSIBILITIES OF THE **TEAM** SHALL BE AS FOLLOWS (BUT NOT LIMITED THERETO). THE TEAM MAY, IN THE COURSE OF ITS WORK, EXPAND THE EXTENT OF THE CHARTER RELATING TO ITS ROLE REGARDING COUNTY ENERGY USE.

1. Work with and possibly contract for an energy management specialist to guide the energy planning process and provide consultation as determined by the **SMART ENERGY TEAM.** Determine whether and how partnerships with other agencies, municipalities and entities should be managed for this process.

2. Evaluate the level of effort needed to analyze all types of energy sources, including electricity, natural gas, propane, and petroleum fuels. Select the scope and timeline for the energy planning process.

3. Compile information regarding the types of energy consumed in county operations and service delivery.

4. Compile and review study designs or evaluation frameworks now available to counties and other public institutions to document current and anticipated energy consumption and costs. Evaluate the direct costs and benefits of each evaluation framework. In so doing, determine whether it is possible to implement the evaluation using available staff and resources or will it be necessary to contract a systems-based evaluation.

5. Select a method or evaluation framework.

6. Compile and review the current policies, methods, and management approaches now used in Portage County to conserve energy.

7. Compile and evaluate examples of management approaches and specific techniques now used by other counties or municipalities in Wisconsin, and elsewhere, to conserve energy. In so doing, provide case examples of different institutional approaches which have been used to measure current energy use, reduce energy consumption, monitor energy use and costs through time, and evaluate alternative sources of energy. In evaluating these examples, identify the general strengths and shortcomings of each approach.

8. Develop by **Dec. 1, 2010** a written **PORTAGE COUNTY STRATEGIC ENERGY PLAN** for submission to and review by the County Board of Supervisors. Using the knowledge gained, develop a written energy conservation plan which could be used to limit the county's energy use, utilize alternative energy sources if viable, and to monitor its energy costs and consumption through time. Ideally, the energy conservation plan should include:

A. A set of goals and objectives for energy use, alternative sources and conservation that would apply to county operations that is measurable and attainable.

B. A specific listing of management options and implementation strategies that are recommended to measure, manage, and reduce energy consumption from county facilities and the county vehicle fleet.

C. Each recorded management option will include a detailed description of the option and its associated implementation activities, the affected stakeholders, the advantages and disadvantages of pursuing the option, its measures of success, and opportunities for funding. These strategies will then be utilized to develop county policies that will affect long-term energy management for county operations.

At a minimum, these options will include:

ii. The alteration of building operation to conserve energy.

iii. The purchase of any energy-efficient equipment.

iv. The use of alternative energy sources.

v. The education of employees about energy conservation methods.

D. A five (5) year budget that projects anticipated costs and funding sources that will be pursued to implement the program recommendations.

E An ongoing monitoring program with assigned duties and responsibilities to systematically measure ongoing energy consumption and to evaluate change and energy savings through time.

Dated: April 27, 2010.

Respectfully submitted,

PORTAGE COUNTY SPACE AND PROPERTIES COMMITTEE

By: Jeanne Dodge, Chair

Tom Mallison

Don Jankowski, Vice-Chair

David Medin

Lonnie Krogwold

EXECUTIVE/OPERATIONS COMMITTEE

By: O. Philip Idsvoog, Chair

Lonnie Krogwold, First Vice-Chair

David Medin, Second Vice-Chair

James Gifford

Marion Bud Flood

Appendix C

Portage County Employee Energy Survey

Portage County Smarty Energy Team

Background

The Portage County Smart Energy Team was charged with developing a plan that identify ways the County can manage energy wisely, which may result in better office conditions, cost savings, and reduced environmental impact. The team decided to administer an energy survey to employees as a part of its planning process. The survey is a modified version of Chippewa County's energy survey.

The purpose of the survey was to solicit practical ideas for energy conservation from employees, identify employees interested in contributing to future energy conservation efforts, gauge how energy conscious/aware employees are, and develop a baseline of how comfortable employees are with temperatures in their workplaces.

236 surveys were returned and results were tabulated. The survey was sent to roughly 600 employees so there was about a 40% response rate. Questions 1, 3, and 5 include the building the employee works in if they're answer was NOT "About right" for those questions. For question 10, all answers were summarized with the number of occurrences in parenthesis.

1.

During winter, the temperature of your place of work is:		
Answer Options	**Response Percent**	**Response Count**
Too hot	21.6%	52
About right	50.7%	118
Too cold	27.8%	64
	answered question	234
	skipped question	9

Specified buildings for answers that were "Too Cold" or "Too Hot"

Building	Too Cold	Too Hot
MRF	0	0
HCC	1	2
Ruth Gilfry	27	18
Annex	4	8
LEC	12	3
Courthouse	11	14
Lincoln Center	3	5
Highway	1	0
Parks	1	0
Portage House	1	0
Library	0	2

2.

In the winter, what temperature should your place of work be?		
Answer Options	**Response Percent**	**Response Count**
60 to 62	1.2%	3
63 to 66	8.7%	21
67 to 70	51.2%	124
71 to 73	32.2%	78
Greater than 73	2.0%	5
Don't know	3.8%	9
Don't care	0.9%	2
	answered question	242
	skipped question	1

3.

In the summer, the temperature of your place of work is:		
Answer Options	**Response Percent**	**Response Count**
Too hot	24.5%	57
About right	39.9%	93
Too cold	35.6%	83
	answered question	233
	skipped question	10

Specified buildings for answers that were "Too cold" or "Too hot"

Building	Too Cold	Too Hot
MRF	0	0
HCC	1	2
Ruth Gilfry	32	12
Annex	13	5
LEC	6	16
Courthouse	18	12
Lincoln Center	11	5
Highway	0	1
Parks	0	1
Portage House	0	0
Library	2	1

4.

In the summer, what temperature should your place of work be?		
Answer Options	**Response Percent**	**Response Count**
68 to 70	42.3%	102
71 to 73	40.2%	97
74 to 76	12.5%	30
Greater than 76	1.2%	3
Don't know	2.1%	5
Don't care	1.7%	4
	answered question	241
	skipped question	2

5.

Do you feel your workspace lighting is:		
Answer Options	**Response Percent**	**Response Count**
Overly bright	17.4%	42
About right	77.6%	187
Not bright enough	5.0%	12
	answered question	241
	skipped question	2

Specified buildings for answers that were "Overly bright" or "Not bright enough"

Building	Overly Bright	Not Bright Enough
MRF	0	0
HCC	1	2
Ruth Gilfry	11	5
Annex	10	0
LEC	10	2
Courthouse	4	0
Lincoln Center	5	0
Highway	0	2
Parks	0	0
Portage House	0	0
Library	0	0

6.

How energy conscious/aware do you consider yourself?		
Answer Options	**Response Percent**	**Response Count**
Extremely	39.0%	94
Somewhat	59.8%	144
Not at all	1.2%	3
answered question		241
skipped question		2

7.

How often do you do things to reduce your own energy use like turning off lights when leaving the room, preventing your vehicle from idling, shutting down your computer, etc.?		
Answer Options	**Response Percent**	**Response Count**
Rarely	0.0%	0
Sometimes	9.1%	22
Most of the time	69.0%	167
All of the time	21.9%	53
answered question		242
skipped question		1

8.

What is your opinion of renewable energy applications such as geothermal heating, solar and wind options, etc.		
Answer Options	**Response Percent**	**Response Count**
Favorable	86.1%	205
No opinion	13.0%	31
Unfavorable	0.8%	2
Additional comments:		28
answered question		238
skipped question		4

9.

Are you willing to make slight behavioral changes such as turning off the lights, reducing vehicle miles traveled, consolidating trips, etc. to help the County reduce its energy use?		
Answer Options	**Response Percent**	**Response Count**
Yes	86.7%	209
Maybe	11.6%	28
No	0.8%	2
Don't know	0.8%	2
answered question		241
skipped question		1

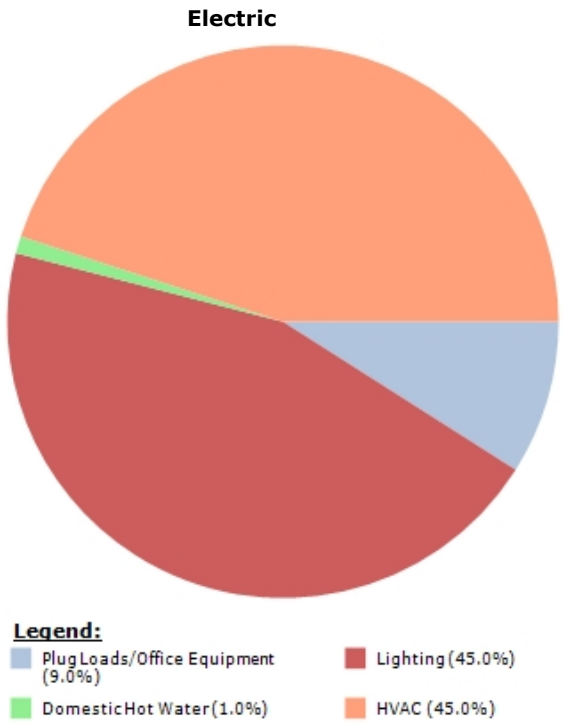
10. What specific things could be done by YOUR department or by County government to conserve and energy and reduce our dependence on fossil fues (defined as heating, cooling, water usage, fuel usage, vehicle miles traveled, etc…)?

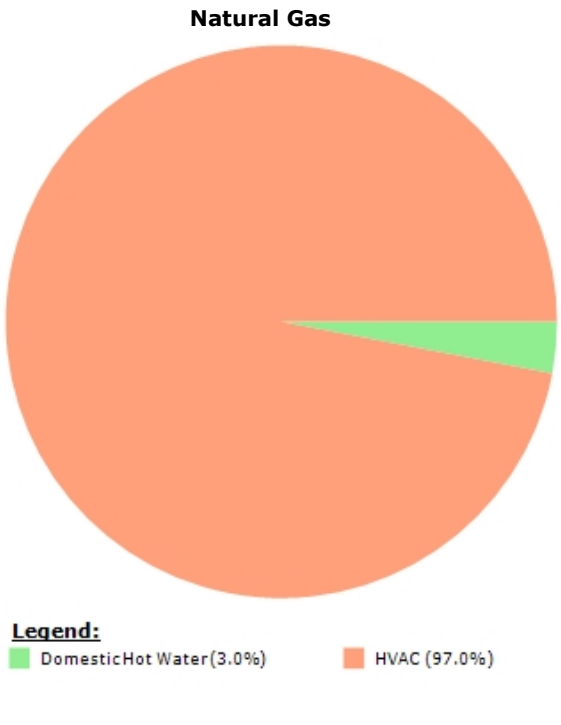
1. Shut down PC's at night (26)
2. Better management of thermostats and opening windows for heating/cooling. Consists of facilities managing the thermostats properly, programmable thermostats, setting lower/higher temps and people wearing sweaters (26)
3. Motion lights in restrooms/hallways/conference rooms (19)
4. Turning off lights (18)
5. Courthouse and Lincoln Center upgrades (12)
6. De-lamping some areas of buildings (11)
7. Remove personal appliances in offices (11)
8. 4 day work weeks (9)
9. Consolidate trips at work. Coordination/communication to do this(8)
10. Heavy duty shades for south windows (7)
11. Car pooling program (5)
12. Employee education (4)
13. Eliminate or reduce lawn watering (4)
14. Solar panels, wind, other renewable energies(3)
15. Reduce or eliminate supervisors mileage (3)
16. Energy efficient vending machines (2)
17. Dual flush toilets, low flow sink nozzles (2)
18. Electric hybrid cars
19. Reminder signage for employees
20. Cut mileage re-imbursement in half
21. Develop idling policy
22. Convert landfill to solar farm

Appendix D

Annex

Typical End Use Profile





Typical Facility Annual Energy Usage

	Electric %	Natural Gas %	Electric kWh	Natural Gas Therms	Electric Cost	Natural Gas Cost
Plug Loads/Office Equipment	9.0%	0.0%	45,439	0	$3,817	$0
Lighting	45.0%	0.0%	227,196	0	$19,084	$0
Office Equipment	0.0%	0.0%	0	0	$0	$0
Domestic Hot Water	1.0%	3.0%	5,049	639	$424	$473
HVAC	45.0%	97.0%	227,196	20,646	$19,084	$15,299
Total	100.0%	100.0%	504,880	21,285	$42,410	$15,772

Your facility uses 14.02 kWh/sq. ft./yr and 0.59 therms/sq. ft./yr and 106.99 kBtu/sq. ft./yr

Energy Conservation Opportunities
Estimated Savings Summary

Opportunity Description	Electric Energy (kWh/yr)	Fuel Energy (therms/yr)	Payback (yrs)	Cost savings	Priority
1.0 Lighting - Custom Fluorescent Recommendation	86,000			$7,224	High
2.0 HVAC - Variable Speed Drive for Boiler Hot Water Distribution Pump	14,000			$1,176	High
3.0 HVAC - Preventative Maintenance Program	2,300		1-2	$193	High
4.0 Plug Loads/Office Equipment - Vending Machine - Install Vending Miser or Disconnect Lamps and Ballasts	910		1-2	$76	High
5.0 Domestic Hot Water - Circulation Pump Timeclock on Domestic Hot Water System	280	13	1-2	$33	High
6.0 HVAC - Door Sweeps Installation		31	1-2	$23	High
7.0 HVAC - Boiler Outside Air Temperature Reset Control		3,100	1-3	$2,297	High
8.0 HVAC - Economizer Controls/Free Cooling	23,000		1-5	$1,932	High
9.0 HVAC - Variable Frequency Drive	18,000		1-5	$1,512	High
10.0 HVAC - Reduce Air Infiltration		560	1-5	$415	High
TOTALS	**144,490**	**3,704**		**$14,882**	

The summary list above includes a number of recommended energy conservation measures for your facility. This list may include overlapping conservation measures. For example, replacement of a boiler with a high efficiency boiler would negate the savings of replacing the burner in the current boiler.

The summary list indicates that if all measures are implemented the total kWh savings is 144,490 which equals 29% of the current annual kWh usage of 504,880 kWh, and 3,704 therms which equals 17% of the current annual therm usage of 21,285 therms.

Be aware that the total savings and percentage of savings is an estimate based on average savings for specific measures which may require adjustments based on possible overlapping conservation measures.

UTILITY BILLING HISTORY

Electricity

Billing Month	Account Number	kW	kWh	Total Amount	$/kWh
23-Sep-2010			44,560	$4,061	$0.091
24-Aug-2010			48,080	$4,403	$0.092
26-Jul-2010			57,040	$5,119	$0.090
24-Jun-2010			51,360	$4,652	$0.091
25-May-2010			43,680	$3,637	$0.083
26-Apr-2010			43,440	$2,968	$0.068
25-Mar-2010			36,000	$3,037	$0.084
23-Feb-2010			33,920	$2,643	$0.078
25-Jan-2010			36,720	$2,717	$0.074
23-Dec-2009			33,600	$2,603	$0.077
23-Nov-2009			36,720	$3,055	$0.083
23-Oct-2009			39,760	$3,350	$0.084
TOTAL			504,880	$42,245	

Average Electricity Rate: $0.084

Natural Gas

Billing Month	Account Number	Therm	Total Amount	$/therm
23-Sep-2010		809	$533	$0.66
24-Aug-2010		55	$124	$2.24
26-Jul-2010		392	$338	$0.86
24-Jun-2010		518	$379	$0.73
25-May-2010		1,344	$939	$0.70
26-Apr-2010		1,856	$1,415	$0.76
25-Mar-2010		2,294	$1,889	$0.82
23-Feb-2010		3,183	$2,533	$0.80
25-Jan-2010		3,755	$2,926	$0.78
23-Dec-2009		2,906	$2,098	$0.72
23-Nov-2009		2,245	$1,564	$0.70
23-Oct-2009		1,929	$1,043	$0.54
TOTAL		21,285	$15,782	

Average Gas Rate: $0.74

1. Lighting - Custom Fluorescent Recommendation

Hire a professional lighting designer to evaluate all the office and conference room lighting. Develop a new lighting design that will substantially reduce the energy consumption over the current lighting system. The Whole Building Lighting Program is a perfect program to assist with the cost to complete this retrofit.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
Offices and conference rooms		Offices and conference rooms	
End Use	Lighting	Electric Energy Savings (kWh/yr)	86,000
Type	Fluorescent	Gas Energy Savings (therm/yr)	
Recommendation:		Electric Cost Savings ($/yr)	$7,224
Custom Fluorescent Recommendation		Gas Cost Savings ($/yr)	
% ECM Opportunity	100	Total Cost Savings ($/yr)	$7,224
% savings electric	50.00000	Payback (yrs)	
% savings gas	0.00000	Electric GHG Savings (tons/yr)	72
Priority	High	Gas GHG Savings (tons/yr)	
Priority Rationale:			
	Acceptable Payback Period		
Grants Available?	Yes		

2. HVAC - Variable Speed Drive for Boiler Hot Water Distribution Pump

Install a variable frequency on your hot water distribution pumps. The hot water supply pumps are 5 HP each and their balancing valves are set at 10% and 25% open. Install VFDs on these two pumps and open the balancing valves 100% so the VFD can control pump speed based on differential pressure. Variable frequency drives (VFDs) control the rotational speed of an alternating current (AC) electric motor by controlling the frequency of the electrical power supply to the motor. VFDs offer many benefits to your electric motors, including:

* Reduced operating costs - VFDs offer greater control over the speed of AC motors, enabling the removal of throttling devices, valves and dampers, all of which can waste energy.

* Increased reliability - by regulating speed, VFDs prolong the life and reduce the maintenance costs of motors, driven equipment and switch gears.

* Increased productivity - VFDs give users a finer degree of control, resulting in more precise process operations and improved product quality.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
Boiler Room		Boiler Room	
End Use	HVAC	Electric Energy Savings (kWh/yr)	14,000
Type	Boilers, Burners, and Furnaces	Gas Energy Savings (therm/yr)	
Recommendation:		Electric Cost Savings ($/yr)	$1,176
Variable Speed Drive for Boiler Hot Water Distribution Pump		Gas Cost Savings ($/yr)	
% ECM Opportunity	100	Total Cost Savings ($/yr)	$1,176
% savings electric	6.00000	Payback (yrs)	
% savings gas	0.00000	Electric GHG Savings (tons/yr)	12
Priority	High	Gas GHG Savings (tons/yr)	
Priority Rationale:			
	Efficiency Upgrade		
Grants Available?	Yes		

3. HVAC – Insulate the AC lines on the Liebert Roof-top AC Unit

These lines transfer refrigerant between the roof top condenser and the DX coil in the Liebert internal unit. Insulating them will improve the efficiency of the system.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
Liebert unit on roof		Liebert unit on roof	
End Use	HVAC	Electric Energy Savings (kWh/yr)	2,300
Type	Miscellaneous	Gas Energy Savings (therm/yr)	
Recommendation:		Electric Cost Savings ($/yr)	$193
Preventative Maintenance Program		Gas Cost Savings ($/yr)	
% ECM Opportunity	100	Total Cost Savings ($/yr)	$193
% savings electric	1.00000	Payback (yrs)	1-2
% savings gas	0.00000	Electric GHG Savings (tons/yr)	2
Priority	High	Gas GHG Savings (tons/yr)	
Priority Rationale:			
	Low Cost/No Cost		
Grants Available?	No		

4. Plug Loads/Office Equipment - Vending Machine - Install Vending Miser or Disconnect Lamps and Ballasts

Disconnect the lamps and ballasts in the soda machine or install a vending miser. Vending machines are costly to operate because they require refrigeration as well as lighting. In fact, machines with lighted displays typically operate 24 hours a day, 365 days a year. The lighting alone can cost about $40.00 per year per machine. One way to reduce lighting costs is to disconnect the lights and ballasts in the display and put a note on the machine that says it is still operational. Another option is to install a device called a vending miser. The vending miser uses an occupancy sensor to determine if the area around the soda machine is in use. If there is no activity in the vicinity of the machine, the machine is powered down periodically.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
Break room		Break room	
End Use	Plug Loads/Office Equipment	Electric Energy Savings (kWh/yr)	910
Type		Gas Energy Savings (therm/yr)	
Recommendation:		Electric Cost Savings ($/yr)	$76
Vending Machine - Install Vending Miser or Disconnect Lamps and Ballasts		Gas Cost Savings ($/yr)	
% ECM Opportunity	100	Total Cost Savings ($/yr)	$76
% savings electric	2.00000	Payback (yrs)	1-2
% savings gas	0.00000	Electric GHG Savings (tons/yr)	1
Priority	High	Gas GHG Savings (tons/yr)	
Priority Rationale:			
	Efficiency Upgrade		
Grants Available?	Yes		

5. Domestic Hot Water - Circulation Pump Timeclock on Domestic Hot Water System

Install a time clock on the domestic hot water circulation pump. Circulation pumps ensure that hot water is at the sink or other point of use when needed. However, most buildings do not require hot water 24 hours a day. Installing a simple and inexpensive timeclock on the circulation pumps or controlling through the energy management system will shut them off when buildings are unoccupied.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
End Use	Domestic Hot Water	Electric Energy Savings (kWh/yr)	280
Type		Gas Energy Savings (therm/yr)	13
Recommendation:		Electric Cost Savings ($/yr)	$24
Circulation Pump Timeclock on Domestic Hot Water System		Gas Cost Savings ($/yr)	$10
% ECM Opportunity	100	Total Cost Savings ($/yr)	$33
% savings electric	5.50000	Payback (yrs)	1-2
% savings gas	2.00000	Electric GHG Savings (tons/yr)	
Priority	High	Gas GHG Savings (tons/yr)	
Priority Rationale:			
	Low Cost/No Cost		
Grants Available?	No		

6. HVAC - Door Sweeps Installation

Reduce energy losses by installing door sweeps in the receiving area. Exterior door sweeps reduce air conditioning costs by preventing conditioned air from escaping or unconditioned air from entering spaces. Interior doors should not have door sweeps installed because gaps under doors enable proper ventilation.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
Receiving		Receiving	
End Use	HVAC	Electric Energy Savings (kWh/yr)	
Type	Building Shell	Gas Energy Savings (therm/yr)	31
Recommendation:		Electric Cost Savings ($/yr)	
Door Sweeps Installation		Gas Cost Savings ($/yr)	$23
% ECM Opportunity	100	Total Cost Savings ($/yr)	$23
% savings electric	0.00000	Payback (yrs)	1-2
% savings gas	0.1500	Electric GHG Savings (tons/yr)	
Priority	High	Gas GHG Savings (tons/yr)	
Priority Rationale:			
	Low Cost/No Cost		
Grants Available?	No		

7. HVAC - Boiler Outside Air Temperature Reset Control

Install a hot water reset on the boiler system. These boilers are condensing models capable of producing low water temperatures at very high efficiencies. The boilers were producing 175 degree water on a 55 degree day. The boilers should have been supplying approximately 110 degree water on a day like that. A hot water reset is a control mechanism that senses outdoor temperatures and adjusts boiler water temperatures accordingly. As outdoor temperatures rise, boiler temperatures can be reduced because not as much heat is needed. Typically, installing this control will reduce boiler energy use by 3% to 10%. On your condensing boilers the savings will be much higher. A hot water reset ensures that boilers will operate only as needed, at lower temperatures, and with fewer line losses.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
Boiler Room		Boiler Room	
End Use	HVAC	Electric Energy Savings (kWh/yr)	
Type	Controls	Gas Energy Savings (therm/yr)	3,100
Recommendation:		Electric Cost Savings ($/yr)	
Boiler Outside Air Temperature Reset Control		Gas Cost Savings ($/yr)	$2,297
% ECM Opportunity	100	Total Cost Savings ($/yr)	$2,297
% savings electric	0.00000	Payback (yrs)	1-3
% savings gas	15.00000	Electric GHG Savings (tons/yr)	
Priority	High	Gas GHG Savings (tons/yr)	18
Priority Rationale:			
	Low Cost/No Cost		
Grants Available?	Yes		

8. HVAC - Economizer Controls/Free Cooling

Install an automatic air-conditioning economizer. The roof-top chiller was running on one compressor on a dry 55 degree day. An economizer would have cooled the building with outside air and not used the chiller. An economizer can take advantage of cool outside air (such as during evening hours or cool days) and use this "free" air for cooling. During the air-conditioning season, the heat generated by internal loads such as people, lighting, and electronic equipment will build up in a building. It can be warmer inside than outdoors. Instead of relying on mechanical cooling, an economizer will allow the cooler outside air to enter the building through the outside air intakes and be distributed through the ductwork. The outside air is then tempered with the inside air to allow the temperature to reach the desired level.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
Mechanical room		Mechanical room	
End Use	HVAC	Electric Energy Savings (kWh/yr)	23,000
Type	Controls	Gas Energy Savings (therm/yr)	
Recommendation:		Electric Cost Savings ($/yr)	$1,932
Economizer Controls/Free Cooling		Gas Cost Savings ($/yr)	
% ECM Opportunity	100	Total Cost Savings ($/yr)	$1,932
% savings electric	10.00000	Payback (yrs)	1-5
% savings gas	0.00000	Electric GHG Savings (tons/yr)	19
Priority	High	Gas GHG Savings (tons/yr)	
Priority Rationale:			
	Efficiency Upgrade		
Grants Available?	Yes		

9. HVAC – Chiiled Water Pumps Variable Frequency Drives

Install a variable frequency drives on the chiiled water supply pumps. These two pumps had their balancing valves et at 20% and 30% open. Install VFDs and open the balancing valves to 100% and control their speed based on differential pressure. Variable-frequency drives (VFDs) control the rotational speed of an alternating current (AC) electric motor by controlling the frequency of the electrical power supply to the motor. VFDs offer many benefits to your electric motors, including:

* Reduced operating costs - VFDs offer greater control over the speed of AC motors, enabling the removal of throttling devices, valves and dampers, all of which can waste energy.

* Increased reliability - by regulating speed, VFDs prolong the life and reduce the maintenance costs of motors, driven equipment and switch gears.

* Increased productivity - VFDs give users a finer degree of control, resulting in more precise process operations and improved product quality.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
Mechanical room		Mechanical room	
End Use	HVAC	Electric Energy Savings (kWh/yr)	18,000
Type	Motor	Gas Energy Savings (therm/yr)	
Recommendation:		Electric Cost Savings ($/yr)	$1,512
Variable Frequency Drive		Gas Cost Savings ($/yr)	
% ECM Opportunity	100	Total Cost Savings ($/yr)	$1,512
% savings electric	8.00000	Payback (yrs)	1-5
% savings gas	0.00000	Electric GHG Savings (tons/yr)	15
Priority	High	Gas GHG Savings (tons/yr)	
Priority Rationale:			
	Efficiency Upgrade		
Grants Available?	Yes		

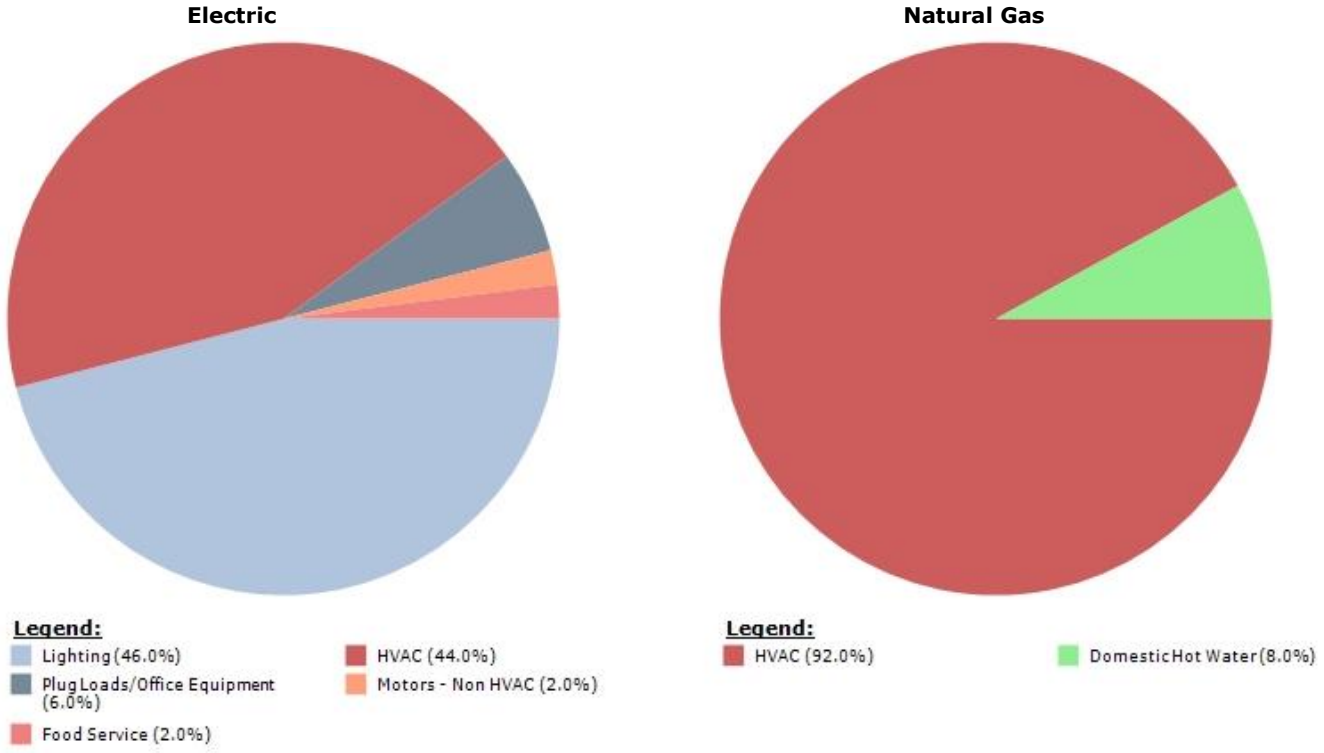
10. HVAC - Reduce Air Infiltration around the receiving overhead doors

Reduce air infiltration and leakage to lower air conditioning and heating costs. There are many low cost, simple ways to reduce air leakage and most are available at the hardware store.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
Receiving		Receiving	
End Use	HVAC	Electric Energy Savings (kWh/yr)	
Type	Building Shell	Gas Energy Savings (therm/yr)	560
Recommendation:		Electric Cost Savings ($/yr)	
Reduce Air Infiltration		Gas Cost Savings ($/yr)	$415
% ECM Opportunity	100	Total Cost Savings ($/yr)	$415
% savings electric	0.00000	Payback (yrs)	1-5
% savings gas	2.70000	Electric GHG Savings (tons/yr)	
Priority	High	Gas GHG Savings (tons/yr)	3
Priority Rationale:			
	Low Cost/No Cost		
Grants Available?	No		

Courthouse

Typical End Use Profile



Typical Facility Annual Energy Usage

	Electric %	Natural Gas %	Electric kWh	Natural Gas Therms	Electric Cost	Natural Gas Cost
Lighting	46.0%	0.0%	311,843	0	$24,947	$0
HVAC	44.0%	92.0%	298,285	40,986	$23,863	$32,584
Plug Loads/Office Equipment	6.0%	0.0%	40,675	0	$3,254	$0
Domestic Hot Water	0.0%	8.0%	0	3,564	$0	$2,833
Motors - Non HVAC	2.0%	0.0%	13,558	0	$1,085	$0
Food Service	2.0%	0.0%	13,558	0	$1,085	$0
Office Equipment	0.0%	0.0%	0	0	$0	$0
Total	100.0%	100.0%	677,920	44,550	$54,234	$35,417

Your facility uses 9.42 kWh/sq. ft./yr and 0.62 therms/sq. ft./yr and 94.08 kBtu/sq. ft./yr

Energy Conservation Opportunities
Estimated Savings Summary

Opportunity Description	Electric Energy (kWh/yr)	Fuel Energy (therms/yr)	Payback (yrs)	Cost savings	Priority
1.0 Lighting - Delamping	22,000		0-1	$1,760	High
2.0 HVAC - Preventative Maintenance Program	3,000		1-2	$240	High
3.0 HVAC - Steam System Leak Repair		2,000	1-5	$1,590	High
4.0 Lighting - Low Wattage Fluorescent Replacement of T-8 Lamps	86,000		3-5	$6,880	High
5.0 HVAC - Boiler - Steam to Hot Water Conversion		14,000	10-15	$11,130	Low
TOTALS	**111,000**	**16,000**		**$21,600**	

The summary list above includes a number of recommended energy conservation measures for your facility. This list may include overlapping conservation measures. For example, replacement of a boiler with a high efficiency boiler would negate the savings of replacing the burner in the current boiler.

The summary list indicates that if all measures are implemented the total kWh savings is 111,000 which equals 16% of the current annual kWh usage of 677,920 kWh, and 16,000 therms which equals 36% of the current annual therm usage of 44,550 therms.

Be aware that the total savings and percentage of savings is an estimate based on average savings for specific measures which may require adjustments based on possible overlapping conservation measures.

UTILITY BILLING HISTORY

Electricity

Billing Month	Account Number	kW	kWh	Total Amount	$/kWh
23-Dec-2009		124	52,480	$3,840	$0.073
23-Nov-2009		139	55,360	$4,101	$0.074
23-Oct-2009		161	54,720	$4,301	$0.079
23-Sep-2009		176	62,400	$5,520	$0.088
24-Aug-2009		193	67,520	$5,905	$0.087
24-Jul-2009		198	68,800	$6,121	$0.089
23-Jun-2009		179	63,360	$5,322	$0.084
22-May-2009		155	52,320	$4,045	$0.077
23-Apr-2009		140	50,080	$3,843	$0.077
24-Mar-2009		140	48,320	$3,738	$0.077
23-Feb-2009		121	51,680	$3,792	$0.073
28-Jan-2009		123	50,880	$3,711	$0.073
TOTAL			677,920	$54,239	

Average Electricity Rate: $0.080

Natural Gas

Billing Month	Account Number	Therm	Total Amount	$/therm
23-Dec-2009		7,528	$5,287	$0.70
23-Nov-2009		4,320	$2,921	$0.68
23-Oct-2009		2,558	$1,353	$0.53
23-Sep-2009		95	$134	$1.41
24-Aug-2009		109	$148	$1.36
24-Jul-2009		107	$150	$1.40
23-Jun-2009		215	$212	$0.98
22-May-2009		600	$371	$0.62
23-Apr-2009		3,421	$2,272	$0.66
24-Mar-2009		6,264	$5,080	$0.81
23-Feb-2009		8,789	$7,664	$0.87
28-Jan-2009		10,544	$9,829	$0.93
TOTAL		44,550	$35,420	

Average Gas Rate: $0.80

1. Lighting - Delamping

Reduce lighting in specified areas by delamping. Delamping refers to the process of removing lamps from existing light fixtures. Often, a light fixture provides more light than is necessary for a given area (such as a hallway or storage room). Combine this effort with the low watt T-8 lamp and ballast replacements so each light fixture only has as many lamps as is needed for the location.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
Retrofit 4 lamp T8 and T12 fixtures to 2 lamp fixtures utilizing 25 watt 5000K lamps and low ballast factor ballasts.		Retrofit 4 lamp T8 and T12 fixtures to 2 lamp fixtures utilizing 25 watt 5000K lamps and low ballast factor ballasts.	
End Use	Lighting	Electric Energy Savings (kWh/yr)	22,000
Type	Fluorescent	Gas Energy Savings (therm/yr)	
Recommendation:		Electric Cost Savings ($/yr)	$1,760
Delamping		Gas Cost Savings ($/yr)	
% ECM Opportunity	20	Total Cost Savings ($/yr)	$1,760
% savings electric	50.00000	Payback (yrs)	0-1
% savings gas	0.00000	Electric GHG Savings (tons/yr)	18
Priority	High	Gas GHG Savings (tons/yr)	
Priority Rationale:			
	Efficiency Upgrade		
Grants Available?	Yes		

2. HVAC - Preventative Maintenance Program

Establish regular preventative HVAC system maintenance. HVAC equipment should be regularly maintained for maximum efficiency as well as to enhance the equipment's life. Often, however, this equipment is addressed only after a problem has been reported. As HVAC equipment ages, it should be maintained more often to ensure temperatures are set and sustained, the proper amount of outside air enters the building, and occupancy comfort levels remain high. This regular maintenance will also reduce energy use and extend equipment life. The DX cooling units did not have insulation on the refrigerant lines going to the DX coils in each air handling unit.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
Insulate the DX lines that are next to each DX unit.		Insulate the DX lines that are next to each DX unit.	
End Use	HVAC	Electric Energy Savings (kWh/yr)	3,000
Type	Miscellaneous	Gas Energy Savings (therm/yr)	
Recommendation:		Electric Cost Savings ($/yr)	$240
Preventative Maintenance Program		Gas Cost Savings ($/yr)	
% ECM Opportunity	10	Total Cost Savings ($/yr)	$240
% savings electric	10.00000	Payback (yrs)	1-2
% savings gas	0.00000	Electric GHG Savings (tons/yr)	3
Priority	High	Gas GHG Savings (tons/yr)	
Priority Rationale:			
	Low Cost/No Cost		
Grants Available?	No		

3. HVAC - Steam System Trap Repair

Repair the steam traps. Steam traps only last about 2 years. Replace or repair all steam traps that are failed. Ones that are failed in the open position waste a great deral of energy by letting steam escape to the condensate return tank where it escapes out the vent to the atmosphere.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
End Use	HVAC	Electric Energy Savings (kWh/yr)	
Type	Boilers, Burners, and Furnaces	Gas Energy Savings (therm/yr)	2,000
Recommendation:		Electric Cost Savings ($/yr)	
Steam System Leak Repair		Gas Cost Savings ($/yr)	$1,590
% ECM Opportunity	100	Total Cost Savings ($/yr)	$1,590
% savings electric	0.00000	Payback (yrs)	1-5
% savings gas	5.00000	Electric GHG Savings (tons/yr)	
Priority	High	Gas GHG Savings (tons/yr)	12
Priority Rationale:			
	Low Cost/No Cost		
Grants Available?	No		

4. Lighting - Low Wattage Fluorescent Replacement of T-8 Lamps

Realize a 25%-40% lighting energy reduction by replacing 32 Watt T-8 lamps and ballasts with 25 or 28 Watt fluorescent lamps and high efficiency low ballast factor ballasts. Low wattage lighting systems are an excellent option for spaces which are overlit and removing entire fixtures is not possible. Hire a lighting design professional to develop a comprehensive lighting design that maximizes efficiency and longevity of the lighting system.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
End Use	Lighting	Electric Energy Savings (kWh/yr)	86,000
Type	Fluorescent	Gas Energy Savings (therm/yr)	
Recommendation:		Electric Cost Savings ($/yr)	$6,880
Low Wattage Fluorescent Replacement of T-8 Lamps		Gas Cost Savings ($/yr)	
% ECM Opportunity	100	Total Cost Savings ($/yr)	$6,880
% savings electric	40.00000	Payback (yrs)	3-5
% savings gas	0.00000	Electric GHG Savings (tons/yr)	72
Priority	High	Gas GHG Savings (tons/yr)	
Priority Rationale:			
	Acceptable Payback Period		
Grants Available?	Yes		

5. HVAC - Boiler - Steam to Hot Water Conversion

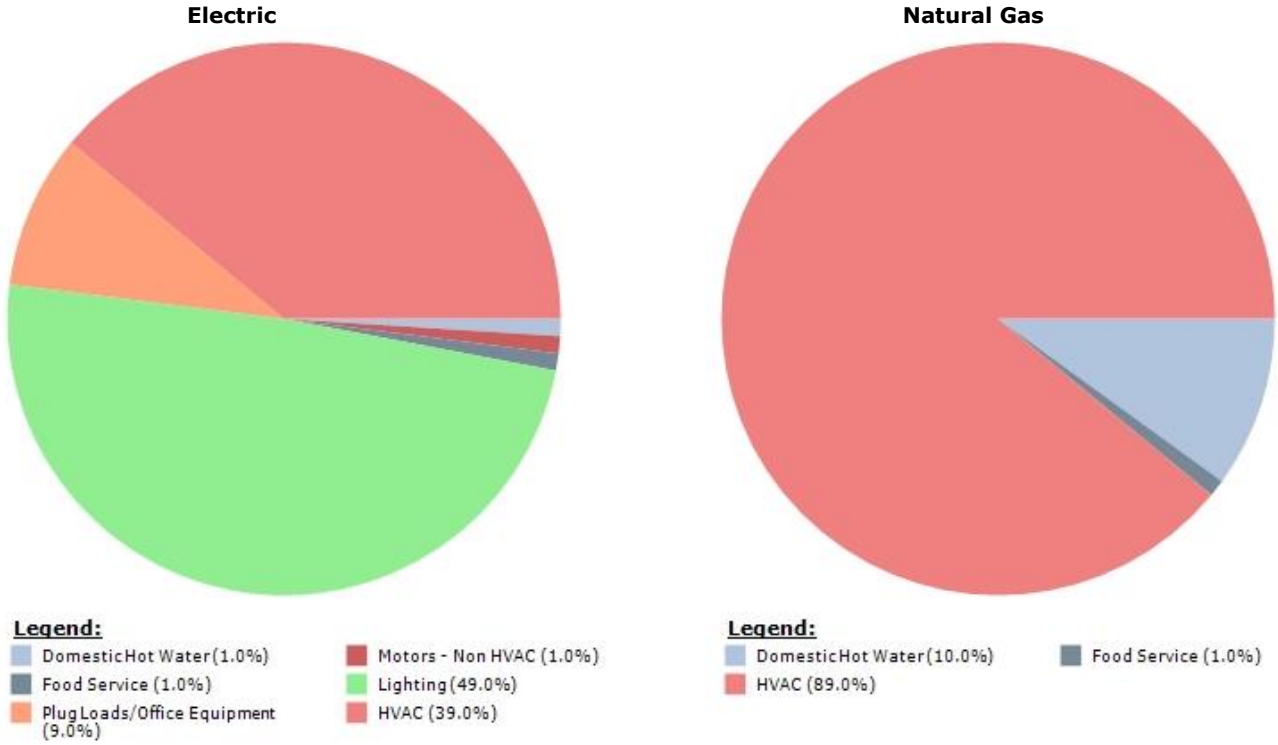
Convert the boiler system to hot water. Hot water boilers are more energy efficient (and have higher AFUE ratings) than steam systems. However, they are costly to replace. So, the most cost-effective time to make this steam-to-hot water conversion is when it is time to replace a steam system's main boiler. A new hot water boiler and connecting piping will cost less than a steam boiler and its piping. These cost savings will balance with the added cost to adapt the system to hot water and probable changes to condensate return piping. Hot water systems offer greater control: they can adjust the water temperature based on the outside air temperature (in steam systems, the heat output is constant whether the outside temperature is 40 degrees or 10 below zero).

EXISTING CONDITIONS	
Location	
Utilize condensing hot water boilers.	
End Use	HVAC
Type	Boilers, Burners, and Furnaces
Recommendation:	
Boiler - Steam to Hot Water Conversion	
% ECM Opportunity	100
% savings electric	0.00000
% savings gas	35.00000
Priority	Low
Priority Rationale:	
	Efficiency Upgrade
Grants Available?	Yes

RECOMMENDATION SAVINGS POTENTIAL	
Location	
Utilize condensing hot water boilers.	
Electric Energy Savings (kWh/yr)	
Gas Energy Savings (therm/yr)	14,000
Electric Cost Savings ($/yr)	
Gas Cost Savings ($/yr)	$11,130
Total Cost Savings ($/yr)	$11,130
Payback (yrs)	10-15
Electric GHG Savings (tons/yr)	
Gas GHG Savings (tons/yr)	82

Lincoln Center

Typical End Use Profile



Typical Facility Annual Energy Usage

	Electric %	Natural Gas %	Electric kWh	Natural Gas Therms	Electric Cost	Natural Gas Cost
Domestic Hot Water	1.0%	10.0%	4,889	2,545	$406	$1,840
Motors - Non HVAC	1.0%	0.0%	4,889	0	$406	$0
Food Service	1.0%	1.0%	4,889	255	$406	$184
Lighting	49.0%	0.0%	239,543	0	$19,882	$0
Plug Loads/Office Equipment	9.0%	0.0%	43,998	0	$3,652	$0
HVAC	39.0%	89.0%	190,657	22,651	$15,825	$16,377
Office Equipment	0.0%	0.0%	0	0	$0	$0
Total	100.0%	100.0%	488,863	25,451	$40,576	$18,401

Your facility uses 29.94 kWh/sq. ft./yr and 1.56 therms/sq. ft./yr and 258.03 kBtu/sq. ft./yr

Energy Conservation Opportunities
Estimated Savings Summary

Opportunity Description	Electric Energy (kWh/yr)	Fuel Energy (therms/yr)	Payback (yrs)	Cost savings	Priority
1.0 Lighting - Reconfigure Lighting Layout for Efficiency and Improvement	90,000			$7,470	High
2.0 HVAC - Ventilation Controls	29,000	4,500	1-5	$5,661	High
3.0 HVAC - Economizer Controls/Free Cooling	19,000		1-5	$1,577	High
4.0 Lighting - T-8 or T-5 - Replaces HID	5,500		3-8	$457	High
5.0 Lighting - Compact Fluorescent Lamp Fixture Replacement	2,900		3-8	$241	High
6.0 Food Service - Refrigeration System Maintenance	730		3-10	$61	High
7.0 Food Service - Refrigeration System Maintenance	370		3-10	$31	High
8.0 HVAC - Boiler Replacement-High Performance		6,800	5-10	$4,916	Medium
TOTALS	**147,500**	**11,300**		**$20,412**	

The summary list above includes a number of recommended energy conservation measures for your facility. This list may include overlapping conservation measures. For example, replacement of a boiler with a high efficiency boiler would negate the savings of replacing the burner in the current boiler.

The summary list indicates that if all measures are implemented the total kWh savings is 147,500 which equals 30% of the current annual kWh usage of 488,863 kWh, and 11,300 therms which equals 44% of the current annual therm usage of 25,451 therms.

Be aware that the total savings and percentage of savings is an estimate based on average savings for specific measures which may require adjustments based on possible overlapping conservation measures.

UTILITY BILLING HISTORY

Electricity

Billing Month	Account Number	kW	kWh	Total Amount	$/kWh
23-Sep-2010			37,944	$3,647	$0.096
24-Aug-2010			48,970	$4,355	$0.089
26-Jul-2010			53,852	$4,404	$0.082
24-Jun-2010			46,973	$4,060	$0.086
25-May-2010			38,971	$3,122	$0.080
26-Apr-2010			39,785	$2,798	$0.070
25-Mar-2010			36,508	$3,002	$0.082
23-Feb-2010			35,468	$2,895	$0.082
25-Jan-2010			38,293	$2,953	$0.077
23-Dec-2009			36,986	$2,975	$0.080
23-Nov-2009			37,955	$3,118	$0.082
23-Oct-2009			37,158	$3,134	$0.084
TOTAL			488,863	$40,463	

Average Electricity Rate: $0.083

Natural Gas

Billing Month	Account Number	Therm	Total Amount	$/therm
23-Sep-2010		827	$542	$0.66
24-Aug-2010		743	$541	$0.73
26-Jul-2010		989	$701	$0.71
24-Jun-2010		1,330	$828	$0.62
25-May-2010		1,856	$1,262	$0.68
26-Apr-2010		2,333	$1,753	$0.75
25-Mar-2010		2,570	$2,105	$0.82
23-Feb-2010		3,286	$2,612	$0.79
25-Jan-2010		3,845	$2,994	$0.78
23-Dec-2009		3,141	$2,261	$0.72
23-Nov-2009		2,404	$1,668	$0.69
23-Oct-2009		2,126	$1,141	$0.54
TOTAL		25,451	$18,408	

Average Gas Rate: $0.72

1. Lighting - Reconfigure Lighting Layout for Efficiency and Improvement

There may be too much light in one area but not enough light in another as a result of installing new lighting equipment and repurposing spaces. Relocate fixtures from overlit areas to underlit areas instead of adding new light fixtures to correct underlit conditions. This will improve lighting system effectiveness and save the energy that would have been used by the new fixture.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
Consider the Whole Building Lighting Program to retrofit at least 70% of the building lighting.		Consider the Whole Building Lighting Program to retrofit at least 70% of the building lighting.	
End Use	Lighting	Electric Energy Savings (kWh/yr)	90,000
Type	Fluorescent	Gas Energy Savings (therm/yr)	
Recommendation:		Electric Cost Savings ($/yr)	$7,470
Reconfigure Lighting Layout for Efficiency and Improvement		Gas Cost Savings ($/yr)	
% ECM Opportunity	100	Total Cost Savings ($/yr)	$7,470
% savings electric	50.00000	Payback (yrs)	
% savings gas	0.00000	Electric GHG Savings (tons/yr)	75
Priority	High	Gas GHG Savings (tons/yr)	
Priority Rationale:			
	Acceptable Payback Period		
Grants Available?	Yes		

2. HVAC - Ventilation Controls

Verify if the outside air dampers are closing when the building is unoccupied and install ventilation controls if needed. Often the amount of ventilation air is based on some maximum design condition, such as occupancy or CO levels. Ventilation controls can measure the interior condition and adjust the actual amount of outside air to match the current school building status. Reducing the amount of outside air will reduce the amount of energy needed to condition (heat or cool) the air.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
Adjust controls to close outside air dampers when the building is in the unoccupied mode. Also verify that ventilation does not exceed code requirements.		Adjust controls to close outside air dampers when the building is in the unoccupied mode. Also verify that ventilation does not exceed code requirements.	
End Use	HVAC	Electric Energy Savings (kWh/yr)	29,000
Type	Controls	Gas Energy Savings (therm/yr)	4,500
Recommendation:		Electric Cost Savings ($/yr)	$2,407
Ventilation Controls		Gas Cost Savings ($/yr)	$3,254
% ECM Opportunity	100	Total Cost Savings ($/yr)	$5,661
% savings electric	15.0000	Payback (yrs)	1-5
% savings gas	20.0000	Electric GHG Savings (tons/yr)	24
Priority	High	Gas GHG Savings (tons/yr)	26
Priority Rationale:			
	Low Cost/No Cost		
Grants Available?	Yes		

3. HVAC - Economizer Controls/Free Cooling

Install an automatic air-conditioning economizer if it does not currently exist. An air conditioning economizer can take advantage of cool outside air (such as during evening hours or cool days) and use this "free" air for cooling. During the air-conditioning season, the heat generated by internal loads such as people, lighting, and electronic equipment will build up in a building. It can be warmer inside than outdoors. Instead of relying on mechanical cooling, an economizer will allow the cooler outside air to enter the building through the outside air intakes and be distributed through the ductwork. The outside air is then tempered with the inside air to allow the temperature to reach the desired level.

EXISTING CONDITIONS	
Location	
Verify that the control system and HVAC system have economizer controls and that they function correctly.	
End Use	HVAC
Type	Controls
Recommendation:	
Economizer Controls/Free Cooling	
% ECM Opportunity	100
% savings electric	10.00000
% savings gas	0.00000
Priority	High
Priority Rationale:	
	Efficiency Upgrade
Grants Available?	Yes

RECOMMENDATION SAVINGS POTENTIAL	
Location	
Verify that the control system and HVAC system have economizer controls and that they function correctly.	
Electric Energy Savings (kWh/yr)	19,000
Gas Energy Savings (therm/yr)	
Electric Cost Savings ($/yr)	$1,577
Gas Cost Savings ($/yr)	
Total Cost Savings ($/yr)	$1,577
Payback (yrs)	1-5
Electric GHG Savings (tons/yr)	16
Gas GHG Savings (tons/yr)	

4. Lighting - T-8 - Replaces HID

Replace HID lamps and fixtures with T-8 fluorescent technology in the store. Replacement fluorescent lamps should be coupled with an enhanced specular aluminum fixture. Fluorescent fixtures are instant-on and eliminate lost work time due to momentary power interruptions. In addition, they lend themselves to better control including occupancy sensors, and dimming where appropriate. Further, T8 lamps have very low lumen-depreciation compared to HID lamps. Over their 20,000 hour projected life T-8's lose 10%. Metal Halide fixtures lose 40-60% of their light output over their life time. Fluorescent lighting provides better light quality with CRI (color rendering index) ratings between 73-85, while Metal Halide only rate from 65 to 70.

EXISTING CONDITIONS	
Location	
Replace the HID lighting in the store with High Performance T8 fluorescent fixtures.	
End Use	Lighting
Type	HID
Recommendation:	
T-8 or T-5 - Replaces HID	
% ECM Opportunity	35
% savings electric	50.00000
% savings gas	0.00000
Priority	High
Priority Rationale:	
	Efficiency Upgrade
Grants Available?	Yes

RECOMMENDATION SAVINGS POTENTIAL	
Location	
Replace the HID lighting in the store with High Performance T8 fluorescent fixtures.	
Electric Energy Savings (kWh/yr)	5,500
Gas Energy Savings (therm/yr)	
Electric Cost Savings ($/yr)	$457
Gas Cost Savings ($/yr)	
Total Cost Savings ($/yr)	$457
Payback (yrs)	3-8
Electric GHG Savings (tons/yr)	5
Gas GHG Savings (tons/yr)	

5. Lighting - Compact Fluorescent Lamp Fixture Replacement

Replace incandescent fixtures with compact fluorescent fixtures. Incandescent fixtures should be replaced with energy-efficient fluorescent fixtures when possible. Some options include fixtures that can accept CFLs and electronic ballasts. Fluorescent lighting in any form is far more energy-efficient than standard incandescent fixtures because the lamps use less energy and last much longer. Many times, lamp and maintenance savings alone will "pay for" the retrofit costs. The energy savings then represent an extra added benefit that is accrued monthly.

EXISTING CONDITIONS	
Location	
Replace the entrance and sunroom incandescent lamps with CFLs. Do the same for all the spot lights and can lights.	
End Use	Lighting
Type	Incandescent
Recommendation:	
Compact Fluorescent Lamp Fixture Replacement	
% ECM Opportunity	25
% savings electric	70.00000
% savings gas	0.00000
Priority	High
Priority Rationale:	
	Low Cost/No Cost
Grants Available?	Yes

RECOMMENDATION SAVINGS POTENTIAL	
Location	
Replace the entrance and sunroom incandescent lamps with CFLs. Do the same for all the spot lights and can lights.	
Electric Energy Savings (kWh/yr)	2,900
Gas Energy Savings (therm/yr)	
Electric Cost Savings ($/yr)	$241
Gas Cost Savings ($/yr)	
Total Cost Savings ($/yr)	$241
Payback (yrs)	3-8
Electric GHG Savings (tons/yr)	2
Gas GHG Savings (tons/yr)	

6. Food Service – Replace the evaporator motors in the walk-in coolers and freezers with ECM type

ECM motors are far more efficient than the older shaded pole or PSC motors.

EXISTING CONDITIONS	
Location	
Replace the evaporator motors on the walk-in coolers and freezers with ECM motors.	
End Use	Food Service
Type	
Recommendation:	
Refrigeration System Maintenance	
% ECM Opportunity	100
% savings electric	15.0000
% savings gas	0.00000
Priority	High
Priority Rationale:	
	Efficiency Upgrade
Grants Available?	Yes

RECOMMENDATION SAVINGS POTENTIAL	
Location	
Replace the evaporator motors on the walk-in coolers and freezers with ECM motors.	
Electric Energy Savings (kWh/yr)	730
Gas Energy Savings (therm/yr)	
Electric Cost Savings ($/yr)	$61
Gas Cost Savings ($/yr)	
Total Cost Savings ($/yr)	$61
Payback (yrs)	3-10
Electric GHG Savings (tons/yr)	1
Gas GHG Savings (tons/yr)	

7. Food Service - Refrigeration System Maintenance

A refrigeration system service increases your system efficiency and performance by repairing and maintaining issues which are adversely affecting performance. A typical service will include filter replacement, valve setting, etc and ensure optimal component life.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
Kitchen		Kitchen	
End Use	Food Service	Electric Energy Savings (kWh/yr)	370
Type		Gas Energy Savings (therm/yr)	
Recommendation:		Electric Cost Savings ($/yr)	$31
Refrigeration System Maintenance		Gas Cost Savings ($/yr)	
% ECM Opportunity	100	Total Cost Savings ($/yr)	$31
% savings electric	7.5000	Payback (yrs)	3-10
% savings gas	0.00000	Electric GHG Savings (tons/yr)	
Priority	High	Gas GHG Savings (tons/yr)	
Priority Rationale:			
	Low Cost/No Cost		
Grants Available?	No		

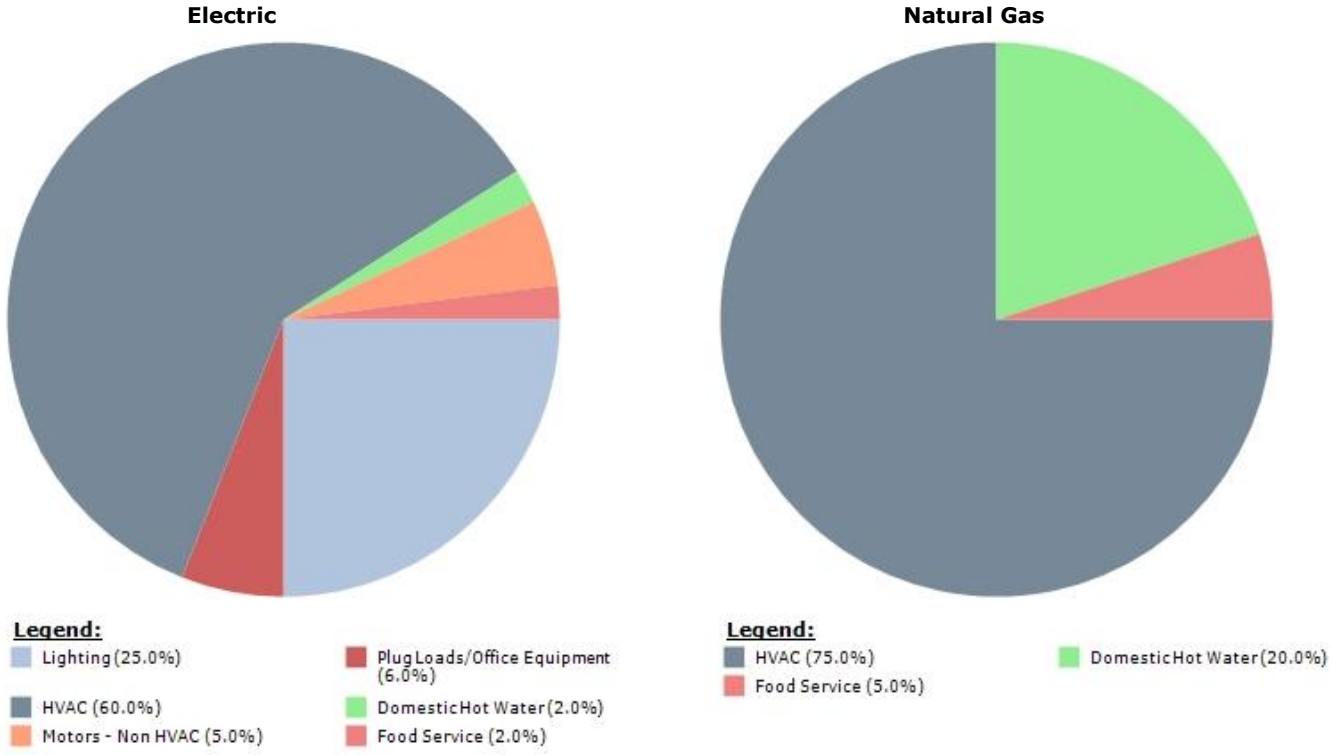
8. HVAC - Boiler Replacement- High Performance

A high-efficiency condensing boiler operates with lower flue-gas temperatures, lower flue-gas emissions and reduced fuel consumption by recovering heat that would otherwise be lost up the flue. High-efficiency boilers operate at efficiencies of 90% and greater, or about 10% to 15% better than new traditional boilers. High-efficiency boilers are called condensing boilers because during the process of recovering heat from the burned fuel, the temperature of the flue gas is reduced to a point where the water vapor that is produced during combustion is condensed out.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
Boiler room		Boiler room	
End Use	HVAC	Electric Energy Savings (kWh/yr)	
Type	Boilers, Burners, and Furnaces	Gas Energy Savings (therm/yr)	6,800
Recommendation:		Electric Cost Savings ($/yr)	
Boiler Replacement- High Performance		Gas Cost Savings ($/yr)	$4,916
% ECM Opportunity	100	Total Cost Savings ($/yr)	$4,916
% savings electric	0.00000	Payback (yrs)	5-10
% savings gas	30.00000	Electric GHG Savings (tons/yr)	
Priority	Medium	Gas GHG Savings (tons/yr)	40
Priority Rationale:			
	Acceptable Payback Period		
Grants Available?	Yes		

Law Enforcement Center

Typical End Use Profile



Typical Facility Annual Energy Usage

	Electric %	Natural Gas %	Electric kWh	Natural Gas Therms	Electric Cost	Natural Gas Cost
Lighting	25.0%	0.0%	192,180	0	$13,837	$0
Plug Loads/Office Equipment	6.0%	0.0%	46,123	0	$3,321	$0
HVAC	60.0%	75.0%	461,232	16,483	$33,209	$12,131
Domestic Hot Water	2.0%	20.0%	15,374	4,395	$1,107	$3,235
Motors - Non HVAC	5.0%	0.0%	38,436	0	$2,767	$0
Food Service	2.0%	5.0%	15,374	1,099	$1,107	$809
Office Equipment	0.0%	0.0%	0	0	$0	$0
Total	100.0%	100.0%	768,720	21,977	$55,348	$16,175

Your facility uses 14.20 kWh/sq. ft./yr and 0.41 therms/sq. ft./yr and 89.09 kBtu/sq. ft./yr

Energy Conservation Opportunities
Estimated Savings Summary

Opportunity Description	Electric Energy (kWh/yr)	Fuel Energy (therms/yr)	Payback (yrs)	Cost savings	Priority
1.0 Lighting - Custom Fluorescent Recommendation	40,000			$2,880	High
2.0 Domestic Hot Water - Custom DHW Recommendation		1,100		$810	High
3.0 Domestic Hot Water - Booster Water Heater Fuel Conversion				$	High
4.0 Plug Loads/Office Equipment - Vending Machine - Install Vending Miser or Disconnect Lamps and Ballasts	920		1-2	$66	High
5.0 HVAC - Economizer Controls/Free Cooling	49,000		1-5	$3,528	High
6.0 Lighting - LED Exit Lighting	1,800		1-5	$130	High
7.0 Lighting - Occupancy Sensor for Lighting	20,000		3-5	$1,440	High
8.0 Lighting - T-8 or T-5 - Replaces HID	11,000		3-8	$792	High
9.0 Food Service - Refrigeration System Maintenance	850		3-10	$61	High
10.0 Food Service - Steamer, Gas ENERGY STAR	1,500	22	5-10	$124	High
11.0 Food Service - Hot Food Holding Cabinet - ENERGY STAR	1,200	22	5-10	$103	High
12.0 HVAC - Boiler Replacement- High Performance		2,500	5-10	$1,840	Low
TOTALS	**126,270**	**3,644**		**$11,773**	

The summary list above includes a number of recommended energy conservation measures for your facility. This list may include overlapping conservation measures. For example, replacement of a boiler with a high efficiency boiler would negate the savings of replacing the burner in the current boiler.

The summary list indicates that if all measures are implemented the total kWh savings is 126,270 which equals 16% of the current annual kWh usage of 768,720 kWh, and 3,644 therms which equals 17% of the current annual therm usage of 21,977 therms.

Be aware that the total savings and percentage of savings is an estimate based on average savings for specific measures which may require adjustments based on possible overlapping conservation measures.

UTILITY BILLING HISTORY

Electricity

Billing Month	Account Number	kW	kWh	Total Amount	$/kWh
24-Aug-2010			81,120	$6,265	$0.077
26-Jul-2010			84,480	$6,490	$0.077
24-Jun-2010			74,560	$5,845	$0.078
25-May-2010			61,760	$4,633	$0.075
26-Apr-2010			60,160	$3,472	$0.058
25-Mar-2010			53,040	$3,705	$0.070
23-Feb-2010			51,360	$3,596	$0.070
25-Jan-2010			58,320	$3,839	$0.066
23-Dec-2009			54,800	$3,746	$0.068
23-Nov-2009			56,720	$3,976	$0.070
23-Oct-2009			58,000	$4,243	$0.073
23-Sep-2009			74,400	$5,530	$0.074
TOTAL			768,720	$55,339	

Average Electricity Rate: $0.072

Natural Gas

Billing Month	Account Number	Therm	Total Amount	$/therm
24-Aug-2010		606	$458	$0.76
26-Jul-2010		489	$397	$0.81
24-Jun-2010		751	$508	$0.68
25-May-2010		1,311	$918	$0.70
26-Apr-2010		1,684	$1,293	$0.77
25-Mar-2010		2,143	$1,771	$0.83
23-Feb-2010		3,402	$2,701	$0.79
25-Jan-2010		4,070	$3,163	$0.78
23-Dec-2009		3,416	$2,450	$0.72
23-Nov-2009		1,711	$1,215	$0.71
23-Oct-2009		1,456	$811	$0.56
23-Sep-2009		937	$489	$0.52
TOTAL		21,977	$16,175	

Average Gas Rate: $0.74

1. Lighting - Custom Fluorescent Recommendation

Retrofit all 4' fluorescent light fixtures with low ballast factor (<=0.78) ballasts and 25 watt 5000K lamps. This will reduce the energy use of all these light fixtures by 40% and improve the visible light levels. Examine all fixture lenses to see if they need replacement as well to improve the efficiency of each light fixture.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
End Use	Lighting	Electric Energy Savings (kWh/yr)	40,000
Type	Fluorescent	Gas Energy Savings (therm/yr)	
Recommendation:		Electric Cost Savings ($/yr)	$2,880
Custom Fluorescent Recommendation		Gas Cost Savings ($/yr)	
% ECM Opportunity	100	Total Cost Savings ($/yr)	$2,880
% savings electric	30.00000	Payback (yrs)	
% savings gas	0.00000	Electric GHG Savings (tons/yr)	34
Priority	High	Gas GHG Savings (tons/yr)	
Priority Rationale:			
	Acceptable Payback Period		
Grants Available?	Yes		

2. Domestic Hot Water - Custom DHW Recommendation

The existing water heaters (3) heat the water to 160 degrees. These are high efficiency water heaters that are most efficient when producing 120 degree water. The higher the water temperature they produce the less efficient they operate. These water heaters supply a large storage tank and from there the water goes through a mixing valve to reduce the water temperature to 105 degrees for showers and sinks. It is unclear what the 160 degree water is needed for. It may be used in the kitchen. It would be best to use one of the water heaters for the 160 degree needs and separate the other two for use at 120 degrees. The mixing valve could probably be eliminated unless 105 degrees is the desired water temperature for those areas. It is best not to reduce water heater output below 120 degrees due to Legionella concerns. Verify how much hot water is needed at each area throughout the facility before deciding how to accomplish this project.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
Mechanical room		Mechanical room	
End Use	Domestic Hot Water	Electric Energy Savings (kWh/yr)	
Type		Gas Energy Savings (therm/yr)	1,100
Recommendation:		Electric Cost Savings ($/yr)	
Custom DHW Recommendation		Gas Cost Savings ($/yr)	$810
% ECM Opportunity	100	Total Cost Savings ($/yr)	$810
% savings electric	0.00000	Payback (yrs)	
% savings gas	25.00000	Electric GHG Savings (tons/yr)	
Priority	High	Gas GHG Savings (tons/yr)	6
Priority Rationale:			
	Acceptable Payback Period		
Grants Available?	Yes		

3. Domestic Hot Water - Booster Water Heater Fuel Conversion

Replace the electric booster heater on the dish washer with a natural gas unit. Electric booster heaters are more expensive to operate than natural gas-powered units. They produce less heat for each energy dollar spent as well as contribute to the electric demand charges assessed each month. When possible, convert these water heaters to high efficiency natural gas units.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
Kitchen		Kitchen	
End Use	Domestic Hot Water	Electric Energy Savings (kWh/yr)	
Type		Gas Energy Savings (therm/yr)	
Recommendation:		Electric Cost Savings ($/yr)	
Booster Water Heater Fuel Conversion		Gas Cost Savings ($/yr)	
% ECM Opportunity	100	Total Cost Savings ($/yr)	
% savings electric	10.00000	Payback (yrs)	
% savings gas	0.00000	Electric GHG Savings (tons/yr)	
Priority	High	Gas GHG Savings (tons/yr)	
Priority Rationale:			
	Acceptable Payback Period		
Grants Available?	Yes		

4. Plug Loads/Office Equipment - Vending Machine - Disconnect Lamps and Ballasts

Disconnect the lamps and ballasts in the soda machine. Vending machines are costly to operate because they require refrigeration as well as lighting. In fact, machines with lighted displays typically operate 24 hours a day, 365 days a year. The lighting alone can cost about $40.00 per year per machine. One way to reduce lighting costs is to disconnect the lights and ballasts in the display and put a note on the machine that says it is still operational. Another option is to install a device called a vending miser. The vending miser uses an occupancy sensor to determine if the area around the soda machine is in use. If there is no activity in the vicinity of the machine, the machine is powered down periodically.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
End Use	Plug Loads/Office Equipment	Electric Energy Savings (kWh/yr)	920
Type		Gas Energy Savings (therm/yr)	
Recommendation:		Electric Cost Savings ($/yr)	$66
Vending Machine - Install Vending Miser or Disconnect Lamps and Ballasts		Gas Cost Savings ($/yr)	
% ECM Opportunity	100	Total Cost Savings ($/yr)	$66
% savings electric	2.00000	Payback (yrs)	1-2
% savings gas	0.00000	Electric GHG Savings (tons/yr)	1
Priority	High	Gas GHG Savings (tons/yr)	
Priority Rationale:			
	Efficiency Upgrade		
Grants Available?	Yes		

5. HVAC - Economizer Controls/Free Cooling

Install an automatic air-conditioning economizer. During my audit the outside air temperature was 55 degrees and it was dry outside. One of the compressors on the Trane two stage water cooled chiller was running. An air conditioning economizer can take advantage of cool outside air (such as during evening hours or cool days) and use this "free" air for cooling. During the air-conditioning season, the heat generated by internal loads such as people, lighting, and electronic equipment will build up in a building. It can be warmer inside than outdoors. Instead of relying on mechanical cooling, an economizer will allow the cooler outside air to enter the building through the outside air intakes and be distributed through the ductwork. The outside air is then tempered with the inside air to allow the temperature to reach the desired level.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
Mechanical room		Mechanical room	
End Use	HVAC	Electric Energy Savings (kWh/yr)	49,000
Type	Controls	Gas Energy Savings (therm/yr)	
Recommendation:		Electric Cost Savings ($/yr)	$3,528
Economizer Controls/Free Cooling		Gas Cost Savings ($/yr)	
% ECM Opportunity	100	Total Cost Savings ($/yr)	$3,528
% savings electric	10.00000	Payback (yrs)	1-5
% savings gas	0.00000	Electric GHG Savings (tons/yr)	41
Priority	High	Gas GHG Savings (tons/yr)	
Priority Rationale:			
	Efficiency Upgrade		
Grants Available?	Yes		

6. Lighting - LED Exit Lighting

Retrofit existing exit lighting with LED units. Exit signs that contain conventional light bulbs should be retrofitted with LED ("light emitting diode") bulbs. LEDs will last approximately 30 years and use a fraction of the energy (1 or 2 watts) of conventional exit signs. Exit signs must remain illuminated 24 hours a day, 365 days a year, so this step will result in substantial long-term energy savings. Maintenance costs will also be reduced because bulb changes will dramatically reduced. A typical LED exit light retrofit will pay for itself within 4 years.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
End Use	Lighting	Electric Energy Savings (kWh/yr)	1,800
Type	Exit	Gas Energy Savings (therm/yr)	
Recommendation:		Electric Cost Savings ($/yr)	$130
LED Exit Lighting		Gas Cost Savings ($/yr)	
% ECM Opportunity	100	Total Cost Savings ($/yr)	$130
% savings electric	95.00000	Payback (yrs)	1-5
% savings gas	0.00000	Electric GHG Savings (tons/yr)	2
Priority	High	Gas GHG Savings (tons/yr)	
Priority Rationale:			
	Low Cost/No Cost		
Grants Available?	No		

7. Lighting - Occupancy Sensor for Lighting

Install occupancy sensors to control the lighting in the basement storage area, locker rooms, evidence room and jail locker rooms. Occupancy sensors reduce lighting energy consumption by about 10% or more where installed. Occupancy sensors can sense occupants' motion or thermal energy and turns lights on or off appropriately. Occupancy sensors must be selected, installed and calibrated properly to assure desired operation. An essential part of a successful installation of occupancy sensors is the final commissioning. Verify that sensors are properly positioned in the room and adjustable features such as sensitivity and time delays have been optimized to the room and occupant needs. Make sure that the maintenance staff and room occupants understand how the controls work and save energy, so that they do not override or bypass the settings.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
End Use	Lighting	Electric Energy Savings (kWh/yr)	20,000
Type	Fluorescent	Gas Energy Savings (therm/yr)	
Recommendation:		Electric Cost Savings ($/yr)	$1,440
Occupancy Sensor for Lighting		Gas Cost Savings ($/yr)	
% ECM Opportunity	100	Total Cost Savings ($/yr)	$1,440
% savings electric	15.00000	Payback (yrs)	3-5
% savings gas	0.00000	Electric GHG Savings (tons/yr)	17
Priority	High	Gas GHG Savings (tons/yr)	
Priority Rationale:			
	Acceptable Payback Period		
Grants Available?	Yes		

8. Lighting - T-8 or T-5 - Replaces HID

Replace the HID lamps and fixtures in the lobby with fluorescent T-8 technology. Replacement fluorescent lamps should be coupled with an enhanced specular aluminum fixture. Fluorescent fixtures are instant-on and eliminate lost work time due to momentary power interruptions. In addition, they lend themselves to better control including occupancy sensors, and dimming where appropriate. Further, T8 lamps have very low lumen-depreciation compared to HID lamps. Fluorescent lighting provides better light quality with CRI (color rendering index) ratings between 73-85, while Metal Halide only rate from 65 to 70.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
End Use	Lighting	Electric Energy Savings (kWh/yr)	11,000
Type	HID	Gas Energy Savings (therm/yr)	
Recommendation:		Electric Cost Savings ($/yr)	$792
T-8 or T-5 - Replaces HID		Gas Cost Savings ($/yr)	
% ECM Opportunity	100	Total Cost Savings ($/yr)	$792
% savings electric	50.00000	Payback (yrs)	3-8
% savings gas	0.00000	Electric GHG Savings (tons/yr)	9
Priority	High	Gas GHG Savings (tons/yr)	
Priority Rationale:			
	Efficiency Upgrade		
Grants Available?	Yes		

9. Food Service – Replace the evaporator motors on the walk-in cooler and freezer with ECM type motors

ECM motors are far more efficient than split capacitor or shaded pole motors which were typically used on older walk-in coolers and freezers. Replace the existing evaporator motors with ECM type.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
Walk-in cooler and freezer ECM motors retrofit		Walk-in cooler and freezer ECM motors retrofit	
End Use	Food Service	Electric Energy Savings (kWh/yr)	850
Type		Gas Energy Savings (therm/yr)	
Recommendation:		Electric Cost Savings ($/yr)	$61
Refrigeration System Maintenance		Gas Cost Savings ($/yr)	
% ECM Opportunity	100	Total Cost Savings ($/yr)	$61
% savings electric	5.50000	Payback (yrs)	3-10
% savings gas	0.00000	Electric GHG Savings (tons/yr)	1
Priority	High	Gas GHG Savings (tons/yr)	
Priority Rationale:			
	Efficiency Upgrade		
Grants Available?	Yes		

10. Food Service - Steamer, Gas ENERGY STAR

Replace your existing electric steamer with a high efficiency natural gas unit to reduce your eletcircal consumption and decrease kitchen temperatures without affecting food preparation. Look for a commercial gas-fueled 6 pan pressureless steamer with a heavy load cooking energy efficiency greater than or equal to 38% using ASTM F1484 test method.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
Kitchen		Kitchen	
End Use	Food Service	Electric Energy Savings (kWh/yr)	1,500
Type		Gas Energy Savings (therm/yr)	22
Recommendation:		Electric Cost Savings ($/yr)	$108
Steamer, Gas ENERGY STAR		Gas Cost Savings ($/yr)	$16
% ECM Opportunity	100	Total Cost Savings ($/yr)	$124
% savings electric	10.00000	Payback (yrs)	5-10
% savings gas	2.00000	Electric GHG Savings (tons/yr)	1
Priority	High	Gas GHG Savings (tons/yr)	
Priority Rationale:			
	Acceptable Payback Period		
Grants Available?	Yes		

11. Food Service - Hot Food Holding Cabinet - ENERGY STAR

Replace your existing hot food steam table with an ENERGY STAR rated unit to reduce electrical consumption and kitchen temperatures while improving food heating.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
Kitchen		Kitchen	
End Use	Food Service	Electric Energy Savings (kWh/yr)	1,200
Type		Gas Energy Savings (therm/yr)	22
Recommendation:		Electric Cost Savings ($/yr)	$86
Hot Food Holding Cabinet - ENERGY STAR		Gas Cost Savings ($/yr)	$16
% ECM Opportunity	100	Total Cost Savings ($/yr)	$103
% savings electric	8.00000	Payback (yrs)	5-10
% savings gas	2.00000	Electric GHG Savings (tons/yr)	1
Priority	High	Gas GHG Savings (tons/yr)	
Priority Rationale:			
	Acceptable Payback Period		
Grants Available?	Yes		

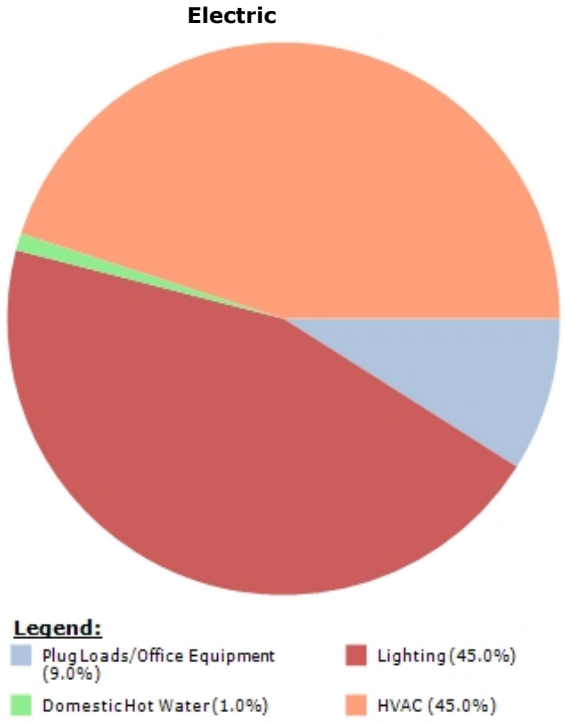
12. HVAC - Boiler Replacement- High Performance

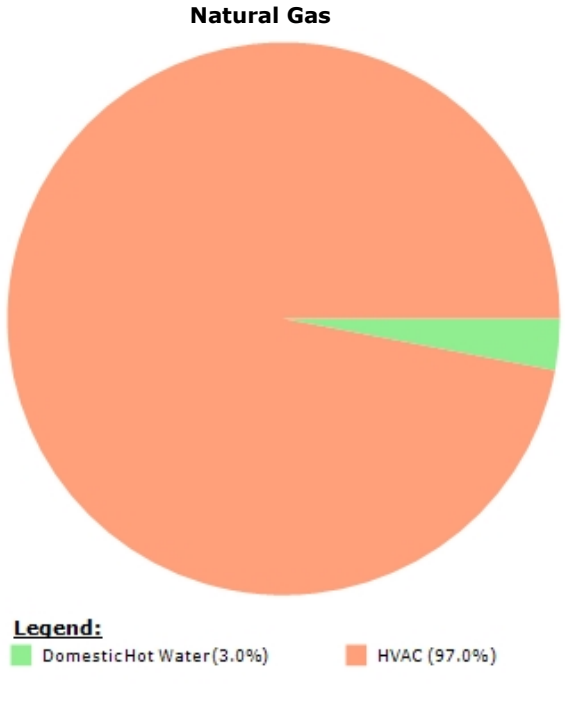
Replace one of the boilers with a high-efficiency condensing boiler. Condensing boilers operate with lower flue-gas temperatures, lower flue-gas emissions and reduced fuel consumption by recovering heat that would otherwise be lost up the flue. High-efficiency boilers operate at efficiencies of 90% and greater, or about 10% to 15% better than traditional boilers. High-efficiency boilers are called condensing boilers because during the process of recovering heat from the burned fuel, the temperature of the flue gas is reduced to a point where the water vapor that is produced during combustion is condensed out.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
Boiler room		Boiler room	
End Use	HVAC	Electric Energy Savings (kWh/yr)	
Type	Boilers, Burners, and Furnaces	Gas Energy Savings (therm/yr)	2,500
Recommendation:		Electric Cost Savings ($/yr)	
Boiler Replacement- High Performance		Gas Cost Savings ($/yr)	$1,840
% ECM Opportunity	100	Total Cost Savings ($/yr)	$1,840
% savings electric	0.00000	Payback (yrs)	5-10
% savings gas	15.00000	Electric GHG Savings (tons/yr)	
Priority	Low	Gas GHG Savings (tons/yr)	15
Priority Rationale:			
	Efficiency Upgrade		
Grants Available?	Yes		

Ruth Gilfry Building

Typical End Use Profile





Typical Facility Annual Energy Usage

	Electric %	Natural Gas %	Electric kWh	Natural Gas Therms	Electric Cost	Natural Gas Cost
Plug Loads/Office Equipment	9.0%	0.0%	63,212	0	$4,931	$0
Lighting	45.0%	0.0%	316,062	0	$24,653	$0
Office Equipment	0.0%	0.0%	0	0	$0	$0
Domestic Hot Water	1.0%	3.0%	7,024	678	$548	$568
HVAC	45.0%	97.0%	316,062	21,936	$24,653	$18,360
Total	100.0%	100.0%	702,360	22,614	$54,784	$18,928

Your facility uses 31.92 kWh/sq. ft./yr and 1.03 therms/sq. ft./yr and 211.73 kBtu/sq. ft./yr

Energy Conservation Opportunities
Estimated Savings Summary

Opportunity Description	Electric Energy (kWh/yr)	Fuel Energy (therms/yr)	Payback (yrs)	Cost savings	Priority
1.0 Lighting - Reconfigure Lighting Layout for Efficiency and Improvement	120,000			$9,360	High
2.0 Plug Loads/Office Equipment - Vending Machine - Install Vending Miser or Disconnect Lamps and Ballasts	950		1-2	$74	High
3.0 Domestic Hot Water - Electric Hot Water Heater Replaced with High Efficient Natural Gas Hot Water Heater	7,000		3-5	$546	High
4.0 Plug Loads/Office Equipment - Replace Refrigerator with High Efficiency Energy Star Refrigerator	6,300		5-10	$491	High
TOTALS	**134,250**			**$10,472**	

The summary list above includes a number of recommended energy conservation measures for your facility. This list may include overlapping conservation measures. For example, replacement of a boiler with a high efficiency boiler would negate the savings of replacing the burner in the current boiler.

The summary list indicates that if all measures are implemented the total kWh savings is 134,250 which equals 19% of the current annual kWh usage of 702,360 kWh, and 0 therms which equals 0% of the current annual therm usage of 22,614 therms.

Be aware that the total savings and percentage of savings is an estimate based on average savings for specific measures which may require adjustments based on possible overlapping conservation measures.

UTILITY BILLING HISTORY

Electricity

Billing Month	Account Number	kW	kWh	Total Amount	$/kWh
23-Sep-2009			62,800	$5,296	$0.084
24-Aug-2009			65,400	$5,452	$0.083
24-Jul-2009			64,600	$5,484	$0.085
23-Jun-2009			63,800	$5,127	$0.080
22-May-2009			63,400	$4,820	$0.076
23-Apr-2009			57,800	$4,389	$0.076
24-Mar-2009			51,800	$3,886	$0.075
23-Feb-2009			58,800	$4,417	$0.075
28-Jan-2009			58,000	$4,131	$0.071
30-Dec-2008			53,480	$3,919	$0.073
26-Nov-2008			51,120	$4,037	$0.079
28-Oct-2008			51,360	$4,125	$0.080
TOTAL			702,360	$55,083	

Average Electricity Rate: $0.078

Natural Gas

Billing Month	Account Number	Therm	Total Amount	$/therm
23-Sep-2009		0	$21	$0.00
24-Aug-2009		0	$21	$0.00
24-Jul-2009		0	$21	$0.00
23-Jun-2009		149	$109	$0.73
22-May-2009		4,486	$2,386	$0.53
23-Apr-2009		1,880	$1,330	$0.71
24-Mar-2009		2,023	$1,752	$0.87
23-Feb-2009		5,314	$4,914	$0.92
28-Jan-2009		5,364	$5,283	$0.98
30-Dec-2008		2,407	$2,221	$0.92
26-Nov-2008		991	$842	$0.85
28-Oct-2008		0	$30	$0.00
TOTAL		22,614	$18,931	

Average Gas Rate: $0.84

1. Lighting - Whole Building Lighting Retrofit

There may be too much light in one area but not enough light in another as a result of installing new lighting equipment and repurposing spaces. Relocate fixtures from overlit areas to underlit areas instead of adding new light fixtures to correct underlit conditions. This will improve lighting system effectiveness and save the energy that would have been used by the new fixture. Hire a professional lighting designer to work with Focus on Energy in the Whole Building Lighting Program to maximize the lighting efficiency of the building.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
Utilize the Whole Building Lighting Program to rework the laighting laayout for the entire buidling.		Utilize the Whole Building Lighting Program to rework the laighting laayout for the entire buidling.	
End Use	Lighting	Electric Energy Savings (kWh/yr)	120,000
Type	Fluorescent	Gas Energy Savings (therm/yr)	
Recommendation:		Electric Cost Savings ($/yr)	$9,360
Reconfigure Lighting Layout for Efficiency and Improvement		Gas Cost Savings ($/yr)	
% ECM Opportunity	100	Total Cost Savings ($/yr)	$9,360
% savings electric	50.00000	Payback (yrs)	
% savings gas	0.00000	Electric GHG Savings (tons/yr)	101
Priority	High	Gas GHG Savings (tons/yr)	
Priority Rationale:			
	Acceptable Payback Period		
Grants Available?	Yes		

2. Plug Loads/Office Equipment - Vending Machine - Install Vending Miser or Disconnect Lamps and Ballasts

Disconnect the lamps and ballasts in the soda machine or install a vending miser. Vending machines are costly to operate because they require refrigeration as well as lighting. In fact, machines with lighted displays typically operate 24 hours a day, 365 days a year. The lighting alone can cost about $40.00 per year per machine. One way to reduce lighting costs is to disconnect the lights and ballasts in the display and put a note on the machine that says it is still operational. Another option is to install a device called a vending miser. The vending miser uses an occupancy sensor to determine if the area around the soda machine is in use. If there is no activity in the vicinity of the machine, the machine is powered down periodically.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
End Use	Plug Loads/Office Equipment	Electric Energy Savings (kWh/yr)	950
Type		Gas Energy Savings (therm/yr)	
Recommendation:		Electric Cost Savings ($/yr)	$74
Vending Machine - Install Vending Miser or Disconnect Lamps and Ballasts		Gas Cost Savings ($/yr)	
% ECM Opportunity	15	Total Cost Savings ($/yr)	$74
% savings electric	10.00000	Payback (yrs)	1-2
% savings gas	0.00000	Electric GHG Savings (tons/yr)	1
Priority	High	Gas GHG Savings (tons/yr)	
Priority Rationale:			
	Acceptable Payback Period		
Grants Available?	Yes		

3. Domestic Hot Water - Electric Hot Water Heater Replaced with High Efficient Natural Gas Hot Water Heater

Install a high efficiency natural gas hot water heating system. Many existing hot water heating systems are standard efficiency (as opposed to high efficiency) units. In recent years, technology advancements have led to the creation of high efficiency units. Sealed combustion hot water systems now offer efficiencies of up to 96%. These units also offer high output and quick recovery. While you will see electric savings you will also see an increase in natural gas usage. This opportunity description does not show the natural gas increase but this should be considered when reviewing this as a possible conservation measure.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
End Use	Domestic Hot Water	Electric Energy Savings (kWh/yr)	7,000
Type		Gas Energy Savings (therm/yr)	
Recommendation:		Electric Cost Savings ($/yr)	$546
Electric Hot Water Heater Replaced with High Efficient Natural Gas Hot Water Heater		Gas Cost Savings ($/yr)	
% ECM Opportunity	100	Total Cost Savings ($/yr)	$546
% savings electric	100.00000	Payback (yrs)	3-5
% savings gas	0.00000	Electric GHG Savings (tons/yr)	6
Priority	High	Gas GHG Savings (tons/yr)	
Priority Rationale:			
	Acceptable Payback Period		
Grants Available?	Yes		

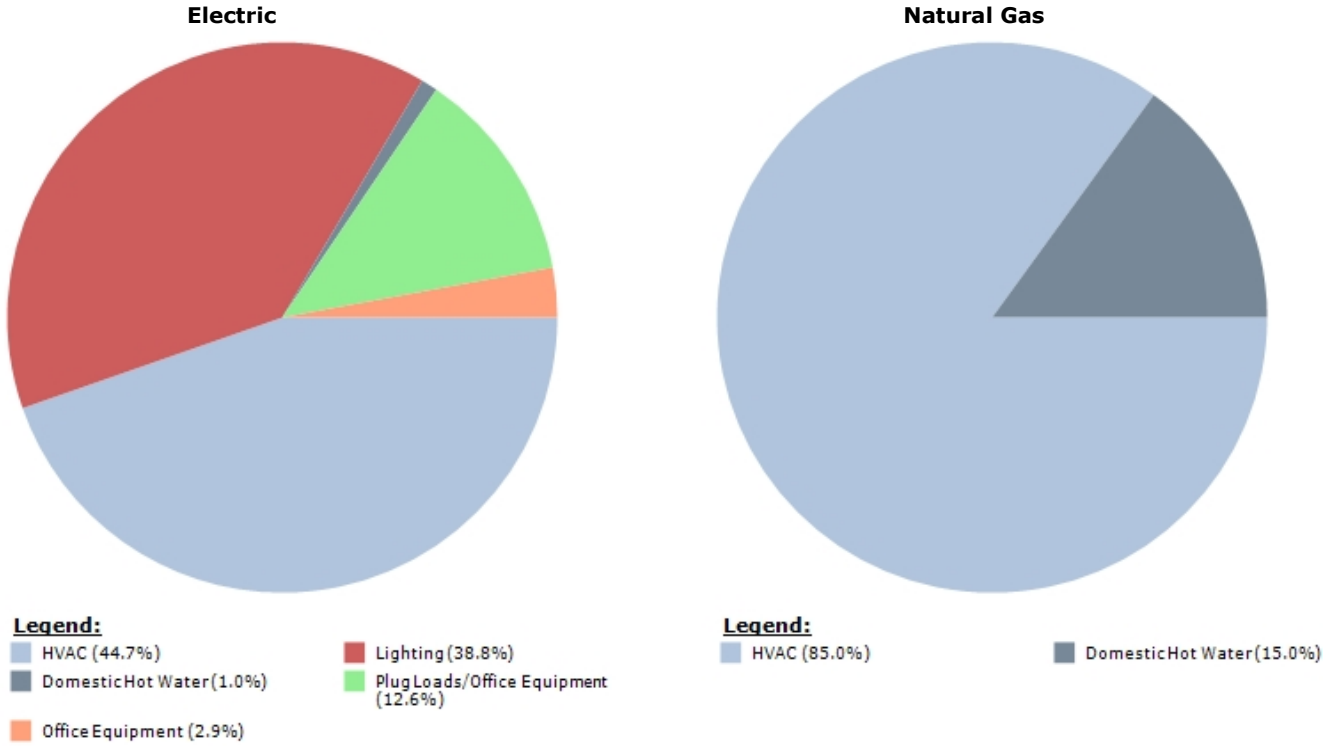
4. Plug Loads/Office Equipment - Replace walk-in Refrigerator with High Efficiency Energy Star Refrigerator

Remove or disconnect the walk-in cooler and install a high efficiency Energy Star refrigerator. ENERGY STAR qualified refrigerators are 20% more energy efficient than the minimum federal standard.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
Remove the walk-in cooler and install an ENERGY STAR stnad alone refrigerator. This unit was almost empty.		Remove the walk-in cooler and install an ENERGY STAR stnad alone refrigerator. This unit was almost empty.	
End Use	Plug Loads/Office Equipment	Electric Energy Savings (kWh/yr)	6,300
Type		Gas Energy Savings (therm/yr)	
Recommendation:		Electric Cost Savings ($/yr)	$491
Replace Refrigerator with High Efficiency Energy Star Refrigerator		Gas Cost Savings ($/yr)	
% ECM Opportunity	100	Total Cost Savings ($/yr)	$491
% savings electric	10.00000	Payback (yrs)	5-10
% savings gas	0.00000	Electric GHG Savings (tons/yr)	5
Priority	High	Gas GHG Savings (tons/yr)	
Priority Rationale:			
	Efficiency Upgrade		
Grants Available?	Yes		

Jefferson House

Typical End Use Profile



Typical Facility Annual Energy Usage

	Electric %	Natural Gas %	Electric kWh	Natural Gas Therms	Electric Cost	Natural Gas Cost
HVAC	46.0%	85.0%	10,566	1,235	$1,162	$1,044
Lighting	40.0%	0.0%	9,188	0	$1,011	$0
Domestic Hot Water	1.0%	15.0%	230	218	$25	$184
Plug Loads/Office Equipment	13.0%	0.0%	2,986	0	$328	$0
Office Equipment	3.0%	0.0%	689	0	$76	$0
Total	100.0%	100.0%	22,969	1,453	$2,527	$1,228

Your facility uses 12.76 kWh/sq. ft./yr and 0.81 therms/sq. ft./yr and 124.27 kBtu/sq. ft./yr

Energy Conservation Opportunities
Estimated Savings Summary

Opportunity Description	Electric Energy (kWh/yr)	Fuel Energy (therms/yr)	Payback (yrs)	Cost savings	Priority
1.0 Lighting - Compact Fluorescent Lamps Replacement	2,200		1-2	$242	
2.0 Lighting - LED Exit Lighting	87		1-5	$10	High
3.0 HVAC - Insulation - Attic	1,100	250	10-20	$332	High
4.0 HVAC - Window Replacement - High Efficiency Units		62	10-30	$52	Medium
TOTALS	**3,387**	**312**		**$636**	

The summary list above includes a number of recommended energy conservation measures for your facility. This list may include overlapping conservation measures. For example, replacement of a boiler with a high efficiency boiler would negate the savings of replacing the burner in the current boiler.

The summary list indicates that if all measures are implemented the total kWh savings is 3,387 which equals 15% of the current annual kWh usage of 22,969 kWh, and 312 therms which equals 21% of the current annual therm usage of 1,453 therms.

Be aware that the total savings and percentage of savings is an estimate based on average savings for specific measures which may require adjustments based on possible overlapping conservation measures.

UTILITY BILLING HISTORY

Electricity

Billing Month	Account Number	kW	kWh	Total Amount	$/kWh
16-Dec-2009			1,942	$235	$0.121
16-Nov-2009			1,699	$205	$0.121
16-Oct-2009			1,877	$226	$0.120
16-Sep-2009			1,894	$228	$0.120
17-Aug-2009			2,230	$268	$0.120
17-Jul-2009			2,494	$299	$0.120
16-Jun-2009			1,810	$218	$0.121
15-May-2009			1,639	$198	$0.121
16-Apr-2009			1,809	$218	$0.120
17-Mar-2009			1,782	$215	$0.120
16-Feb-2009			1,804	$218	$0.121
16-Jan-2009			1,989	$237	$0.119
TOTAL			22,969	$2,763	

Average Electricity Rate: $0.120

Natural Gas

Billing Month	Account Number	Therm	Total Amount	$/therm
16-Dec-2009		212	$195	$0.92
16-Nov-2009		105	$92	$0.87
16-Oct-2009		66	$50	$0.76
16-Sep-2009		33	$28	$0.84
17-Aug-2009		36	$31	$0.86
17-Jul-2009		35	$32	$0.92
16-Jun-2009		53	$43	$0.81
15-May-2009		60	$49	$0.81
16-Apr-2009		147	$135	$0.92
17-Mar-2009		201	$207	$1.03
16-Feb-2009		248	$274	$1.10
16-Jan-2009		257	$288	$1.12
TOTAL		1,453	$1,423	

Average Gas Rate: $0.98

1. Lighting - Compact Fluorescent Lamps Replacement

Replace incandescent lamps with self ballasted screw in CFL (Compact Fluorescent Lamps): Self ballasted compact fluorescent lamps use up to 75% less electric energy than incandescent lamps with comparable light output ratings. A variety of models, sizes, shapes, wattages and capabilities are available for direct replacement of incandescent lamps. Compact fluorescent lamps last up to 10 times longer than a standard life incandescent lamp. Other CFL options include multi-level and dimmable models and some cold cathode (instant on) models. CFLs generally require some time to reach full light output levels, contain small amounts of mercury and require responsible disposal. CFLs also generate up to 75% less heat than the equivalent light output incandescent lamp.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
End Use	Lighting	Electric Energy Savings (kWh/yr)	2,200
Type	Incandescent	Gas Energy Savings (therm/yr)	
Recommendation:		Electric Cost Savings ($/yr)	$242
Compact Fluorescent Lamps Replacement		Gas Cost Savings ($/yr)	
% ECM Opportunity	100	Total Cost Savings ($/yr)	$242
% savings electric	60.00000	Payback (yrs)	1-2
% savings gas	0.00000	Electric GHG Savings (tons/yr)	2
Priority		Gas GHG Savings (tons/yr)	
Priority Rationale:			
	Low Cost/No Cost		
Grants Available?	Yes		

2. Lighting - LED Exit Lighting

Retrofit existing exit lighting with LED units. Exit signs that contain conventional light bulbs should be retrofitted with LED ("light emitting diode") bulbs. LEDs will last approximately 30 years and use a fraction of the energy (1 or 2 watts) of conventional exit signs. Exit signs must remain illuminated 24 hours a day, 365 days a year, so this step will result in substantial long-term energy savings. Maintenance costs will also be reduced because bulb changes will dramatically reduced. A typical LED exit light retrofit will pay for itself within 4 years.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
End Use	Lighting	Electric Energy Savings (kWh/yr)	87
Type	Exit	Gas Energy Savings (therm/yr)	
Recommendation:		Electric Cost Savings ($/yr)	$10
LED Exit Lighting		Gas Cost Savings ($/yr)	
% ECM Opportunity	100	Total Cost Savings ($/yr)	$10
% savings electric	95.00000	Payback (yrs)	1-5
% savings gas	0.00000	Electric GHG Savings (tons/yr)	
Priority	High	Gas GHG Savings (tons/yr)	
Priority Rationale:			
	Low Cost/No Cost		
Grants Available?	No		

3. HVAC - Insulation - Attic

Insulate building attics with additional insulation. Attics often lack proper insulation levels and it is easy to add more. Adding insulation is an inexpensive way to increase a building's energy efficiency and save energy dollars. Depending on the building type, local codes, and location, insulation contractors can add rolls or batts of insulation or they can use machines to blow-in loose insulation.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
End Use	HVAC	Electric Energy Savings (kWh/yr)	1,100
Type	Building Shell	Gas Energy Savings (therm/yr)	250
Recommendation:		Electric Cost Savings ($/yr)	$121
Insulation - Attic		Gas Cost Savings ($/yr)	$211
% ECM Opportunity	100	Total Cost Savings ($/yr)	$332
% savings electric	10.00000	Payback (yrs)	10-20
% savings gas	20.00000	Electric GHG Savings (tons/yr)	1
Priority	High	Gas GHG Savings (tons/yr)	1
Priority Rationale:			
	Acceptable Payback Period		
Grants Available?	Yes		

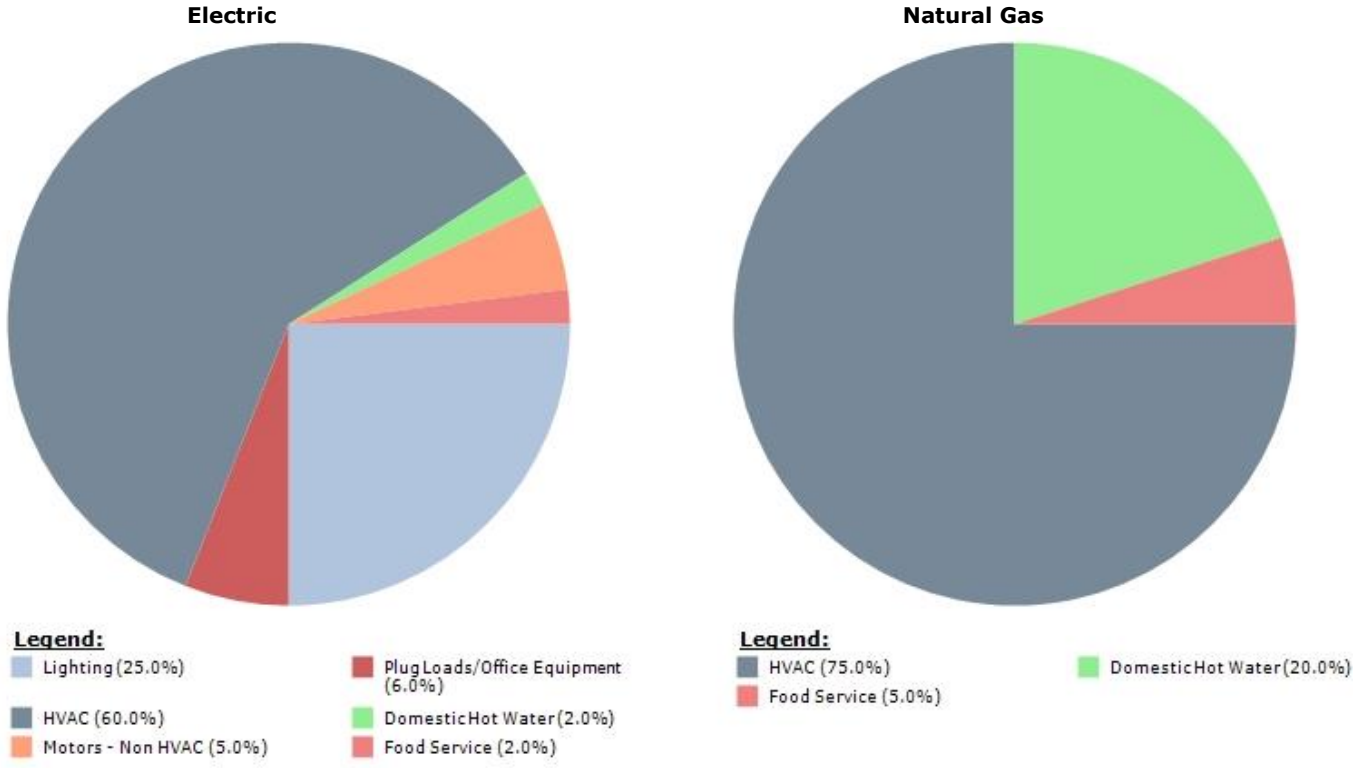
4. HVAC – Install storm windows

There are currently no storm windows. Purchase storm windows to give an extra layer of glass in the winter to minimize heat loss.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
End Use	HVAC	Electric Energy Savings (kWh/yr)	
Type	Building Shell	Gas Energy Savings (therm/yr)	62
Recommendation:		Electric Cost Savings ($/yr)	
Window Replacement - High Efficiency Units		Gas Cost Savings ($/yr)	$52
% ECM Opportunity	100	Total Cost Savings ($/yr)	$52
% savings electric	0.00000	Payback (yrs)	10-30
% savings gas	5.0000	Electric GHG Savings (tons/yr)	
Priority	Medium	Gas GHG Savings (tons/yr)	
Priority Rationale:			
	Efficiency Upgrade		
Grants Available?	No		

Health Care Center

Typical End Use Profile



Typical Facility Annual Energy Usage

	Electric %	Natural Gas %	Electric kWh	Natural Gas Therms	Electric Cost	Natural Gas Cost
Lighting	25.0%	0.0%	211,140	0	$15,836	$0
Plug Loads/Office Equipment	6.0%	0.0%	50,674	0	$3,801	$0
HVAC	60.0%	75.0%	506,736	51,959	$38,005	$35,332
Domestic Hot Water	2.0%	20.0%	16,891	13,856	$1,267	$9,422
Motors - Non HVAC	5.0%	0.0%	42,228	0	$3,167	$0
Food Service	2.0%	5.0%	16,891	3,464	$1,267	$2,355
Office Equipment	0.0%	0.0%	0	0	$0	$0
Total	100.0%	100.0%	844,560	69,278	$63,342	$47,109

Your facility uses 10.29 kWh/sq. ft./yr and 0.84 therms/sq. ft./yr and 119.52 kBtu/sq. ft./yr

Energy Conservation Opportunities
Estimated Savings Summary

Opportunity Description	Electric Energy (kWh/yr)	Fuel Energy (therms/yr)	Payback (yrs)	Cost savings	Priority
1.0 Lighting - Reconfigure Lighting Layout for Efficiency and Improvement	23,000			$1,725	High
2.0 Food Service - Refrigeration Sealing Maintenance Service	2,000			$150	High
3.0 Domestic Hot Water - Booster Water Heater Fuel Conversion	1,700			$128	High
4.0 Domestic Hot Water - Water Temperature Reduction on Water Heater		420	1-2	$286	High
5.0 Plug Loads/Office Equipment - Vending Machine - Install Vending Miser or Disconnect Lamps and Ballasts	1,000		1-2	$75	High
6.0 Domestic Hot Water - Low Flow Faucet Aerators Installation		2,800	1-5	$1,904	High
7.0 Food Service - Kitchen Exhaust Hood Demand Control Ventilation		1,600	1-5	$1,088	High
8.0 Lighting - Low Wattage Fluorescent Replacement of T-8 Lamps	46,000		3-5	$3,450	High
9.0 Food Service - Refrigeration System Maintenance	1,400		3-10	$105	High
10.0 HVAC - Burner Replacement-High Efficiency		1,600	5-7	$1,088	High
11.0 Food Service - Oven, Convection, Gas, High Efficiency		69	5-10	$47	Medium
12.0 Food Service - Steamer, Gas ENERGY STAR		69	5-10	$47	Medium
13.0 HVAC - Boiler - Steam to Hot Water Conversion		16,000	10-15	$10,880	Medium
TOTALS	**75,100**	**22,558**		**$20,972**	

The summary list above includes a number of recommended energy conservation measures for your facility. This list may include overlapping conservation measures. For example, replacement of a boiler with a high efficiency boiler would negate the savings of replacing the burner in the current boiler.

The summary list indicates that if all measures are implemented the total kWh savings is 75,100 which equals 9% of the current annual kWh usage of 844,560 kWh, and 22,558 therms which equals 33% of the current annual therm usage of 69,278 therms.

Be aware that the total savings and percentage of savings is an estimate based on average savings for specific measures which may require adjustments based on possible overlapping conservation measures.

UTILITY BILLING HISTORY

Electricity

Billing Month	Account Number	kW	kWh	Total Amount	$/kWh
28-Sep-2010			86,520	$7,172	$0.083
27-Aug-2010			86,160	$6,903	$0.080
29-Jul-2010			84,480	$6,717	$0.080
29-Jun-2010			70,200	$5,326	$0.076
28-May-2010			64,920	$3,813	$0.059
29-Apr-2010			63,000	$4,532	$0.072
26-Feb-2010			56,760	$4,281	$0.075
28-Jan-2010			57,360	$4,274	$0.075
30-Dec-2009			61,440	$4,454	$0.073
30-Nov-2009			71,880	$5,118	$0.071
28-Oct-2009			65,520	$4,849	$0.074
28-Sep-2009			76,320	$6,245	$0.082
TOTAL			844,560	$63,686	

Average Electricity Rate: $0.075

Natural Gas

Billing Month	Account Number	Therm	Total Amount	$/therm
28-Sep-2010		4,294	$2,391	$0.56
27-Aug-2010		1,623	$1,071	$0.66
29-Jul-2010		1,642	$1,116	$0.68
29-Jun-2010		1,909	$1,136	$0.59
28-May-2010		4,695	$3,021	$0.64
29-Apr-2010		6,689	$4,731	$0.71
26-Feb-2010		10,447	$8,091	$0.77
28-Jan-2010		10,405	$8,112	$0.78
30-Dec-2009		10,039	$6,966	$0.69
30-Nov-2009		8,095	$5,644	$0.70
28-Oct-2009		7,337	$3,852	$0.53
28-Sep-2009		2,103	$973	$0.46
TOTAL		69,278	$47,104	

Average Gas Rate: $0.68

1. Lighting - Reconfigure Lighting Layout for Efficiency and Improvement

There may be too much light in one area but not enough light in another as a result of installing new lighting equipment and repurposing spaces. Relocate fixtures from overlit areas to underlit areas instead of adding new light fixtures to correct underlit conditions. This will improve lighting system effectiveness and save the energy that would have been used by the new fixture. Hire a lighting design professional to develop an optimal lighting design that combines high efficiency with longevity.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
Most areas other than wing hallways and guest rooms.		Most areas other than wing hallways and guest rooms.	
End Use	Lighting	Electric Energy Savings (kWh/yr)	23,000
Type	Fluorescent	Gas Energy Savings (therm/yr)	
Recommendation:		Electric Cost Savings ($/yr)	$1,725
Reconfigure Lighting Layout for Efficiency and Improvement		Gas Cost Savings ($/yr)	
% ECM Opportunity	100	Total Cost Savings ($/yr)	$1,725
% savings electric	15.00000	Payback (yrs)	
% savings gas	0.00000	Electric GHG Savings (tons/yr)	19
Priority	High	Gas GHG Savings (tons/yr)	
Priority Rationale:			
	Acceptable Payback Period		
Grants Available?	Yes		

2. Food Service - Refrigeration Sealing Maintenance Service

Inspecting and treating leaking seals in the refrigeration system will reduce operating times and operating duty. Less energy will be consumed to maintain set temperatures and equipment will last longer. The doors are not sealing well at all.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
Kitchen		Kitchen	
End Use	Food Service	Electric Energy Savings (kWh/yr)	2,000
Type		Gas Energy Savings (therm/yr)	
Recommendation:		Electric Cost Savings ($/yr)	$150
Refrigeration Sealing Maintenance Service		Gas Cost Savings ($/yr)	
% ECM Opportunity	100	Total Cost Savings ($/yr)	$150
% savings electric	12.0000	Payback (yrs)	
% savings gas	0.00000	Electric GHG Savings (tons/yr)	2
Priority	High	Gas GHG Savings (tons/yr)	
Priority Rationale:			
	Acceptable Payback Period		
Grants Available?	No		

3. Domestic Hot Water - Booster Water Heater Fuel Conversion

Replace electric booster heater with gas unit. Electric booster heaters are more expensive to operate than natural gas-powered units. They produce less heat for each energy dollar spent as well as contribute to the electric demand charges assessed each month. When possible, convert these water heaters to high efficiency natural gas units.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
Kitchen		Kitchen	
End Use	Domestic Hot Water	Electric Energy Savings (kWh/yr)	1,700
Type		Gas Energy Savings (therm/yr)	
Recommendation:		Electric Cost Savings ($/yr)	$128
Booster Water Heater Fuel Conversion		Gas Cost Savings ($/yr)	
% ECM Opportunity	100	Total Cost Savings ($/yr)	$128
% savings electric	10.00000	Payback (yrs)	
% savings gas	0.00000	Electric GHG Savings (tons/yr)	1
Priority	High	Gas GHG Savings (tons/yr)	
Priority Rationale:			
	Acceptable Payback Period		
Grants Available?	Yes		

4. Domestic Hot Water - Water Temperature Reduction on Water Heater

Reduce domestic hot water temperature. The water heaters are set at 164 degrees. Reducing hot water temperature is an easy way to reduce energy costs for most non-food service businesses. Tests should be conducted to measure hot water temperature and if water temperatures measure 120 degrees or higher, reduce the temperature.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
Water heaters		Water heaters	
End Use	Domestic Hot Water	Electric Energy Savings (kWh/yr)	
Type		Gas Energy Savings (therm/yr)	420
Recommendation:		Electric Cost Savings ($/yr)	
Water Temperature Reduction on Water Heater		Gas Cost Savings ($/yr)	$286
% ECM Opportunity	100	Total Cost Savings ($/yr)	$286
% savings electric	0.00000	Payback (yrs)	1-2
% savings gas	3.0000	Electric GHG Savings (tons/yr)	
Priority	High	Gas GHG Savings (tons/yr)	2
Priority Rationale:			
	Low Cost/No Cost		
Grants Available?	No		

5. Plug Loads/Office Equipment - Vending Machine - Install Vending Miser or Disconnect Lamps and Ballasts

Disconnect the lamps and ballasts in the soda machine. Vending machines are costly to operate because they require refrigeration as well as lighting. In fact, machines with lighted displays typically operate 24 hours a day, 365 days a year. The lighting alone can cost about $40.00 per year per machine. One way to reduce lighting costs is to disconnect the lights and ballasts in the display and put a note on the machine that says it is still operational. Another option is to install a device called a vending miser. The vending miser uses an occupancy sensor to determine if the area around the soda machine is in use. If there is no activity in the vicinity of the machine, the machine is powered down periodically.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
Basement		Basement	
End Use	Plug Loads/Office Equipment	Electric Energy Savings (kWh/yr)	1,000
Type		Gas Energy Savings (therm/yr)	
Recommendation:		Electric Cost Savings ($/yr)	$75
Vending Machine - Install Vending Miser or Disconnect Lamps and Ballasts		Gas Cost Savings ($/yr)	
% ECM Opportunity	100	Total Cost Savings ($/yr)	$75
% savings electric	2.00000	Payback (yrs)	1-2
% savings gas	0.00000	Electric GHG Savings (tons/yr)	1
Priority	High	Gas GHG Savings (tons/yr)	
Priority Rationale:			
	Low Cost/No Cost		
Grants Available?	No		

6. Replace the old dishwasher with a high efficiency new model.

New dishwashers use far less water per cycle. This reduces the amount of water that needs to be heated to 180 degrees for the rinse cycle. This facility provides 3 meals per day 365 days per year. The savings will be dramatic.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
Replace the old dishwasher with a high efficiency new model.		Replace the old dishwasher with a high efficiency new model.	
End Use	Domestic Hot Water	Electric Energy Savings (kWh/yr)	
Type		Gas Energy Savings (therm/yr)	2,800
Recommendation:		Electric Cost Savings ($/yr)	
Low Flow Faucet Aerators Installation		Gas Cost Savings ($/yr)	$1,904
% ECM Opportunity	100	Total Cost Savings ($/yr)	$1,904
% savings electric	0.00000	Payback (yrs)	1-5
% savings gas	20.0000	Electric GHG Savings (tons/yr)	
Priority	High	Gas GHG Savings (tons/yr)	16
Priority Rationale:			
	Acceptable Payback Period		
Grants Available?	Yes		

7. Food Service - Kitchen Exhaust Hood Demand Control Ventilation

Install and calibrate exhaust speed controls on kitchen fans to match cooking times and demand. Kitchen exhaust fans draw conditioned air out of facilities and necessitate additional outside air intake. Kitchen exhaust controls reduce unnecessary run time and capacity. If kitchen exhaust controls are unfeasible, consider reducing your exhaust fan speed or implementing a manual schedule.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
Kitchen		Kitchen	
End Use	Food Service	Electric Energy Savings (kWh/yr)	
Type		Gas Energy Savings (therm/yr)	1,600
Recommendation:		Electric Cost Savings ($/yr)	
Kitchen Exhaust Hood Demand Control Ventilation		Gas Cost Savings ($/yr)	$1,088
% ECM Opportunity	100	Total Cost Savings ($/yr)	$1,088
% savings electric	0.00000	Payback (yrs)	1-5
% savings gas	45.00000	Electric GHG Savings (tons/yr)	
Priority	High	Gas GHG Savings (tons/yr)	9
Priority Rationale:			
	Acceptable Payback Period		
Grants Available?	Yes		

8. Lighting - Low Wattage Fluorescent Replacement of T-8 Lamps

Realize a 25%-40% lighting energy reduction by replacing 32 Watt T-8 lamps and ballasts with 25 or 28 Watt fluorescent lamps and high efficiency ballasts. Low wattage lighting systems are an excellent option for spaces which are overlit and removing entire fixtures is not possible.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
All areas other than wing halls and guest rooms.		All areas other than wing halls and guest rooms.	
End Use	Lighting	Electric Energy Savings (kWh/yr)	46,000
Type	Fluorescent	Gas Energy Savings (therm/yr)	
Recommendation:		Electric Cost Savings ($/yr)	$3,450
Low Wattage Fluorescent Replacement of T-8 Lamps		Gas Cost Savings ($/yr)	
% ECM Opportunity	100	Total Cost Savings ($/yr)	$3,450
% savings electric	30.00000	Payback (yrs)	3-5
% savings gas	0.00000	Electric GHG Savings (tons/yr)	39
Priority	High	Gas GHG Savings (tons/yr)	
Priority Rationale:			
	Acceptable Payback Period		
Grants Available?	Yes		

9. Food Service - Refrigeration System Maintenance

Replace the evaporator motors on the walk-in cooler and freezer with ECM type motors.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
Walk-in Cooler and Freezer evaporator motors need to be replaced with ECM type motors.		Walk-in Cooler and Freezer evaporator motors need to be replaced with ECM type motors.	
End Use	Food Service	Electric Energy Savings (kWh/yr)	1,400
Type		Gas Energy Savings (therm/yr)	
Recommendation:		Electric Cost Savings ($/yr)	$105
Refrigeration System Maintenance		Gas Cost Savings ($/yr)	
% ECM Opportunity	100	Total Cost Savings ($/yr)	$105
% savings electric	8.50000	Payback (yrs)	3-10
% savings gas	0.00000	Electric GHG Savings (tons/yr)	1
Priority	High	Gas GHG Savings (tons/yr)	
Priority Rationale:			
	Acceptable Payback Period		
Grants Available?	Yes		

10. HVAC - Burner Replacement- High Efficiency

Install new burners on the current boilers. New, high efficiency burners can be installed in existing boiler systems to improve combustion efficiencies. These high efficiency burners mix the air and fuel more effectively and allow for better fuel utilization. Additionally, new burners with a large turndown ratio can increase a boiler system's efficiency over a range of operating conditions.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
Central boiler plant		Central boiler plant	
End Use	HVAC	Electric Energy Savings (kWh/yr)	
Type	Boilers, Burners, and Furnaces	Gas Energy Savings (therm/yr)	1,600
Recommendation:		Electric Cost Savings ($/yr)	
Burner Replacement- High Efficiency		Gas Cost Savings ($/yr)	$1,088
% ECM Opportunity	100	Total Cost Savings ($/yr)	$1,088
% savings electric	0.00000	Payback (yrs)	5-7
% savings gas	3.00000	Electric GHG Savings (tons/yr)	
Priority	High	Gas GHG Savings (tons/yr)	9
Priority Rationale:			
	Acceptable Payback Period		
Grants Available?	Yes		

11. Food Service - Oven, Convection, Gas, High Efficiency

Replace your existing gas convection oven with a high efficiency unit to reduce your natural gas consumption and decrease kitchen temperatures without affecting food preparation. Look for a commercial gas-fueled convection oven with a heavy load cooking energy efficiency greater than or equal to 40% using the ASTM F1496 test method.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
Kitchen		Kitchen	
End Use	Food Service	Electric Energy Savings (kWh/yr)	
Type		Gas Energy Savings (therm/yr)	69
Recommendation:		Electric Cost Savings ($/yr)	
Oven, Convection, Gas, High Efficiency		Gas Cost Savings ($/yr)	$47
% ECM Opportunity	100	Total Cost Savings ($/yr)	$47
% savings electric	0.00000	Payback (yrs)	5-10
% savings gas	2.00000	Electric GHG Savings (tons/yr)	
Priority	Medium	Gas GHG Savings (tons/yr)	
Priority Rationale:			
	Acceptable Payback Period		
Grants Available?	Yes		

12. Food Service - Steamer, Gas ENERGY STAR

Replace your existing gas steamer with a high efficiency unit to reduce your natural gas consumption and decrease kitchen temperatures without affecting food preparation. Look for a commercial gas-fueled 6 pan pressureless steamer with a heavy load cooking energy efficiency greater than or equal to 38% using ASTM F1484 test method.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
Kitchen		Kitchen	
End Use	Food Service	Electric Energy Savings (kWh/yr)	
Type		Gas Energy Savings (therm/yr)	69
Recommendation:		Electric Cost Savings ($/yr)	
Steamer, Gas ENERGY STAR		Gas Cost Savings ($/yr)	$47
% ECM Opportunity	100	Total Cost Savings ($/yr)	$47
% savings electric	0.00000	Payback (yrs)	5-10
% savings gas	2.00000	Electric GHG Savings (tons/yr)	
Priority	Medium	Gas GHG Savings (tons/yr)	
Priority Rationale:			
	Acceptable Payback Period		
Grants Available?	Yes		

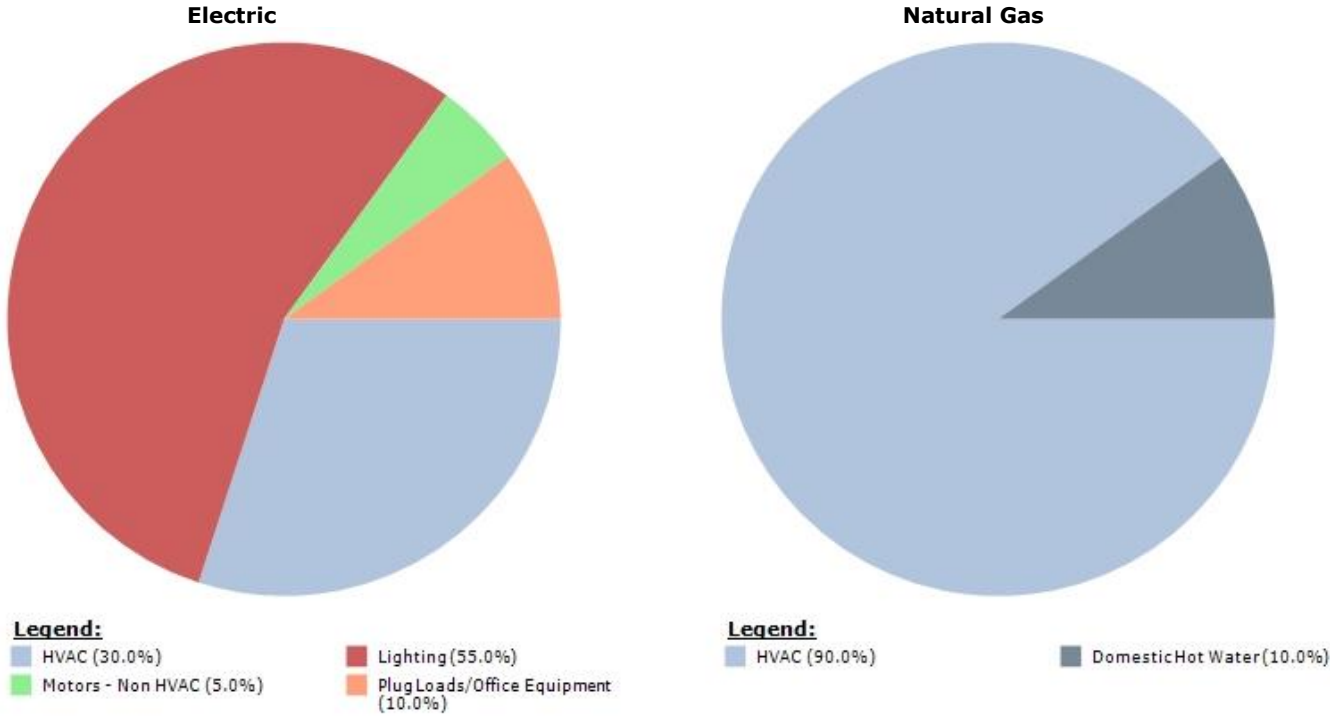
13. HVAC - Boiler - Steam to Hot Water Conversion

Convert the boiler system to hot water. Hot water boilers are more energy efficient (and have higher AFUE ratings) than steam systems. However, they are costly to replace. So, the most cost-effective time to make this steam-to-hot water conversion is when it is time to replace a steam system's main boiler. A new hot water boiler and connecting piping will cost less than a steam boiler and its piping. These cost savings will balance with the added cost to adapt the system to hot water and probable changes to condensate return piping. Hot water systems offer greater control: they can adjust the water temperature based on the outside air temperature (in steam systems, the heat output is constant whether the outside temperature is 40 degrees or 10 below zero).

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
Central Boiler Plant		Central Boiler Plant	
End Use	HVAC	Electric Energy Savings (kWh/yr)	
Type	Boilers, Burners, and Furnaces	Gas Energy Savings (therm/yr)	16,000
Recommendation:		Electric Cost Savings ($/yr)	
Boiler - Steam to Hot Water Conversion		Gas Cost Savings ($/yr)	$10,880
% ECM Opportunity	100	Total Cost Savings ($/yr)	$10,880
% savings electric	0.00000	Payback (yrs)	10-15
% savings gas	30.00000	Electric GHG Savings (tons/yr)	
Priority	Medium	Gas GHG Savings (tons/yr)	94
Priority Rationale:			
	Efficiency Upgrade		
Grants Available?	Yes		

Public Library

Typical End Use Profile



Typical Facility Annual Energy Usage

	Electric %	Natural Gas %	Electric kWh	Natural Gas Therms	Electric Cost	Natural Gas Cost
HVAC	30.0%	90.0%	163,680	17,333	$14,076	$13,433
Lighting	55.0%	0.0%	300,080	0	$25,807	$0
Domestic Hot Water	0.0%	10.0%	0	1,926	$0	$1,493
Motors - Non HVAC	5.0%	0.0%	27,280	0	$2,346	$0
Plug Loads/Office Equipment	10.0%	0.0%	54,560	0	$4,692	$0
Office Equipment	0.0%	0.0%	0	0	$0	$0
Total	100.0%	100.0%	545,600	19,259	$46,922	$14,926

Your facility uses 25.53 kWh/sq. ft./yr and 0.90 therms/sq. ft./yr and 177.22 kBtu/sq. ft./yr

Energy Conservation Opportunities
Estimated Savings Summary

Opportunity Description	Electric Energy (kWh/yr)	Fuel Energy (therms/yr)	Payback (yrs)	Cost savings	Priority
1.0 Lighting - Custom Fluorescent Recommendation	33,000			$2,838	High
2.0 HVAC - Variable Speed Drive for Boiler Hot Water Distribution Pump	8,200			$705	High
3.0 HVAC - Economizer Controls/Free Cooling	16,000		1-5	$1,376	High
4.0 HVAC - Variable Frequency Drive	9,800		1-5	$843	High
5.0 HVAC - Chiller System - Replace with High Efficiency Unit	36,000		5-10	$3,096	Medium
6.0 HVAC - Boiler - Steam to Hot Water Conversion		5,200	10-15	$4,030	Medium
7.0 HVAC - Insulation - Roof	8,200	350	10-20	$976	Low
TOTALS	**111,200**	**5,550**		**$13,864**	

The summary list above includes a number of recommended energy conservation measures for your facility. This list may include overlapping conservation measures. For example, replacement of a boiler with a high efficiency boiler would negate the savings of replacing the burner in the current boiler.

The summary list indicates that if all measures are implemented the total kWh savings is 111,200 which equals 20% of the current annual kWh usage of 545,600 kWh, and 5,550 therms which equals 29% of the current annual therm usage of 19,259 therms.

Be aware that the total savings and percentage of savings is an estimate based on average savings for specific measures which may require adjustments based on possible overlapping conservation measures.

UTILITY BILLING HISTORY

Electricity

Billing Month	Account Number	kW	kWh	Total Amount	$/kWh
18-Aug-2010			64,320	$5,787	$0.090
20-Jul-2010			66,240	$5,697	$0.086
21-Jun-2010			53,840	$4,663	$0.087
19-May-2010			43,280	$3,565	$0.082
20-Apr-2010			41,920	$3,174	$0.076
19-Mar-2010			38,080	$3,308	$0.087
17-Feb-2010			33,680	$2,711	$0.080
19-Jan-2010			35,360	$2,706	$0.077
17-Dec-2009			34,640	$3,039	$0.088
17-Nov-2009			39,440	$3,378	$0.086
20-Oct-2009			44,560	$3,855	$0.087
17-Sep-2009			50,240	$4,965	$0.099
TOTAL			545,600	$46,847	

Average Electricity Rate: $0.086

Natural Gas

Billing Month	Account Number	Therm	Total Amount	$/therm
18-Aug-2010		0	$91	$0.00
20-Jul-2010		0	$100	$0.00
21-Jun-2010		17	$103	$6.08
19-May-2010		1,147	$831	$0.72
20-Apr-2010		963	$800	$0.83
19-Mar-2010		2,262	$1,854	$0.82
17-Feb-2010		4,417	$3,491	$0.79
19-Jan-2010		5,078	$3,835	$0.76
17-Dec-2009		3,107	$2,252	$0.72
17-Nov-2009		1,367	$945	$0.69
20-Oct-2009		900	$525	$0.58
17-Sep-2009		0	$94	$0.00
TOTAL		19,259	$14,920	

Average Gas Rate: $0.77

1. Lighting – Retrofit all 3 lamp fluorescent light fixtures in offices and Children's Area

Retrofit all the three lamp fluorescent light fixtures in the offices and Children's Area to two lamps utilizing 25 watt 5000K lamps and low ballast factor (<=0.78) ballasts. Replace the parabolic lenses with prismatic lenses to let more light out to the sides.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
Childrens Section and offices.		Childrens Section and offices.	
End Use	Lighting	Electric Energy Savings (kWh/yr)	33,000
Type	Fluorescent	Gas Energy Savings (therm/yr)	
Recommendation:		Electric Cost Savings ($/yr)	$2,838
Custom Fluorescent Recommendation		Gas Cost Savings ($/yr)	
% ECM Opportunity	100	Total Cost Savings ($/yr)	$2,838
% savings electric	15.00000	Payback (yrs)	
% savings gas	0.00000	Electric GHG Savings (tons/yr)	28
Priority	High	Gas GHG Savings (tons/yr)	
Priority Rationale:			
	Acceptable Payback Period		
Grants Available?	Yes		

2. HVAC - Variable Speed Drive for Boiler Hot Water Distribution Pump

Install a variable frequency on your two – 3 HP hot water distribution pumps. The balancing valves were set at 50% open which makes this a very good candidate for variable-frequency drives. Variable-frequency drives (VFDs) control the rotational speed of an alternating current (AC) electric motor by controlling the frequency of the electrical power supply to the motor. VFDs offer many benefits to your electric motors, including:

* Reduced operating costs - VFDs offer greater control over the speed of AC motors, enabling the removal of throttling devices, valves and dampers, all of which can waste energy.

* Increased reliability - by regulating speed, VFDs prolong the life and reduce the maintenance costs of motors, driven equipment and switch gears.

* Increased productivity - VFDs give users a finer degree of control, resulting in more precise process operations and improved product quality.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
Boiler Room		Boiler Room	
End Use	HVAC	Electric Energy Savings (kWh/yr)	8,200
Type	Boilers, Burners, and Furnaces	Gas Energy Savings (therm/yr)	
Recommendation:		Electric Cost Savings ($/yr)	$705
Variable Speed Drive for Boiler Hot Water Distribution Pump		Gas Cost Savings ($/yr)	
% ECM Opportunity	100	Total Cost Savings ($/yr)	$705
% savings electric	5.00000	Payback (yrs)	
% savings gas	0.00000	Electric GHG Savings (tons/yr)	7
Priority	High	Gas GHG Savings (tons/yr)	
Priority Rationale:			
	Acceptable Payback Period		
Grants Available?	Yes		

3. HVAC - Economizer Controls/Free Cooling

The electrical usage on this building is extremely high. Research the features of each air handling unit to see if an economizer feature exists on the air handling units. If it does, verify it functions properly and install enthalpy controls if that does not currently exist. If no economizers exist install an automatic air-conditioning economizer. An air conditioning economizer can take advantage of cool outside air (such as during evening hours or cool days) and use this "free" air for cooling. During the air-conditioning season, the heat generated by internal loads such as people, lighting, and electronic equipment will build up in a building. It can be warmer inside than outdoors. Instead of relying on mechanical cooling, an economizer will allow the cooler outside air to enter the building through the outside air intakes and be distributed through the ductwork. The outside air is then tempered with the inside air to allow the temperature to reach the desired level.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
End Use	HVAC	Electric Energy Savings (kWh/yr)	16,000
Type	Controls	Gas Energy Savings (therm/yr)	
Recommendation:		Electric Cost Savings ($/yr)	$1,376
Economizer Controls/Free Cooling		Gas Cost Savings ($/yr)	
% ECM Opportunity	100	Total Cost Savings ($/yr)	$1,376
% savings electric	10.00000	Payback (yrs)	1-5
% savings gas	0.00000	Electric GHG Savings (tons/yr)	13
Priority	High	Gas GHG Savings (tons/yr)	
Priority Rationale:			
	Acceptable Payback Period		
Grants Available?	Yes		

4. HVAC – Install a Variable Frequency Drive on the basement AHU

Install a variable frequency drive on the fan motor of the basement air handling unit. Variable-frequency drives (VFDs) control the rotational speed of an alternating current (AC) electric motor by controlling the frequency of the electrical power supply to the motor. VFDs offer many benefits to your electric motors, including:

* Reduced operating costs - VFDs offer greater control over the speed of AC motors, enabling the removal of throttling devices, valves and dampers, all of which can waste energy.

* Increased reliability - by regulating speed, VFDs prolong the life and reduce the maintenance costs of motors, driven equipment and switch gears.

* Increased productivity - VFDs give users a finer degree of control, resulting in more precise process operations and improved product quality.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
End Use	HVAC	Electric Energy Savings (kWh/yr)	9,800
Type	Motor	Gas Energy Savings (therm/yr)	
Recommendation:		Electric Cost Savings ($/yr)	$843
Variable Frequency Drive		Gas Cost Savings ($/yr)	
% ECM Opportunity	100	Total Cost Savings ($/yr)	$843
% savings electric	6.00000	Payback (yrs)	1-5
% savings gas	0.00000	Electric GHG Savings (tons/yr)	8
Priority	High	Gas GHG Savings (tons/yr)	
Priority Rationale:			
	Acceptable Payback Period		
Grants Available?	Yes		

5. HVAC - Chiller System - Replace with High Efficiency Unit

Replace the current chiller system with a new high efficiency unit. Older chiller units are much less efficient than new units. It is worth studying the costs/benefits of replacing these older pieces of equipment before the end of their natural lives. Replacement will reduce long-term energy costs, increase operating efficiencies, and reduce maintenance costs. Importantly, a new high efficiency chiller can be specified to ensure that maximum heating demand is always met.

For more information refer to the Energy Star Web Site, the Heating & Cooling section of the Building Upgrade Manual (http://www.energystar.gov/ia/business/Heating.pdf), pages 4 through 9.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
Roof		Roof	
End Use	HVAC	Electric Energy Savings (kWh/yr)	36,000
Type	Air Conditioning	Gas Energy Savings (therm/yr)	
Recommendation:		Electric Cost Savings ($/yr)	$3,096
Chiller System - Replace with High Efficiency Unit		Gas Cost Savings ($/yr)	
% ECM Opportunity	100	Total Cost Savings ($/yr)	$3,096
% savings electric	22.00000	Payback (yrs)	5-10
% savings gas	0.00000	Electric GHG Savings (tons/yr)	30
Priority	Medium	Gas GHG Savings (tons/yr)	
Priority Rationale:			
	Life Cycle Cost Savings		
Grants Available?	Yes		

6. HVAC - Boiler - Steam to Hot Water Conversion

Convert the boiler system to hot water. Hot water boilers are more energy efficient (and have higher AFUE ratings) than steam systems. Many times they are costly to replace because steam pipes need to be removed and new hot water pipes installed. Your situation is much different. You have a steam to hot water heat exchanger in the boiler room next to the boiler and the building has hot water piping in it already. This project would only require replacing the boilers and then installing a steam generator for the humidification system. Hot water systems offer greater control: they can adjust the water temperature based on the outside air temperature (in steam systems, the heat output is constant whether the outside temperature is 40 degrees or 10 below zero).

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
Boiler Room		Boiler Room	
End Use	HVAC	Electric Energy Savings (kWh/yr)	
Type	Boilers, Burners, and Furnaces	Gas Energy Savings (therm/yr)	5,200
Recommendation:		Electric Cost Savings ($/yr)	
Boiler - Steam to Hot Water Conversion		Gas Cost Savings ($/yr)	$4,030
% ECM Opportunity	100	Total Cost Savings ($/yr)	$4,030
% savings electric	0.00000	Payback (yrs)	10-15
% savings gas	30.00000	Electric GHG Savings (tons/yr)	
Priority	Medium	Gas GHG Savings (tons/yr)	30
Priority Rationale:			
	Efficiency Upgrade		
Grants Available?	Yes		

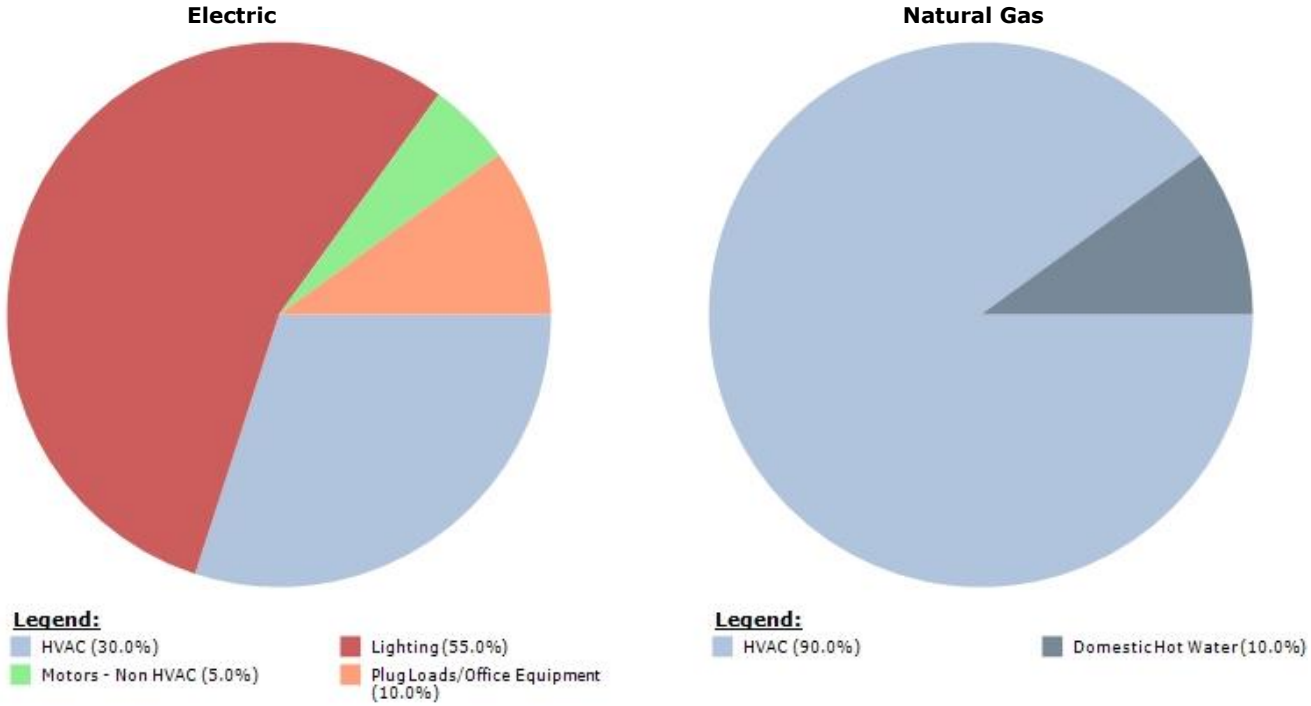
7. HVAC - Insulation - Roof

Insulate the roof when re-roofing. When a building needs a new roof, install rigid insulation between the upper membrane and the roof deck at the same time. This additional step in the re-roofing process will reduce heating and cooling costs because it will retain heat inside the building, where it belongs. Add insulation to ensure that the effective R-value of the roof is 25 or greater.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
Roof		Roof	
End Use	HVAC	Electric Energy Savings (kWh/yr)	8,200
Type	Building Shell	Gas Energy Savings (therm/yr)	350
Recommendation:		Electric Cost Savings ($/yr)	$705
Insulation - Roof		Gas Cost Savings ($/yr)	$271
% ECM Opportunity	100	Total Cost Savings ($/yr)	$976
% savings electric	5.00000	Payback (yrs)	10-20
% savings gas	2.00000	Electric GHG Savings (tons/yr)	7
Priority	Low	Gas GHG Savings (tons/yr)	2
Priority Rationale:			
	Efficiency Upgrade		
Grants Available?	Yes		

Plover Branch Public Library

Typical End Use Profile



Typical Facility Annual Energy Usage

	Electric %	Natural Gas %	Electric kWh	Natural Gas Therms	Electric Cost	Natural Gas Cost
HVAC	30.0%	90.0%	8,500	2,525	$1,028	$2,212
Lighting	55.0%	0.0%	15,583	0	$1,885	$0
Domestic Hot Water	0.0%	10.0%	0	281	$0	$246
Motors - Non HVAC	5.0%	0.0%	1,417	0	$171	$0
Plug Loads/Office Equipment	10.0%	0.0%	2,833	0	$343	$0
Office Equipment	0.0%	0.0%	0	0	$0	$0
Total	100.0%	100.0%	28,332	2,806	$3,428	$2,458

Your facility uses 4.66 kWh/sq. ft./yr and 0.46 therms/sq. ft./yr and 62.06 kBtu/sq. ft./yr

Energy Conservation Opportunities
Estimated Savings Summary

Opportunity Description	Electric Energy (kWh/yr)	Fuel Energy (therms/yr)	Payback (yrs)	Cost savings	Priority
1.0 Lighting - 25 watt lamp and low ballast factor ballast retrofit	5,100			$617	High
2.0 HVAC - Setback Thermostat Installation		130	1-2	$114	High
3.0 Lighting - Compact Fluorescent Lamps Replacement	940		1-2	$114	High
4.0 Lighting - LED Exit Lighting	300		1-5	$36	High
5.0 Plug Loads/Office Equipment - Replace Refrigerator with High Efficiency Energy Star Refrigerator	280		5-10	$34	High
6.0 Domestic Hot Water - Pipe Insulation on Domestic Hot Water Lines		22	3-5	$19	Medium
TOTALS	**6,620**	**152**		**$934**	

The summary list above includes a number of recommended energy conservation measures for your facility. This list may include overlapping conservation measures. For example, replacement of a boiler with a high efficiency boiler would negate the savings of replacing the burner in the current boiler.

The summary list indicates that if all measures are implemented the total kWh savings is 6,620 which equals 23% of the current annual kWh usage of 28,332 kWh, and 152 therms which equals 5% of the current annual therm usage of 2,806 therms.

Be aware that the total savings and percentage of savings is an estimate based on average savings for specific measures which may require adjustments based on possible overlapping conservation measures.

UTILITY BILLING HISTORY

Electricity

Billing Month	Account Number	kW	kWh	Total Amount	$/kWh
19-Oct-2010			1,874	$230	$0.123
17-Sep-2010			2,421	$291	$0.120
18-Aug-2010			3,372	$403	$0.119
20-Jul-2010			3,439	$411	$0.120
18-Jun-2010			2,849	$346	$0.121
19-May-2010			2,232	$266	$0.119
20-Apr-2010			2,165	$250	$0.115
19-Mar-2010			2,060	$257	$0.125
17-Feb-2010			2,037	$253	$0.124
19-Jan-2010			2,206	$273	$0.124
17-Dec-2009			1,900	$234	$0.123
17-Nov-2009			1,777	$219	$0.123
TOTAL			28,332	$3,433	

Average Electricity Rate: $0.121

Natural Gas

Billing Month	Account Number	Therm	Total Amount	$/therm
19-Oct-2010		67	$62	$0.92
17-Sep-2010		3	$23	$7.53
18-Aug-2010		4	$23	$5.69
20-Jul-2010		3	$24	$8.02
18-Jun-2010		4	$23	$5.82
19-May-2010		120	$106	$0.88
20-Apr-2010		199	$180	$0.91
19-Mar-2010		370	$333	$0.90
17-Feb-2010		618	$537	$0.87
19-Jan-2010		707	$587	$0.83
17-Dec-2009		472	$377	$0.80
17-Nov-2009		239	$184	$0.77
TOTAL		2,806	$2,459	

Average Gas Rate: $0.88

1. Lighting – 25 watt lamp and low ballast factor ballast retrofit

Retrofit all the 4 foot fluorescent light fixtures with 25 watt 5,000K fluorescent lamps and replace their ballasts with low ballast factor (<=0.78) instant start electronic ballasts.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
All areas		All areas	
End Use	Lighting	Electric Energy Savings (kWh/yr)	5,100
Type	Fluorescent	Gas Energy Savings (therm/yr)	
Recommendation:		Electric Cost Savings ($/yr)	$617
Custom Fluorescent Recommendation		Gas Cost Savings ($/yr)	
% ECM Opportunity	100	Total Cost Savings ($/yr)	$617
% savings electric	45.00000	Payback (yrs)	
% savings gas	0.00000	Electric GHG Savings (tons/yr)	4
Priority	High	Gas GHG Savings (tons/yr)	
Priority Rationale:			
	Acceptable Payback Period		
Grants Available?	Yes		

2. HVAC - Setback Thermostat Installation

Install a setback thermostat to control the temperature schedule of your building. A programmable setback thermostat will allow you to automatically turn down the set-point of your heating system in areas that are unoccupied (such as areas during nights and weekends). These thermostats are programmable; allowing you to create a temperature set-point schedule that will fit your buildings occupants needs. Most setback thermostats can be installed directly in place of your existing thermostat with no additional modification to your HVAC system.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
End Use	HVAC	Electric Energy Savings (kWh/yr)	
Type	Controls	Gas Energy Savings (therm/yr)	130
Recommendation:		Electric Cost Savings ($/yr)	
Setback Thermostat Installation		Gas Cost Savings ($/yr)	$114
% ECM Opportunity	100	Total Cost Savings ($/yr)	$114
% savings electric	0.00000	Payback (yrs)	1-2
% savings gas	5.00000	Electric GHG Savings (tons/yr)	
Priority	High	Gas GHG Savings (tons/yr)	1
Priority Rationale:			
	Low Cost/No Cost		
Grants Available?	No		

3. Lighting - Compact Fluorescent Lamps Replacement

Replace incandescent lamps with self ballasted screw in CFL (Compact Fluorescent Lamps): Self ballasted compact fluorescent lamps use up to 75% less electric energy than incandescent lamps with comparable light output ratings. A variety of models, sizes, shapes, wattages and capabilities are available for direct replacement of incandescent lamps. Compact fluorescent lamps last up to 10 times longer than a standard life incandescent lamp. Other CFL options include multi-level and dimmable models and some cold cathode (instant on) models. CFLs generally require some time to reach full light output levels, contain small amounts of mercury and require responsible disposal. CFLs also generate up to 75% less heat than the equivalent light output incandescent lamp.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
Entrance/desk area		Entrance/desk area	
End Use	Lighting	Electric Energy Savings (kWh/yr)	940
Type	Incandescent	Gas Energy Savings (therm/yr)	
Recommendation:		Electric Cost Savings ($/yr)	$114
Compact Fluorescent Lamps Replacement		Gas Cost Savings ($/yr)	
% ECM Opportunity	100	Total Cost Savings ($/yr)	$114
% savings electric	60.00000	Payback (yrs)	1-2
% savings gas	0.00000	Electric GHG Savings (tons/yr)	1
Priority	High	Gas GHG Savings (tons/yr)	
Priority Rationale:			
	Low Cost/No Cost		
Grants Available?	Yes		

4. Lighting - LED Exit Lighting

Retrofit existing exit lighting with LED units. Exit signs that contain conventional light bulbs should be retrofitted with LED ("light emitting diode") bulbs. LEDs will last approximately 30 years and use a fraction of the energy (1 or 2 watts) of conventional exit signs. Exit signs must remain illuminated 24 hours a day, 365 days a year, so this step will result in substantial long-term energy savings. Maintenance costs will also be reduced because bulb changes will dramatically reduced. A typical LED exit light retrofit will pay for itself within 4 years.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
End Use	Lighting	Electric Energy Savings (kWh/yr)	300
Type	Exit	Gas Energy Savings (therm/yr)	
Recommendation:		Electric Cost Savings ($/yr)	$36
LED Exit Lighting		Gas Cost Savings ($/yr)	
% ECM Opportunity	100	Total Cost Savings ($/yr)	$36
% savings electric	95.00000	Payback (yrs)	1-5
% savings gas	0.00000	Electric GHG Savings (tons/yr)	
Priority	High	Gas GHG Savings (tons/yr)	
Priority Rationale:			
	Low Cost/No Cost		
Grants Available?	No		

5. Plug Loads/Office Equipment - Replace Refrigerator with High Efficiency Energy Star Refrigerator
Replace the old refrigerator in the basement children's room with a high efficient Energy Star refrigerator. ENERGY STAR qualified refrigerators are 20% more energy efficient than the minimum federal standard.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
Basement children's room		Basement childrens room	
End Use	Plug Loads/Office Equipment	Electric Energy Savings (kWh/yr)	280
Type		Gas Energy Savings (therm/yr)	
Recommendation:		Electric Cost Savings ($/yr)	$34
Replace Refrigerator with High Efficiency Energy Star Refrigerator		Gas Cost Savings ($/yr)	
% ECM Opportunity	100	Total Cost Savings ($/yr)	$34
% savings electric	10.00000	Payback (yrs)	5-10
% savings gas	0.00000	Electric GHG Savings (tons/yr)	
Priority	High	Gas GHG Savings (tons/yr)	
Priority Rationale:			
	Acceptable Payback Period		
Grants Available?	No		

6. Domestic Hot Water - Pipe Insulation on Domestic Hot Water Lines
Insulate the domestic hot water lines and install check valves on the water heater. The domestic hot water system, including all piping, should be insulated to minimize heat loss as the water travels from the holding tank throughout the system. Uninsulated piping not only causes the water heater to run more often, but it can also overheat the space through which it travels, causing the ventilation and cooling systems to work harder.

EXISTING CONDITIONS		RECOMMENDATION SAVINGS POTENTIAL	
Location		**Location**	
End Use	Domestic Hot Water	Electric Energy Savings (kWh/yr)	
Type		Gas Energy Savings (therm/yr)	22
Recommendation:		Electric Cost Savings ($/yr)	
Pipe Insulation on Domestic Hot Water Lines		Gas Cost Savings ($/yr)	$19
% ECM Opportunity	100	Total Cost Savings ($/yr)	$19
% savings electric	0.00000	Payback (yrs)	3-5
% savings gas	8.00000	Electric GHG Savings (tons/yr)	
Priority	Medium	Gas GHG Savings (tons/yr)	
Priority Rationale:			
	Long Payback Period		
Grants Available?	No		

Appendix E

Watts-Up Computer Study

PC power management and energy savings

Test Week A 1 week leaving computer on after work day (07/12 to 07/19)
(monitor enters power save after 10 minutes)
Test Week B 1 week turning computer off after work day (07/19 to 07/26)

Methodology: A 'Watts up? PRO' electric usage meter was used to measure the amount of electricity consumption for a PC on a week long basis. A computer and monitor were plugged into the meter and readings were started on the Monday of each test week at 9:00am and stopped at 9:00am the following Monday. The computer was used like it would be in a typical work week (powered on with on/off use through 8 hours of the day). After completing the readings for the test week, the meter was connected to the PC, data was downloaded and analyzed.

Equipment: 1 Watts Up? PRO
1 Dell Optiplex 745 PC
This model is common within the County but not the only model. There are different models from a spread of 5 years that are used in County operations. Energy use for all models is similar but may vary slightly. A white paper report called Review of Computer Energy Consumption and Potential Savings (Bray, 2006) found that the way in which a computer is used is a far more significant factor in determining the total energy consumption than is the efficiency of the computer.
1 Dell 14" monitor

Settings: Price per Kilowatt Hour $.10
This was determined from the 2010 commercial Wisconsin electricity rate average that the U.S. Energy Information Administration published. This is also the rate that Focus on Energy and North Wind Renewable Energy uses to calculate payback periods for commercial customers.

Duty Cycle Setting 70
This was set so when the computer is on it will be recorded as "on duty" because it uses more than 70 watts, whether it's active or not. By doing this we can tell what percent of time the computer was powered on.

Chart:

	Min Watts	Max Watts	Min Volts	Max Volts	Min Amps	Max Amps	Power Factor	kWh	Monthly Avg kWh	Cost	Monthly Avg Cost	Time	Duty Cycle
Test Week A	72.3	175.9	101.6	121.9	0.008	1.919	0.76	13.6	57.9	$1.63	$6.94	7 days	99
Test Week B	1	175.9	115.5	121.9	0.008	1.921	0.76	4.11	17.64	$0.49	$2.12	7 days	24

Significant Findings:

72.3 was the minimum amount of watts the computer used during Test Week A. 1 watt was the minimum amount used during Test Week B. In Test Week A, after the work day, the computer was continually using 70-80 watts but in Test Week B it was using around 1 watt after the work day. The computer was on >99% of the time in Test Week A and 24% of the time in Test Week B. The kWh use, calculated kWh savings, costs and calculated cost savings for the two computer management strategies are below.

Costs and Savings:

Portage County has 457 computer workstations in regular use. Out of these, 20 must remain powered ON at all times because they are used 24 hours a day. These include Sheriff's Department dispatch and night duty offices as well as the Portage County Health Care Facility. For our purposes, the total current expenditures were calculated then calculations were made with the number of computers that are able to be turned off in the evenings; 437.

*Note: NOT all computers are used everyday so calculations may be slightly higher than actual.

Current Use & Expenditures (**457 PC's**)

57.9 kWh/month/PC	X 12 months X 457 PC's =	317,523.6 kWh/year
$5.79 /month/PC	X 12 months X 457 PC's =	$31,752.36 /year

Power ON (**437 PC's**)

57.9 kWh/month/PC	X 12 months X 437 PC's =	303,627.6 kWh/year
$5.79 /month/PC	X 12 months X 437 PC's =	$30,362.76/year

Power OFF (**437 PC's**)

17.64 kWh/month/PC	X 12 months X 437 PC's =	92,504.2 kWh/year
$1.76/month/PC	X 12 months X 437 PC's =	$9,229.44/year

Total Savings: PC Power OFF vs. PC Power ON (**437 computers**)

kWh Savings	=	211,123.4 kWh/year
Cost Savings	=	$21,133/year

When all applicable computers are turned off after the work day compared to left on after the work day, there could be near a 69.6% energy savings or $21,133/year realized.

Index

Watt	Measure of power. Volts * amps = watts.
Volt	SI unit of potential difference and electromotive force.
Amp	The base SI unit of electrical current.
Power Factor	Number from 0 to 1 that represents the phase angleshift between the voltage and current. Watts / volts * amps = power factor.
Duty Cycle	Percent of time the appliance is above a threshold level.

Appendix F

Annual Energy Report Procedure

To be completed in January of each year by the Facilities Administrative Assistant

Wisconsin Public Service Accounts (WPS) – Electric & Natural Gas

Example account number: 0402563444-00001

Contact: Mike Resch (715) 345-7519 or mpresch@wisconsinpublicservice.com

WPS has a very helpful online billing service that can be used to view and electronically transfer County account data into Excel. This online service includes billing data for the previous two years. All Portage County accounts with WPS are registered online and available to view, export into an Excel document, and/or print. To access accounts use the following username and passwords.

Username:	streetlights	Username:	parksdept
Password:	portage2	Password:	portage3
Username:	irrigation	Username:	buildings
Password:	portage2	Password:	portage4

Once you've accessed the accounts online, click "view bill history" to see detailed account information. Then you are able to download to a spreadsheet, sum for the specified time period (one year), and enter the product into the respective cell located on the County Baseline Year'xxxx' spreadsheet, determinant upon what account you are working with.

Alliant Energy – Electric

Example account number: 665858-001

Contact: Customer Service 1-800-862-6222

Alliant Energy will need to be contacted. Upon request they will run reports and send to you in paper copy for the specified time period (one year). The usage and costs should then be totaled for each account number and entered into the respective cell located on the County Baseline Year'xxxx' spreadsheet, determinant upon what account you are working with.

Central Wisconsin Electric Cooperative – Electric

Example account number: 1765025

Contact: Office Phone (715) 445-2211

Central Wisconsin Electric Cooperative will need to be contacted. Upon request they will run reports and send to you in paper copy for the specified time period (one year). The usage and costs should then be totaled for each account number and entered into the respective cell located on the County Baseline Year'xxxx' spreadsheet, determinant upon what account you are working with.

All graphs and summary tables will automatically update themselves for the County Baseline 2010 spreadsheet because the equations will be set up. County Baseline Year'xxxx' spreadsheets will need to have equations updated for this to happen in subsequent year's baseline spreadsheets.

Appendix G

Portage County Strategic Energy Plan Recommendations Prioritization

The following list is a set of recommendations from the building energy audits done by the Focus on Energy Advisor. They are a combination of capital improvements and energy management suggestions that may be implemented to increase the efficiency of energy use in County buildings. Some recommendations from the audits are not included in this list because they are either part of the 2010 projects that are to be completed or they are combined with another recommendation in this document. The full energy audits that include all recommendations are located in the plan under Appendix D.

A. Ease of Installation

Hard – 0	Medium – 2	Easy – 4
40+ hrs maintenance time	10-40 hrs maintenance time	< 10 hrs maintenance time
$10,000+ installation cost	$1,000-$10,000 installation cost	< $1,000 installation cost

B. Recommendation Cost

Expensive – 0	Less Expensive – 2	Least Expensive – 4	No Cost - 6
$5,000 +	$1,000 - $5,000	Less than $1,000	$0

C. Estimated Energy Savings

Low – 0	Medium – 2	High – 4	Very High – 6
$0 - $100 annually	$100 - $200 annually	$200 - $1,000 annually	$1,000 + annually

D. Feasibility (Based on Sustainability Specialists evaluation of available funding & physical restrictions)

Not very feasible - 0	Feasible -2	Very Feasible -4

E. Change in Employee Comfort (Based on Energy Survey and employee comments)

No Change – 0	Change for the better – 2	Large Change for the better – 4
No employees benefit	Some (1-10) employees benefit	Large number (20+) of employees benefit

Annex	A	B	C	D	E	Total
Lighting – Custom Fluorescent Recommendation	0	0	6	2	2	10
HVAC – VFD for boiler hot water pump	2	0	4	4	0	10
Insulate the AC lines on the Liebert roof-top AC unit	4	4	0	4	0	12
DHW – Circulation pump Timelock on domestic hot water system	4	4	0	4	0	12
HVAC – Door sweep Installation	4	4	0	4	2	14
HVAC – Chilled water pumps variable frequency drives	2	2	4	4	0	12
HVAC – Adjust boiler outside air temperature reset control	*4*	*6*	*4*	*4*	*0*	*18*
HVAC – Adjust economizer controls	*4*	*6*	*4*	*4*	*0*	*18*
HVAC – Reduce air infiltration on receiving doors	*4*	*4*	*0*	*4*	*0*	*12*

Courthouse	A	B	C	D	E	Total
Lighting – Custom fluorescent recommendation	0	0	6	2	2	10
HVAC – Preventative maintenance program. Insulate AC lines & steam trap replacement	4	2	4	4	0	14
HVAC – Boiler steam to hot water conversion	0	0	6	0	4	10

Lincoln Center	A	B	C	D	E	Total
Lighting – Custom fluorescent recommendation	0	0	6	2	2	10
HVAC – ventilation controls	2	2	4	2	2	12
HVAC – Boiler replacement to high performance	2	0	6	4	0	12
Food Service – Refrigeration system maintenance	4	4	0	4	0	12
HVAC – Adjust economizer controls	*4*	*6*	*4*	*4*	*0*	*18*

Law Enforcement Center	A	B	C	D	E	Total
Lighting – Custom fluorescent recommendation	0	0	6	2	2	10
Lighting – T8 or T5 replaces HID (inside and out)	2	2	4	4	0	12
Food Service – Gas ENERGY STAR steamer	2	2	2	4	0	10
Food Service – ENERGY STAR hot food holder	2	2	2	4	0	10
HVAC – boiler replacement high performance	2	0	6	4	0	12
DHW – Hot water temperature study and adjustments	*4*	*6*	*2*	*4*	*0*	*16*
DHW – Electric to gas conversion of booster water heater	*4*	*4*	*2*	*4*	*0*	*14*
HVAC – Adjust economizer controls	*4*	*6*	*6*	*4*	*0*	*20*

Ruth Gilfry Building	A	B	C	D	E	Total
Lighting – Custom fluorescent Recommendation	0	0	6	2	2	10
DHW – Replace hot water heater w/Gas ENERGY STAR	2	0	6	4	0	12

Plug Loads – Disconnect walk-in refrigerator reaplace w/ ENERGY STAR	4	2	6	4	0	16

Jefferson House	A	B	C	D	E	Total

Focus on Energy recommendations #1 and #2 will be done with the 2010 energy projects.

The other two recommendations were discarded at an Energy Team meeting when it was brought to the Focus on Energy Advisor's attention that the gas bills were for a different use than the building has now. He could not make the recommendations any more since he doesn't know if the current gas bills are more appropriate for the current use in the building.

Health Care Center	A	B	C	D	E	Total
Lighting – Reconfigure lighting layout	0	4	6	2	2	14
Lighting – low wattage fluorescents Replacements	0	0	6	2	2	10
HVAC – replace burners on boilers w/ high efficiency	0	2	6	2	0	10
HVAC – Boiler steam to hot Water conversion	0	0	6	0	2	8
Food Service – Refrigerator sealing maintenance	4	4	2	4	0	14
Food Service – Replace dishwasher with High efficiency model	2	0	6	4	0	12
Food Service – replace convection oven with gas ENERGY STAR	2	2	0	4	2	10
Food Service – replace steamer w/ gas ENERGY STAR	2	2	0	4	0	8
DHW – Booster water heater	2	2	2	2	0	8
Food Service – Hood fan controls	2	0	6	4	2	14
DHW –Reduce water temp on heater	*4*	*6*	*4*	*4*	*0*	*18*

Library	A	B	C	D	E	Total
Lighting – Retrofit all 3 lamp fixtures in offices and children's library	0	0	6	2	2	10
HVAC – VFD for boiler hot water pump	2	2	4	4	0	12
HVAC – Install VFD on Basement AHU	2	2	4	4	0	12
HVAC – Replace chiller system w/ high efficiency unit	0	0	6	2	0	8

HVAC – Boiler steam to hot water conversion	0	0	6	0	2	8
HVAC – Insulation on roof when it's re-roofed	0	0	6	2	0	8
HVAC – Adjust economizer controls	*4*	*6*	*4*	*4*	*0*	*18*

Plover Branch Library	A	B	C	D	E	Total
Lighting – Retrofit all 4 foot lamps With 25w low ballast factor ballasts	0	0	6	2	2	10
Lighting – Install compact Fluorescent lamps	4	4	2	4	0	14
HVAC – Install programmable Thermostat	4	4	2	4	0	14
Plug Loads – Replace refrigerator with high efficiency ENERGY STAR refrigerator	4	4	0	4	2	14
DHW – Pipe insulation on DHW lines	4	4	0	4	0	12

Appendix H Potential Non-County Funding Sources

Energy Efficiency and Conservation Block Grant (EECBG)
The Energy Efficiency and Conservation Block Grant (EECBG) program was created as part of the American Recovery and Reinvestment Act of 2009. The EECBG funds may or may not be available in the future but they are definitely something to keep an eye on as well as other programs of the same type that may be available in the future.

EPA Climate Showcase Communities Grant
In 2009, EPA launched this competitive grant program to assist local and tribal governments in establishing and implementing climate change initiatives. The goal is to create replicable models of sustainable community action that generate cost-effective and persistent greenhouse gas reductions while improving the environmental, economic, public health, or social conditions in a community. Applications are due every year in July for consideration.

UWSP Foundations & Grants Database
UWSP offers an online database of foundations and grants available around the country. A search was done for dollars available to implement energy efficiency and renewable energy projects in municipalities such as Portage County. The list compiled below is potential opportunities for funding that were found through the search.

Note: the asterisked foundations and grants have the most potential.

Note: the opportunities below may not be available for government entities because the listings on the database do not always specify this or not; it is only a list of potential opportunities that need to be looked into further. Some may only be available to non-profit organizations.

Name	Application Instructions	Deadlines (if provided)
Alliant Energy Foundation, Inc.	www.alliantenergy.com/community/charitablefoundation/index.htm	January 15th, May 17th, and September 15th
*Community Foundation of Central Wisconsin	www.cfpcwi.org	Due March 1st of every year
*Derse Foundation	Letter of interest to: jderse@wi.rr.com	
Dudley Foundation	Contact: Ann Dudley Shannon 500 First Street, Suite 2 Wasuau, WI 54403 Phone: (715) 849-5729	March, June, September, and December board meetings
Everett Smith Group Foundation	Letter of interest to: 800 North Marshall St Milwaukee, WI 53202-3911	
Mid-Wisconsin Foundation	Submit application to: 132 West State Street Medford, WI 54451	April 15th and October 15th
Thomas J. Rolfs Foundation, Inc.	Letter of interest with financial audit	
Wisconsin Energy Corporation Funding	www.wec-foundation.com Fill out online application	January 31st, April 30th, July 31st, and October 31st
Wisconsin Public Service Foundation	www.wisconsinpublicservice.com/company/wpsfoundation.aspx Fill out online application any time	

Appendix I

RESOLUTION NO. _____

RE: APPROVING AND ENDORSING THE STRATEGIC ENERGY MANAGEMENT PLAN (PHASE ONE ELECTRICITY & NATURAL GAS)

TO THE HONORABLE CHAIRMAN AND MEMBERS OF THE PORTAGE COUNTY BOARD OF SUPERVISORS

WHEREAS, the Portage County Board of Supervisors commissioned a comprehensive study to be produced by the PORTAGE COUNTY SMART ENERGY TEAM; and

WHEREAS, the PORTAGE COUNTY SMART ENERGY TEAM has conducted its study and presented the proposed results to all county departments, agencies, and committees, as well as input and review from the public; and

WHEREAS, it is anticipated that the Strategic Energy Management Plan will be a cornerstone for strategic management and planning for Portage County facilities and programs for the future;

WHEREAS, the following summary represents the overall strategy goals of the Plan:

> This goal set forth in this plan is for Portage County to reduce its electricity and natural gas consumption 10% for the calendar year of 2015 compared to the calendar year of 2009 (base year). At the goal of a 10% reduction in electricity and natural gas use, savings of nearly $70,000 annually would be realized. Implementing all of the recommendations in this plan, at an estimated capital expense of $2.2 to $3.4 million dollars, could produce significantly more savings, potentially $100,000+ annually. Capital investment is required to implement some recommendations, while others require no investment; and

WHEREAS, the Plan also provides a list of energy management and efficiency recommendations for each facility; and

WHEREAS, the Plan also provides a set of goals, objectives, and actions that establishes a framework to implement an aggressive energy management program.

FISCAL NOTE: This resolution adopts and approves the Strategic Energy Management Plan as the formal template of the county for future investment in energy saving projects, designs and infrastructure. It does not however by itself approve or appropriate the funding for such projects which remain subject to the county's future budgeting and capital projects process and procedures. The Strategic Energy Management Plan makes non-binding but aspirational budgetary and monetary recommendations for long term energy efficient investments in the future consistent with the goals of set forth in this resolution.

NOW, THEREFORE, BE IT RESOLVED by the Portage County Board of Supervisors hereby adopts, endorses and ratifies the final STRATEGIC ENERGY MANAGEMENT PLAN (PHASE ONE ELECTRICITY & NATURAL GAS) as presented by the PORTAGE COUNTY SMART ENERGY TEAM, with the plan being attached to the minutes of this proceeding and incorporated in all respects herein by reference, with the terms and limitations as set forth in the FISCAL NOTE.

Dated: April 19, 2011.

Respectfully submitted,

EXECUTIVE/OPERATIONS COMMITTEE

By: _____ _____
O. Philip Idsvoog, Chair Lonnie Krogwold, First Vice-Chair

_____ _____
David Medin, Second Vice-Chair Perry Pazdernik

_____
Don Butkowski

PORTAGE COUNTY SPACE AND PROPERTIES COMMITTEE

By: _____ _____
Jeanne Dodge, Chair Tom Mallison

_____ _____
Don Jankowski, Vice-Chair David Medin

_____
Lonnie Krogwold

References

U.S. Energy Information Administration,
http://www.eia.doe.gov/state/state_energy_profiles.cfm?sid=WI

U.S. Department of Energy, "Heat Distribution Systems"
http://www.energysavers.gov/your_home/space_heating_cooling/index.cfm/mytopic=12580

Chippewa County Comprehensive Energy Conservation Plan, October 2009

Portage County Energy Report, 2015

September 13, 2016

Prepared by:
Nathan Sandwick, Community Development Educator, Portage County UW-Extension
Todd Neuenfeldt, Facilities Director, Portage County

*Special thanks to Dan Mechenich and Joe Kottwitz for preparing and detailing elsewhere many of the successes and recommendations highlighted in this report during their internship through UW-Stevens Point; and for the prior work on Portage County's Strategic Energy Management Plan as Energy Specialist's with the Central Wisconsin Resiliency Project.

Contents

Executive Summary

In April of 2010 under the direction of Jeanne Dodge, Chair of Space and Properties with assistance from Jen Stewart, former UW-Extension Community Development Educator, Portage County created an Energy Team for the purpose of developing an Energy Plan. The plan was to set energy reduction goals and to better utilize renewable energy sources.

This team was comprised of various Portage County Staff and Supervisors including Supervisor Jeanne Dodge, County Board Chair Phil Idsvoog, Supervisor Al Haga, Planning and Zoning Director Jeff Schuler, then UW-Extension Community Development Educator, Jennifer Stewart, County Executive Patty Dreier and myself, Todd Neuenfeldt. The team set an ambitious goal to reduce natural gas and electric consumption by 10% in five years.

Many projects went into achieving this goal. Some projects were as simple as re-insulating refrigeration lines while many projects were much more complicated, for example the installation of Variable Frequency Drives (VFD's) on pumps and motors. Not reflected in this report is the thousands of dollars Portage County was reimbursed from Focus on Energy for performing these projects.

I am happy to report Portage County has exceeded the goal of 10%. Energy efficiency improvements achieved among buildings operated and controlled by Portage County since 2009 have cut those facilities' annual electricity use by approximately 763,000 kWh (15%) and annual natural gas consumption by an estimated 27,500 therms (11%). At 2015 prices for electricity and natural gas, these energy savings equate to an annual cost savings of approximately $80,000.

Phase Two of the planning effort, with help from Kristi SeBlonka and Dan Mechenich in 2012, expanded the scope of the plan to examine how the County uses Transportation fuels and to identify where savings could be recognized. Several projects have been completed in effort to conserve fuel. Some of those projects include education of drivers for thoughtful driving techniques that improve fuel economy, better utilization of vehicles and Highway Patrol Trucks that automatically shut off after 12 minutes of idling.

I would like to recognize Supervisor Jeanne Dodge for her vision of the Energy Team and Energy Plan, County Executive Dreier for her support and leadership, UW-Extension Community Development Educator Nathan Sandwick for his countless hours in and out of the office compiling data and transforming it into an understandable document. And let's not forget, none of this would be possible without the support of the County Board. Congratulations and thank you to all involved, mentioned and not mentioned.

Moving forward, we will continue to seek and perform energy conservation projects seeking incentives through Focus on Energy whenever possible. We will also integrate design for energy efficiencies and renewable energy projects in future remodel or construction of County buildings.

Todd J Neuenfeldt,

Portage County Facilities Director

Summary of Successes, Opportunities, and Recommendations

Featured first in this report are these key points from a series of discussions among numerous county department leaders and staff that took place in 2014. Discussions focused on each participating department's recent successes, opportunities, and challenges in pursuit of further energy savings. A part-time energy intern through UW-Stevens Point provided information resources to staff in these meetings; and documented and summarized key findings as case studies. Key successes and recommendations are included in this section. It is hoped that this summary of successes, opportunities and recommendations may help to engage more colleagues in more strategic energy management efforts and help promote the existing culture of shared responsibility in strategic energy management.

Highlighted Successes

□	The Solid Waste Department has reduced air infiltration in its facilities by installing doorway curtains and opening garage doors less frequently and for a shorter duration.
□	Timers installed on the Highway Department's 1.2 kW engine block heaters have them running only when needed instead of constantly, and computer chips turn off idling patrol trucks after 12 minutes.
□	The Highway department (and other individuals) routinely look for anomalies in utility bills and can match each with a specific meter.
□	The Highway and Parks departments carefully track bulk fuel purchases and quickly respond to requests for that data.
□	The Highway Department has made purchases that conserve energy and improve staff satisfaction.
□	The Parks and Highway Departments have both boosted vehicle/equipment utilization to generate more revenue in a model that also seeks to reduce operating costs.
□	The Parks Department "mothballs" several buildings each winter, reducing their energy use to minimum levels.
□	Handheld meters that measure electricity use has allowed Courthouse Building staff to make behavioral changes that improve energy conservation while minimizing inconvenience.
□	The Facilities Management Department has completed many low cost/high savings energy conservation projects across numerous facilities and departments.
□	A new variable frequency drive motor on the landfill's methane flare spins only as fast as needed (typically a ~14 amp draw) instead of at the maximum speed (a ~33 amp draw).
□	Since adopting the energy plan, County supervisors reviewed data as reported through 2015.

In achieving these successes, it was various staff members who identified opportunities to conserve energy, helped by a willingness and excitement to carry out the work. The successes listed above show that Portage County's energy improvements are often made at the department level. Continued progress toward energy conservation and efficiencies might well continue in collaboration with departments, with measurement focused on what is managed.

Key Recommendations

□	Portage County should create an energy planning culture to improve staff participation and acceptance using open dialogue, periodic communications, surveys, orientation, and training.	(Energy Plan, HR Dept staff, staff working in the Courthouse)
□	Portage County should explore the potential of satisfying energy plan objectives and expanding its environmental stewardship with purchasing decisions using free and acclaimed resources like Green Seal's environmental standards.	(Best Practices)
□	Portage County should develop (maintain) a funding strategy for capital and energy efficiency projects that might also encompass renewable energy proposals.	(Energy Plan)
□	Portage County should develop standard operating procedures and policies, including, but not limited to, those from the energy plan.	(Energy Plan)
□	Portage County should account for energy use with efficiency metrics with the help of free and acclaimed resources, like AASHE's Stars program or the U.S. Green Building Council's LEED rating system(s), and use them to write performance-based energy use goals (e.g. a 10% reduction in energy use per revenue dollar, etc.).	(Best Practices)
□	Portage County should firm up cost/savings estimates from the energy plan and other renewable energy/energy efficiency projects to select the best opportunities, including a possible salaried, full-time, energy planning position.	(Best Practices)

Summary of Energy Use in 2015

Energy use data in this report spans as much as eight years, from 2008 through 2015. The data shows several areas of appreciable progress. Like the 2013 energy report, this report recognizes the need to take weather variables and into account when evaluating improvements in building performance, and at times focuses attention on facilities owned and operated by Portage County.

In 2015, Portage County spent $1,117,539 on energy resources, as detailed in this report. In particular, the county consumed 5,488,837 kilowatt-hours (kWh) of electricity, and 244,315 therms of natural gas at a combined cost of $610,307. The county also purchased 239,294 gallons of transportation fuels (including unleaded and diesel fuels) for county-owned vehicles and equipment, at a cost of $507,232. These 2015 utility totals represent a modest increase annual electricity use and a decrease in natural gas use compared to 2014. Among facilities predominantly *operated* by Portage County there was a decrease in both electricity and natural gas use in 2015 as compared to both 2009 and 2014.

Taking into account the coldness of winter months and corresponding heating loads of buildings, the performance of buildings was better in 2015 than in most previous years. Notably, improvements in heating efficiencies among *county-operated* buildings resulted in about 11% less energy consumption (per degree day) as compared to 2009.

Electricity use across facilities has varied with efficiency improvements as well as variation in operations, occupancy, service demand, and weather. The county's annual average price paid for electricity (per kilowatt-hour) in 2015 was about 3% higher than average prices paid in 2009. Notably, beginning in 2015, Wisconsin Public Service increased customers' fixed charges – offset to some degree with a slight decrease in variable rates. While this may amount to

more of a shift than an increase for many users, this would bring a noticeable cost increase particularly for accounts that use very little energy and a slight cost decrease for accounts that use a great deal of energy.

Portage County purchased an estimated 31,408 fewer gallons of fuel in 2015 compared to the year before – spending $484,691 less than 2014. There was a 42% decrease in average price for fuels purchased by the county. The price of fuels had gradually climbed in previous years.

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 2015 annual energy report provides a current inventory and indicates areas of progress to date.

Natural Gas and Electricity

Overview

A Snapshot of Energy Usage, 2015

Number of Portage County government buildings:	14	(excludes park shelters and 1039 Ellis)
County energy use (electricity & natural gas):	43,159 MMBtu's	(43% Electricity; 57% Natural Gas)
Cost of County energy use (electricity & natural gas):	$ 610,307	(77% Electricity; 23% Natural Gas)

Portage County government consumes the great majority of its electricity and natural gas energy (about 97% in 2015) in buildings that house its operations. There is also a small amount of energy used at County parks, and a minimal share in the cost to maintain the common areas of the Portage County Business Park. Natural gas is primarily used for water heating, space heating and cooking in County buildings. Total energy use and that of buildings is in the table below[1].

Portage County 2015 Energy Use by Type of Energy (Buildings)

End Use	Type of Energy Consumed	Unit	Annual Consumption	MMBtu Equivalent	Percent of Total Usage
Buildings	Electricity	kWh (kilowatt hours)	5,108,016	17,429	40%
	Natural Gas	therms	244,064	24,406	57%
		Sub-Total	**N/A**	**41,835**	**97%**
TOTAL		**Total**	**N/A**	**43,159**	**100%**

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

[1] The electricity purchased by Portage County to operate streetlights and signs is tracked; yet it is not included in these totals in keeping with the format of the 2010 Strategic Energy Management Plan and Portage County Energy Report, 2013.

Utility Costs

The largest energy expenditure in 2015 was for buildings: $437,109 for electricity, and $139,778 for natural gas. Together these costs make up 95% of the total costs for the County's electricity and natural gas usage. In total, the County spent an estimated $610,307 on electricity and natural gas in 2015, which is $81,307 less than was spent in 2009.

Portage County 2015 Energy Cost by Type of Energy and End Use (Buildings)

End Use	Type of Energy Consumed	Dollars	Percent of Total Usage
Buildings	Electricity	$437,109	72%
	Natural Gas	$139,778	23%
	Sub-Total	**$576,887**	**95%**
	Total	**$610,307**	**100%**

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

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. (A Btu is a common unit of energy. One MMBtu is a million Btu.)

2015 Dollars per MMBtu by Energy Type

Energy Type	$/MMBtu
Electricity (kWh)	$25.74
Natural Gas (therms)	$5.73
Average	**$14.21**

Source: Data from Wisconsin Public Service, Alliant Energy, and Central Wisconsin Electric Cooperative.
Note: Electricity costs subject to cost-sharing are excluded from this calculation.

Detail and Discussion

Buildings

Variability in weather is important when evaluating building performance over time. Between 2008 and 2015, the year with the coldest winter months was 2014, and the year with the hottest summer months was 2010. That is measured in heating degree days ("HDDs") and cooling degree days ("CDDs").

County-operated buildings' performance in terms of natural gas (used predominantly for space heating) generally improved between 2009 and 2015. Over the same period Portage County buildings' total electricity use has not changed dramatically. Several buildings have seen more variability than others. Electricity use among the twelve buildings operated by Portage County decreased by about 3% in 2015 compared to the previous year – even with a substantial increase in air conditioning loads associated with an increase in cooling degree days.

Space Heating:

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 indicate furnace loads and relate to natural gas consumption in these buildings.

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 2015, the amount of natural gas used per heating degree day ("HDD") has dropped by about 9% across all facilities covered in the 2010 Strategic Energy Management Plan, and by about 11% among the twelve buildings operated by Portage County[2]. Many energy efficiency improvements implemented in county owned facilities in recent years have contributed to this improvement in building heating performance.

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

	2008	2009	2010	2011	2012	2013	2014	2015
MMBtu/HDD	3.14	3.31	3.45	3.24	2.94	2.80	3.09	3.03

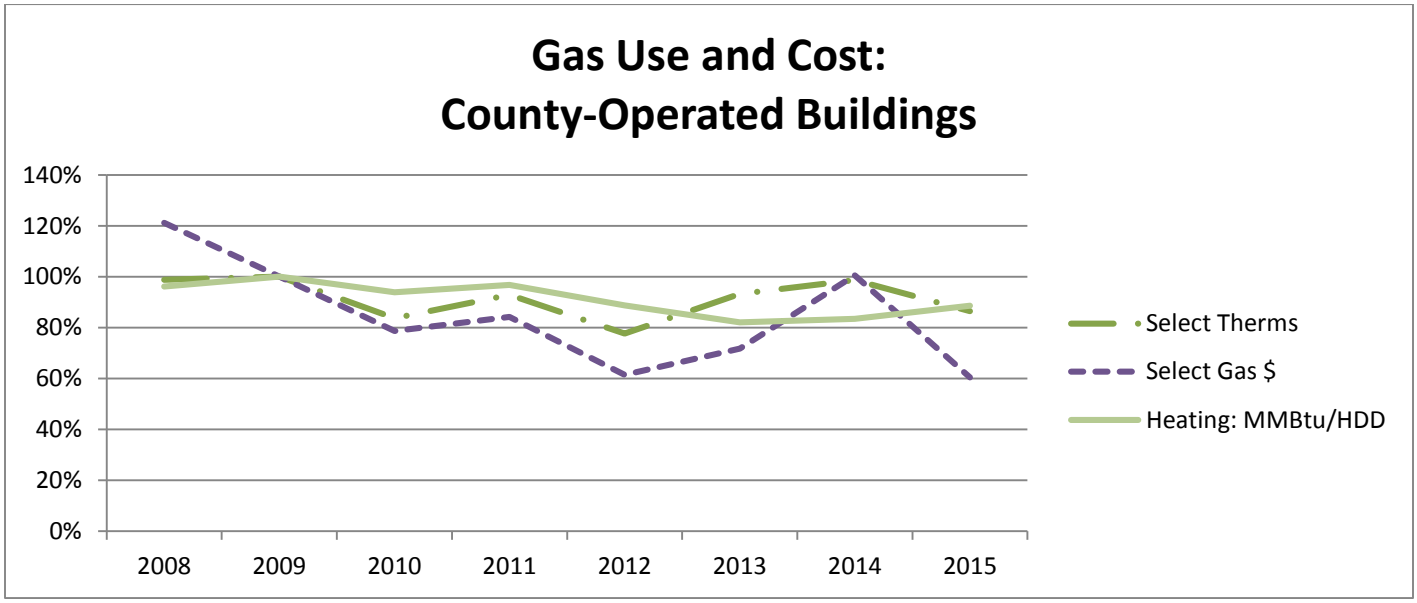
Ratio of *Portage County-Operated* Buildings' Natural Gas Consumption to HDD* (MMBtu/HDD)

	2008	2009	2010	2011	2012	2013	2014	2015
MMBtu/HDD	2.87	2.99	2.81	2.89	2.65	2.45	2.50	2.65

By this measure, if heating performances of the twelve county-operated buildings had remained what they were in 2009, the county would have required about 48,100 more therms to heat them than it actually did in 2014. This would have cost about $39,300 more in 2014 alone.

For the buildings operated by Portage County rather than a contracted service provider, the improved heating performance is most pronounced. 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 the twelve county-operated buildings, the natural gas demand per HDD has dropped by about 11% since 2009.

Gas Use and Cost: Portage County-Operated Buildings



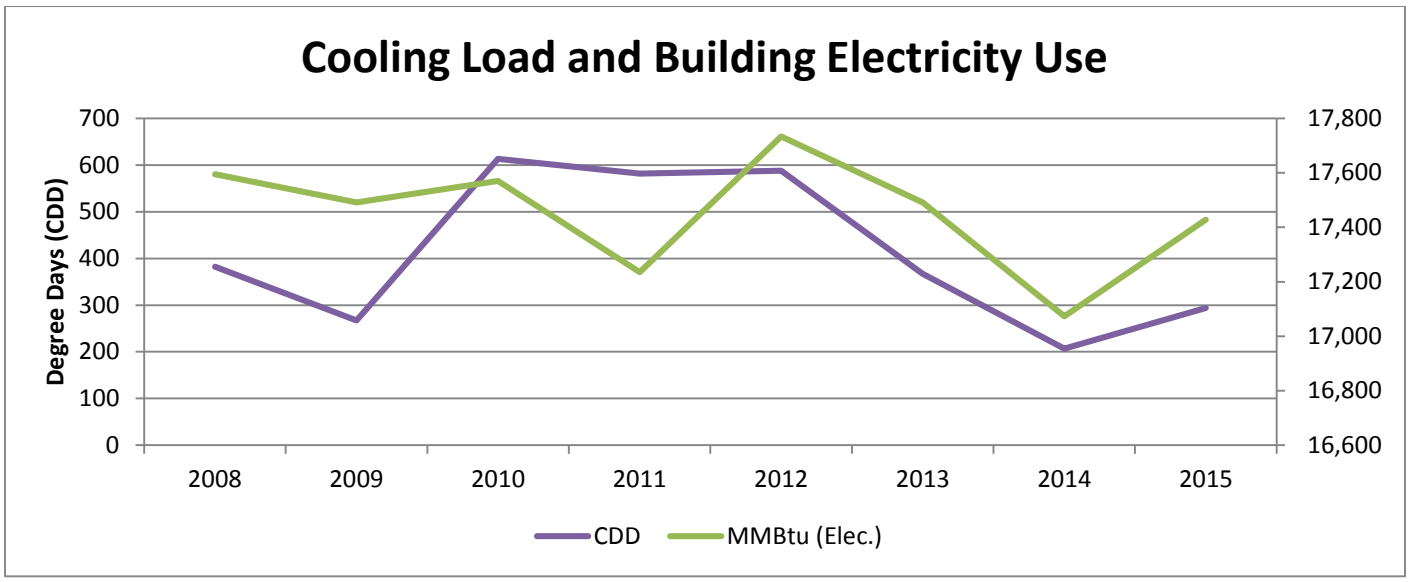
Space Cooling:

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

[2] See Appendix A for county buildings operated by Portage County.

Building[3]. So the relationship between cooling degree days and building electricity use is not always very clear regarding annual data, yet may still be seen in the figure below.

Cooling Load and Building Electricity Use



Parks

The County Parks' electricity and natural gas use consists of use at shelters and by outdoor lighting in the parks. These facilities show substantial year-to-year variability in energy usage. Usage varies according to the use of parks by visitors, and also varies by the types of operations that need to be performed each year for maintenance.

Energy Use, and Costs, for Portage County Parks (2011 to 2015)

	2009	2010	2011	2012	2013	2014	2015
Electricity (kWh)	185,796	169,546	150,108	182,398	155,486	144,243	153,483
Electricity Costs ($)	$25,658	$24,269	$22,919	$26,388	$23,807	$22,646	$24,986
Natural Gas (Therms)	108	252	262	201	167	227	251
Natural Gas Costs ($)	$158	$284	$296	$204	$192	$326	$297

Strategic Energy Management: Natural Gas and Electricity

Actions taken

Portage County has embraced the practice of improving building facilities gradually, as replacements become necessary and as other opportunities and demands emerge. Typically pursued in order to contain costs, numerous improvements have helped do so by advancing energy efficiency as well. 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

[3] 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.

including costs and estimated payback periods for each project implemented, are given in tables (by building) in the appendices of this report.

Efforts in recent years have centered on tracking energy uses and costs, establishing meaningful performance-based measures, engaging more staff and leadership to foster innovation and inform investments, and exploring ways for the county to help lead and improve community energy security on a broader scale.

Considerable focus in 2012 and 2013 was on data tracking used in preparing the first annual energy report since adoption of the energy plan. Practical observations and insights from all county staff were actively sought especially where explanation of trends was needed. Also compiled were a few related measures that indicate the dynamic service demands and variations in heating and cooling loads. As in the 2013 energy report, facilities owned and controlled by Portage County are indicated in the appendices. Yet more could perhaps be done to develop meaningful performance-based measures with respect to the important services provided by each department. Efforts especially in 2014 focused on engaging a lot more staff through a series of meetings specific to participating departments. In these meetings, energy use data and recent trends were examined and discussed. Many successes and responsible actions were noted and encouraged, and a many remaining opportunities and challenges were identified.

Progress toward achieving Goals

Overall Snapshots as Reported	**2009**	**2014**	**2015**	**'15 as % of '09**
Number of Portage County government buildings:	15	14	14	-
County electricity and natural gas use (MMBtu):	46,638	48,491	43,159	93%
Electricity (kWh)	*5,651,787*	*5,359,797*	*5,488,837*	*97%*
Natural Gas (therms)	*273,544*	*302,031*	*244,315*	*89%*
Cost of County electricity and natural gas use:	$691,614	$696,644	$610,307	88%
Electricity ($)[5]	*$470,273*	*$450,062*	*$ 470,232*	*100%*
Natural Gas ($)	*$221,341*	*$246,582*	*$ 140,075*	*63%*
Estimated CO_2 Emissions (lbs CO_2)	12,765,476	12,604,955	12,147,553	95%

Snapshots for Comparison and Evaluation	**2009**	**2014**	**2015**	**'15 as % of '09**
Number of Portage County-controlled buildings:	12	12	12	-
County electricity and natural gas use (MMBtu):	42,140	39,657	36,200	**86%**
Electricity (kWh)	*5,117,203*	*4,481,084*	*4,354,235*	*85%*
Natural Gas (therms)	*246,805*	*243,677*	*213,437*	*86%*
Cost of County energy (kWh & therms) use:	$606,683	$565,935	$489,659	81%
Electricity ($)[4]	*$408,563*	*$366,709*	*$369,926*	*91%*
Natural Gas ($)	*$198,120*	*$199,226*	*$119,733*	*60%*
Estimated CO_2 Emissions (lbs CO_2)	11,547,900	10,434,964	9,866,287	85%

Regarding "Snapshots for Comparison and Evaluation" above, the adopted goal of a 10% reduction in energy use was achieved regarding the set of twelve buildings operated by Portage County. Looking as far back as 2008, 2012 was the year in which the least natural gas was 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

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

alone, a consumption decrease of 22% was complemented by a price decrease of 21% to achieve a net cost savings of 38%.

Focusing on the buildings and facilities operated by the county (Snapshots for Comparison and Evaluation), utility costs in 2014 were $40,748 less than in 2009. This represents a total cost savings of about 7%.

Transportation Fuels and Costs

Portage County spent $507,232 on fuels for county-owned vehicles and equipment in 2015, purchasing a total of 239,294 gallons of fuel. Total county department fuel purchases (for county-owned vehicles and equipment) from 2012 to 2015 are summarized in the table below. These totals include both unleaded and diesel fuels.

	Total Gallons	Cost	Total Gallons	Cost	Total Gallons	Cost	Total Gallons	Cost
	2012	2012	2013	2013	2014	2014	2015	2015
Highway	167,916	$568,548	233,487	$811,778	182,512	$703,214	150,301	$300,951
Parks	9,973	$35,362	9,808	$33,987	9,873	$33,467	9,601	$21,064
Sheriffs	61,447	$197,697	60,280	$197,003*	57,300	$182,762*	59,095	$136,213*
Fleet	19,495	$88,271	21,827	$102,823*	21,017	$72,470*	20,297	$49,004*
TOTAL	**258,831**	**$889,879**	**325,402**	**$1,145,591**	**270,702**	**$991,913**	**239,294**	**$507,232**

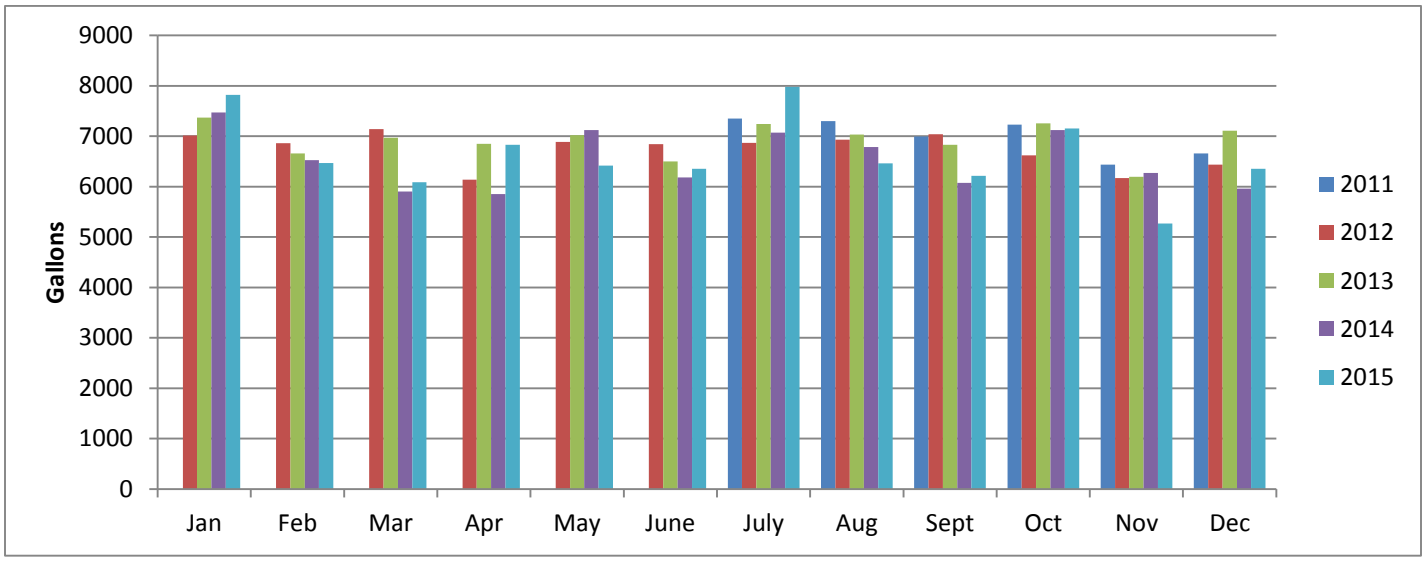
*Cost totals shown here do not take into account volume discounts for retail purchases.

Over the past three years, total dollars spent on mileage reimbursements for county-related travel totaled $200,545 (2013), $205,518 (2014), and $140,726 (2015).

Retail (Gas Station) Fuel Purchases:

Monthly retail fuel purchases (including both gasoline and diesel) since July 2011 are shown in the chart below.

Retail Fuel Purchases, 2011-2015



Bulk Fuels (Highway and Parks Departments)

The purchase of bulk fuels occurs periodically, and a purchase in one time period (shown in the tables below) doesn't necessarily reflect consumption in that period exactly.

The quantity of fuel purchases varies in part with construction activity during the summer months, and with snow removal in the winter months. Compared to 2012, annual snowfall in Stevens Point area in 2013 and 2014 was 87% and 78% higher, respectively, (http://www.usclimatedata.com/). The Parks Department's overall fuel purchases have been fairly consistent. Notably, the Park Department's replacement of older and worn out vehicles over the years has gradually increased the fuel economy of its fleet with some work trucks achieving 20 miles per gallon.

Fuel prices have continued to rise up until 2015 when they dropped. Focusing on the Highway department's purchase of diesel fuel in particular: compared to 2013, a 23% decrease in diesel fuel purchases in 2014 coincided with a 12% increase in average prices, resulting in just a 14% overall decrease in cost to the highway department for diesel fuel which amounts to $108,125 fewer dollars spent compared to 2013.

Gasoline	2011		2012		2013		2014		2015	
	Gallons	Cost	Gallons	Cost	Gallons	Cost	Gallons	Cost	Gallons	Cost
Highway	17,403	$56,154	15,000	$50,331	16,512	$50,196	16,067	$49,757	16,026	$35,079
Parks			5,949	$22,670	5,752	$19,657	4,848	$18,099	5,125	$12,313

Diesel	2011		2012		2013		2014		2015	
	Gallons	Cost	Gallons	Cost	Gallons	Cost	Gallons	Cost	Gallons	Cost
Highway	119,713	$347,699	152,916	$518,217	216,975	$761,582	166,445	$653,457	134,275	$265,872
Parks			4,024	$12,692	4,056	$14,331	5,114	$16,890	4,476	$8,752

Continued Strategic Energy Management Efforts

Given the high (and often rising) cost of energy and 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.

In 2014, UW-Extension CNRED Educator and a part-time Energy Intern engaged staff of various relevant departments – sharing building-specific energy use trends and ideas for further energy savings. These department-level discussions revealed some successes, opportunities, and challenges (as of Fall/Winter 2014). Some of these and additional observations are listed below, and dozens more are documented separately as case studies from meetings with participating departments.

Current Overview of Successes, Opportunities, and Challenges Regarding Utilities:

- Success: the Solid Waste Department has reduced air infiltration in its facilities by installing doorway curtains and opening garage doors less frequently and for a shorter duration.
- Success: timers installed on the Highway Department's 1.2 kW engine block heaters have them running only when needed instead of constantly, and computer chips turn off idling patrol trucks after 12 minutes.
- Success: the Highway department (and other individuals) routinely look for anomalies in utility bills and can match each with a specific meter.
- Success: department have made purchases that conserve energy.
- Success: the Parks Department "mothballs" several buildings each winter, reducing their energy use to minimum levels.
- Success: handheld meters that measure electricity use has allowed Courthouse Building staff to make behavioral changes that improve energy conservation while minimizing inconvenience.
- Success: the Facilities Management Department has completed many low cost/high savings energy conservation projects across numerous facilities and departments.
- Success: a new variable frequency drive motor on the landfill's methane flare spins only as fast as needed (typically a ~14 amp draw) instead of at the maximum speed (a ~33 amp draw).
- Success: improvements in systems for tracking purchases.

- Success: dedicated funds in the capital budget to explore energy efficiency and renewable energy opportunities.
- Success: partnered with UWSP for assistance from both an intern and a college of natural resource professor dedicated to exploring and communicating (to staff) numerous energy management strategies.
- Opportunity: exploring potential local government role in promoting energy efficiency improvements that create value (property, and savings) for county residents and businesses throughout the community.
- Opportunity: continuing to invest in basic and innovative energy efficiency measures in existing facilities.
- Opportunity: ensuring high performance and lasting use through excellent design of future building projects.
- Opportunity: using Energy Star Portfolio Manager to better evaluate performance of certain buildings and to engage staff in pursuing operational efficiencies.
- Opportunity: engage business park companies in exploring any interest and opportunity to save energy (and water) by limiting the irrigation to common area trees and high value plantings most vulnerable to drought.
- Opportunity: training a local government employee in solar installation to reduce associated costs
- Opportunity: assist the Human Resources Department in providing employees with energy management training, clear expectations, and easy-to-use energy management tips and memory aids.
- Opportunity: provide sunny offices with anti-glare screens so that they can keep the shades open in the winter.
- Opportunity/Challenge: examining energy costs that are part of the products and services purchased require detailed accounting information that is not always readily available in a form that is most useful.
- Opportunity/Challenge: consideration of creating a clearly defined policy establishing a preference for purchase of locally sourced and/or environmental sound products and services.
- Challenge: project costs – even as mitigated by previously available grants – have been a top concern of Portage County in rejecting two renewable energy projects proposed at County Parks in recent years.

Current Overview of Successes, Opportunities, and Challenges Regarding Transportation Fuels:

The rising price of fuels affects the cost-effectiveness of any fuel-intensive services provided by county departments. Beyond ongoing pursuit of simple and inexpensive strategies (technologies and practices) that may help to minimize the amounts of fuel required in meeting service demands, a more comprehensive response that is commensurate to rising prices (among other concerns) could also include high-level deliberation of how best to align investments in equipment, practices and important services in the long run.

- Success: the Highway and Parks departments carefully track bulk fuel purchases and quickly respond to requests for that data.
- Success: the Parks and Highway Departments have both boosted vehicle/equipment utilization to generate more revenue in a model that also seeks to reduce operating costs.
- Success: replacement of worn out and older vehicles with more-efficient models over the years, and/or improvements in vehicle utilization (matching capabilities of vehicles and attachments for the demands placed on them), has occurred in the Parks and Highway Departments.
- Success: thoughtful driving techniques that improve fuel economy are understood and often practiced by staff in the Parks Department.
- Success: continued placement of natural windbreaks (in collaboration with land owners) to reduce the need to install snow fences each year.
- Success: patrol trucks (Highway Department) have timers that turn off engine if idled for 12 minutes.
- Opportunity: further training resources for energy-conserving driving techniques may be of interest to staff of the Parks Department, and the Aging and Disability Resource Center; and might be included as part of the orientation and trainings provided by the Human Resources department if and where appropriate
- Opportunity: exploration of opportunities for carpooling or otherwise combining errands may be of interest to Portage House and the Aging and Disability Resource Center.

- Opportunity/Challenge: switching from an 18 to 10 year patrol truck replacement cycle (Highway Department) might hasten improvements in fuel economy and enable the Department to recover more value from vehicles sold - yet would need to be considered by the Highway Commission as it effects upfront costs.
- Opportunity: highway Department was interested in exploring snowplow route optimization.
- Success/Opportunity/Challenge: continue to evaluate alternative fuels' plausibility, and monitor growth in its infrastructure and technology.
- Challenge: unexpected weather can greatly affect how quickly the Highway Department must spend funds allocated for snowplowing (as conventionally based on the previous year).

Appendices

Appendix A: 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	
	1039 Ellis St.	Portage County	Commercial Tenant (BHTP)	v
	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 elsewhere.

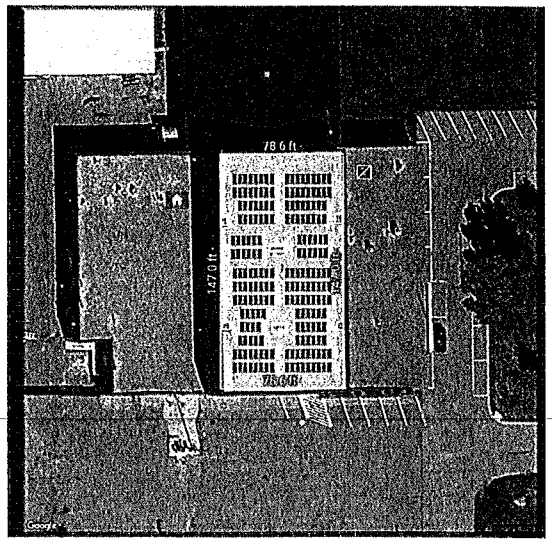
i. As in prior inventories (2009, 2010), this report includes 50% of this building's energy use.

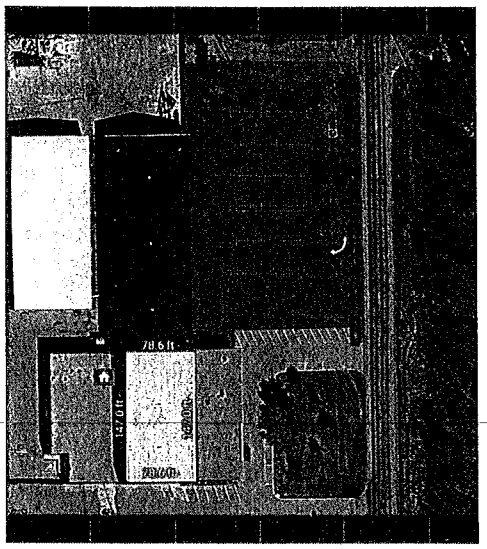
ii. Included in past inventories, and in total; but not included in certain comparisons over time in this report. RVs/users change each year and are not controlled by Portage County. New facilities such as Dewey Marsh Shooting Range, and the potential Standings Rocks Snow-Making machine might also be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

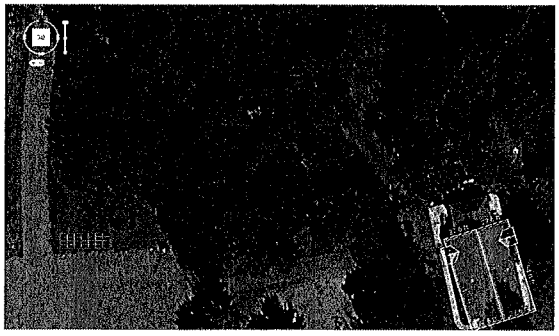
v. Energy use is not included in this report.

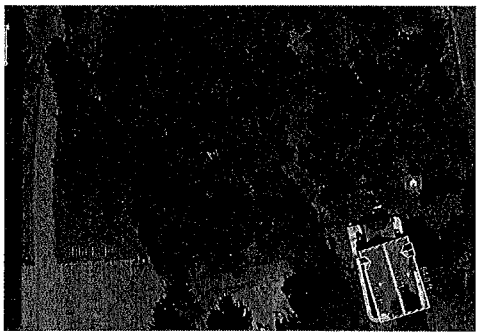




Highway Department Solar

	Roof Mount	Ground Mount
PV System Size	73 kW (205 modules)	116.6 kW (324 modules)
Estimated Annual Energy Production	86,368kWh – 56% offset	155,059 kWh – 101% offset
Levelized Cost of Energy (30 year)	$.057	$.048
System Cost	$171,000 - $34,547 ($.40/kWh) Focus Rebate = *$136,453 net cost*	$272,00 - $62,023 ($.40/kWh) Focus Rebate = *$209,977 net cost*
30 year IRR	8.13%	9.74%
Simple Payback	Approx 14 years	Approx 12 years





Nepco Park Solar

	Seasonally Adjustable Ground Mount	Ground Mount
PV System Size	8.5 kW (28 modules)	8.5 kW (28 modules)
Estimated Annual Energy Production	11,896 kWh –47 % offset`	11,300 kWh – 45% offset
Levelized Cost of Energy (30 year)	$.089/kWh	$.068/kWh
System Cost	$37,000 - $4,000 Focus Rebate - $1,281 CWGB Rebate - = *$31,719 net cost*	$24,300 - $2,916 Focus Rebate – $1,281 CWGB Rebate = *$20,103 net cost*
30 year IRR	5.40%	7.87%
Simple Payback	Approx 18 years	Approx 14 years

Red Sands Beach Solar

	Roof Mount	Ground Mount
PV System Size	4.2 kW (14 modules)	4.2 kW (14 modules)
Estimated Annual Energy Production	5,209 kWh – 112% offset	5,173 kWh – 112% offset
Levelized Cost of Energy (30 year)	$.074	$.11
System Cost	$12,900 - $1548 Focus Rebate = *$10,712 net cost*	$18,100 - $2,172 Focus Rebate = *$15,928 net cost*
30 year IRR	5.32%	1.75%
Simple Payback	Approx 15 years	Approx 19 years

Nancy,

Attached are Alliant Energy's proposed renewable options, one of which is Customer Hosted Renewable as a pilot program. There will be a limit to the number of customers that can participate during the pilot. Alliant Energy would maintain and manage these projects. As I mentioned previously, the RECIP program hosted by Focus on Energy pertains to projects that are owned by customers on their own property.

We do not yet have written approval from the PSCW for these programs, but we're starting a list of customers who have expressed interest in participating. I will add Wood County to the list, which will get you in the line but will not obligate you in any way to participate.

As soon as we have approval we will reach out to you.

Mary

Mary Eiler Radl, Key Account Manager

Alliant Energy
528 Industrial Avenue, Tomah, WI 54660
Office: (608) 372-0353 Cell: (608) 387-4101
alliantenergy.com maryradl@alliantenergy.com

ALLIANT ENERGY
Wisconsin
Power and Light

Volume III, Original Sheet No. 9.80
Amendment XXX, Schedule REP-1

RENEWABLE ENERGY PARTNER ELECTRIC

1. Effective In

All area served by the Company.

2. Availability

This schedule is available to any customer served under a commercial or industrial rate schedule that chooses to purchase all or a portion of its electricity requirements from renewable energy from a designated resource as outlined below. Availability of this rider is capped at a total of 150 MW_{ac} of existing customer load.

This offering requires a contract between the Company and the customer. For purposes of this rider, an eligible customer is defined by tax ID for non-governmental entities or a single unit of government (e.g., municipality, county, school district, etc.) with multiple accounts. Such customer may aggregate any of its eligible accounts under a single contract with the Company, up to a maximum number of accounts as determined by the Company on a case-by-case basis. The details regarding aggregation and billing will be addressed in the contract.

A separate contract is required for each customer, and multiple customers are not allowed to aggregate loads under a single contract.

3. Contract Terms and Provisions

Contracts developed under this rider, and any subsequent amendments, must be filed and approved by the Public Service Commission of Wisconsin (PSCW) in accordance with Wis. Stat. § 196.192. If the PSCW raises specific issues with a contract, the Company and the customer will be allowed a reasonable time period to address those issues before the PSCW approves or denies the contract.

The contract filed with the PSCW will include, but is not limited to, the following information:

a. Details about the dedicated renewable resource, including, but not limited to, the following:

   1) Project description, equipment type, location and cost;

   2) Size in kW and projected kWh energy production;

   3) Total percentage of anticipated consumption coincident with energy production; and

   4) Project timeline.

b. Contract agreement term.

ALLIANT ENERGY
Wisconsin
Power and Light

Volume III, Original Sheet No. 9.80
Amendment XXX, Schedule REP-1

RENEWABLE ENERGY PARTNER ELECTRIC

c. Renewable resource rate(s) reflecting all costs associated with the dedicated resource including any upfront contributions or administrative charges.

d. Nameplate capacity and the estimated applicable Midcontinent Independent System Operator (MISO) accredited capacity value of the dedicated renewable resource.

e. Provisions to address early termination by either the Company or the customer.

f. Provision to address default by either the Company or the customer in fulfilling obligations under the contract.

g. Information about the customer's creditworthiness.

4. Rate

A customer taking service under this rider will be responsible for all rates, adjustments, and credits specified in the customer's otherwise applicable rate schedule(s), unless specifically addressed otherwise in this schedule. Additionally, a participating customer will pay the cost of the dedicated renewable resource, as agreed upon in the contract, and will receive a bill credit for the renewable energy generated specifically for the customer by the dedicated renewable resource. Such bill credit will be determined based on the Energy Credit Value applied to the lesser of the energy generated by the dedicated renewable resource for the customer or the customer's actual energy consumption, for each 60-minute interval in the billing period. Any excess generation above a customer's load for a given 60-minute interval will be provided to non-participating customers at no cost. Energy Credit Values will be based on the settled market value of the produced energy less any MISO charges established for a MISO pricing node, but in no case shall an hourly Energy Credit Value be less than zero. Pricing node to be determined and included in the contract. Capacity valuation may be negotiated on a project-specific basis.

Renewable Energy Attributes

Participating customers will be assigned all renewable energy attributes, including Renewable Energy Credits, regardless of the amount of energy that is used to calculate the participating customer's energy credit as defined above.

Renewable energy purchases under this rider are exempt from fuel cost surcharges and credits.

Minimum Charge

The minimum charge will consist of charges from the customer's otherwise applicable rate schedule plus any charges as defined in the contract.

ALLIANT ENERGY
Wisconsin Power and Light

Volume III, Original Sheet No. 9.80
Amendment XXX, Schedule REP-1

RENEWABLE ENERGY PARTNER ELECTRIC

Late Payment Charge

Late payment charges as shown in the Rules and Regulations Applicable to Electric and Gas Service will apply to outstanding charges.

5. Other Terms and Provisions

Within a reasonable time (30 days) after receiving a customer request for service under this rider, the Company will begin discussions with the customer to determine if mutually agreeable terms can be reached with respect to a designated renewable resource in accordance with Wis. Stat. § 196.192.

Any customer electing service under this rider waives all rights to any billing adjustment arising from a claim that the bill for the customer's service would be cheaper under any alternative rate schedule for any period of time, including any rights under Wis. Admin. Code § PSC 113.0406(4).

The Company may limit participation in the program based on a customer's account standing, bill payment and collection history.

Service under this rider may be limited at the sole discretion of the Company.

ALLIANT ENERGY
Wisconsin
Power and Light

Volume III, Original, Sheet No.
Amendment XXX, Schedule CSP-1

COMMUNITY SOLAR ELECTRIC

1. Effective In

All territory served by the Company.

2. Availability

This program is available to any customer taking service under one of the Company's electric rate schedules who chooses to offset their electric bills through a subscription to the Alliant Energy Community Solar Program per the terms of a community solar contract with the Company, provided that the following requirements are met:

a. No single subscriber may have more than a 60 percent interest in the nameplate capacity of any individually metered Alliant Energy Community Solar Facility.

b. For each Alliant Energy Community Solar Facility, the Company will reserve for subscription by residential customers an amount of nameplate capacity that is equal to the lesser of (i) 25 percent of the available subscription blocks for such Alliant Energy Community Solar Facility or (ii) 250 kilowatts.

c. If the reserved residential portion identified in Section 2.b. above is not fully subscribed by residential subscribers after six months of an Alliant Energy Community Solar Facility becoming operational, the Company will make any remaining unsubscribed subscription blocks available for subscription by non-residential customers.

3. Subscription Block Size

A subscription block is a proportionate interest in the beneficial use of the electricity generated through the Alliant Energy Community Solar Program. Subscriptions blocks must be elected in 250 Watt (AC) increments. The maximum number of subscription blocks allowable per subscriber is the nearest 250 Watt increment that meets the annual average usage of the subscriber, as determined by the Company. The subscription, when combined with certain other tariff offerings, may not exceed 100% of the average annual usage as set forth in the community solar contract

The Company will use the subscriber's most recent twelve months of electric energy consumption to determine the subscriber's average annual usage. If this amount is not representative of predicted usage, or if this data is not available, the Company will provide an estimate.

4. Program Subscription Limit

The Company offers the Alliant Energy Community Solar Program to retail metered electric customers, beginning at the effective date of the tariff, until fully subscribed. Subscriptions may be offered for more than one Alliant Energy Community Solar Facility. A single facility is anticipated to be 1 MW in size. The total amount of capacity available

ALLIANT ENERGY
Wisconsin
Power and Light

Volume III, Original, Sheet No.
Amendment XXX, Schedule CSP-1

COMMUNITY SOLAR ELECTRIC

for subscription in the Alliant Energy Community Solar Program shall not exceed 3 MW. Subscription applications will be processed on a first come, first served basis. The Company cannot guarantee customers will be able to subscribe to an Alliant Energy Community Solar Facility located in their region. At its sole discretion and consistent with the terms of this tariff, the Company reserves the right to determine the size, number, and location of any Alliant Energy Community Solar Facilities.

5. Subscription Period Length

The maximum term for a subscription is 20 years from the start of commercial operation of an Alliant Energy Community Solar Facility.

6. Upfront Subscription Fees

Each Alliant Energy Community Solar Facility will have an upfront subscription fee including the cost of power generation, land, interconnection facilities, marketing and administration costs of [•] per 250 Watt (AC) subscription block. Subscriber payment of such upfront subscription fee is due as follows:

a. A deposit equal to ten percent of the total subscription fee per block is due at the time of enrollment.

b. The remaining upfront subscription fee may be paid in a lump sum or in installments over a 12-month period. Failure to pay the entire subscription fee balance within one year of enrollment could result in the forfeiture of the subscriber's potential subscription, and the loss of monies already paid towards the upfront subscription fee.

c. The upfront subscription fee for an Alliant Energy Community Solar Facility is subject to the application of a price factor based on the number of years the subscription capacity of the applicable Alliant Energy Community Solar Facility has been available at the time of subscriber enrollment. Year 1 begins on the date of commercial operation of the Alliant Energy Community Solar Facility. The first day of each subsequent year is the anniversary of the commercial operation date. These factors are shown in the table below.

Subscription Fee Price Factor Schedule

Years (1-7)	Percent of Purchase Price	Years (8-14)	Percent of Purchase Price	Years (15-21)	Percent of Purchase Price
1	100%	8	65%	15	30%
2	95%	9	60%	16	25%
3	90%	10	55%	17	20%
4	85%	11	50%	18	15%
5	80%	12	45%	19	10%
6	75%	13	40%	20	5%

ALLIANT ENERGY
Wisconsin
Power and Light

COMMUNITY SOLAR				ELECTRIC	
7	70%	14	35%	21	0%

7. Monthly Solar Production Bill Credits

a. Subscribers will receive production bill credits for the applicable Alliant Energy Community Solar Facility for the relevant production month. Production bill credits are based on the mathematical product of:

1) The allocation of the customer's subscribed percentage of kW capacity to the total monthly amount of kWh energy produced by the Alliant Energy Community Solar Facility, and;
2) The current, or floor, solar production credit rate, whichever is higher. The solar production credit rate is updated annually. The rate in effect when the Alliant Energy Community Solar Facility becomes operational establishes the solar facility floor rate for such Alliant Energy Community Solar Facility.

b. Due to variability in billing dates, the production month to which solar production credits are applicable will not necessarily match the billing period for the retail electric service on customer bills.

8. Subscription Fees and Solar Production Credit Rates

Alliant Energy Community Solar Facility Subscription Fee			*Solar Production Credit Rate		
Alliant Energy Community Solar Facility Name	In-service Date	Cost per 250 Watt Block		Commercial Credit $/kWh	Residential Credit $/kWh
			Floor	$0.056	$0.063
			Current Year	$0.056	$0.063
			Floor		
			Current Year		
			Floor		
			Current Year		

*The solar production credit rates equal the sum of the production capacity rate per kWh as determined in the Company's most recent rate proceeding cost of service study, and the annually updated average standard avoided cost of energy as included in rate schedule PgS-3.

ALLIANT ENERGY
Wisconsin
Power and Light

Volume III, Original, Sheet No.
Amendment XXX, Schedule CSP-1

COMMUNITY SOLAR ELECTRIC

9. Administration Charge

In addition to subscription fees, a $25.00 non-refundable administrative charge is due at the time of enrollment.

10. Cancellation

The Company has the unilateral right to cancel a subscription at any time if an Alliant Energy Community Solar Facility does not achieve commercial operation, experiences a Force Majeure event, or for any other reason. Upon cancellation by the Company for any reason other than subscriber's violation of the rules of this rider or the reason's specified in Section 10.a. below, the Company will refund a pro rata share of the subscription fee(s) as shown in the cancellation refund schedule below.

a. A subscriber's community solar contract will be considered cancelled and not eligible for a refund of the pro rata share of the upfront subscription fee under the following conditions:

   i. If for 90 days or more, the subscriber is no longer the customer of record at the service address identified in the community solar contract and the subscriber does not provide notice of cancellation under Section 10.b. below before the end of this 90-day period, or the contract is not properly transferred before the end of this 90-day period as described in Section 11 below.

   ii. If any of the representations of the subscriber in the community solar contract are false or incorrect, such false or incorrect representation may constitute a material breach of the community solar contract, and the Company may cancel the community solar contract upon notice to the subscriber.

b. In the event the subscriber provides notice of cancellation of a community solar contract due to: Force Majeure, the subscriber moving or relocating outside the Company's service territory, or the subscriber ceasing to be a customer of the Company for other reasons, the Company will refund a pro rata share of the subscriber's upfront subscription fee, as set forth in the cancellation refund table below.

Year 1 begins on the date of commercial operation of the Alliant Energy Community Solar Facility. The first day of each subsequent year is the anniversary of the commercial operation date.

Cancellation Refund Schedule

Years	Percent of Purchase	Years	Percent of Purchase	Years	Percent of Purchase

Issued: Effective:
PSCW Authorization:

ALLIANT ENERGY
Wisconsin
Power and Light

Volume III, Original, Sheet No.
Amendment XXX, Schedule CSP-1

COMMUNITY SOLAR ELECTRIC

(1-7)	Price	(8-14)	Price	(15-21)	Price
1	95%	8	60%	15	25%
2	90%	9	55%	16	20%
3	85%	10	50%	17	15%
4	80%	11	45%	18	10%
5	75%	12	40%	19	5%
6	70%	13	35%	20	0%
7	65%	14	30%	21	0%

11. Transfers of Subscriptions

a. Transfers of Subscriptions to a New Premise of the Customer in the Company's Service Territory. A subscriber may elect to transfer subscription(s) to a new premise of the customer in the Company's service territory. Such transfer is not subject to cancellation provided that the subscriber notifies the Company of such transfer within 90 days of ceasing to be the customer of record for the premise as described in the community solar contract. A transfer of a subscription will only be effective if the recipient satisfies the terms and conditions applicable to the subscription and the Alliant Energy Community Solar Program Contract and assumes all responsibilities associated therewith.

b. Transfers of Subscriptions to a Third-Party Customer of the Company. A subscriber may elect to transfer subscription(s) to an extended family member of the subscriber who is a residential customer of the Company, to the new owner of the premise if the subscriber ceases to be the customer of record for the premise as described in the community solar contract, or to a non-profit organization in the Company's service territory. The transfer is not subject to cancellation provided that the subscriber notifies the Company within 90 days of ceasing to be the customer of record for the premise as described in the contract. Credit to the new owner will begin in the subsequent billing month after the current subscriber notifies the Company of the transfer. A transfer of a subscription will only be effective if the recipient satisfies the terms and conditions applicable to the subscription and the Alliant Energy Community Solar Program Contract and assumes all responsibilities associated therewith.

12. Other Terms and Conditions

In addition to the above, the following terms and conditions will apply.

a. All terms and conditions of the subscriber's otherwise applicable rate schedules apply.
b. All terms and conditions apply as stated in the community solar contract between the Company and the subscriber for participation in the Alliant Energy Community Solar Program.
c. Except as specified in this paragraph, all Renewable Energy Credits (RECs) associated with the Alliant Energy Community Solar Program will be assigned to the Company, and the Company will retire all such RECs that are tracked in the Midwest

ALLIANT ENERGY
Wisconsin
Power and Light

Volume III, Original, Sheet No.
Amendment XXX, Schedule CSP-1

COMMUNITY SOLAR ELECTRIC

Renewable Energy Tracking System or any similar system on behalf of the program. If a subscriber seeks to retire the RECs associated with that customer's subscription on behalf of the subscriber, where feasible, the Company will work with that subscriber to retire those RECs on behalf of the subscriber.

d. Alliant Energy Community Solar Facilities will be interconnected to the Company's distribution system.
e. If the solar production bill credit exceeds the amount owned by a subscriber in any billing period, the excess portion of the solar production credit will be carried forward to the subscriber's next month's bill.
f. All rates are subject to periodic review and approval by the Public Service Commission of Wisconsin.
g. Service under this rider provides for generation or purchase of solar energy into the Company's system and not for actual delivery to the subscriber.
h. The Company reserves the right to deny subscriptions to customers in arrears with the Company.
i. The Company reserves the right to limit subscriptions due to the availability of solar energy from Alliant Energy Community Solar Facilities.
j. The Company reserves the right to terminate this rider in its sole discretion upon a requisite filing to the Public Service Commission of Wisconsin.

Issued: Effective:
PSCW Authorization:

ALLIANT ENERGY
Wisconsin
Power and Light

Volume III, Original Sheet No. XX
Amendment XXX, Schedule CHR-1

CUSTOMER-HOSTED RENEWABLES PILOT

1. Effective In

   All territory served by the Company.

2. Availability

   This pilot program is available to any customer served under a commercial or industrial rate schedule that would like to host a Company-owned Customer Solution (defined for purposes of this pilot program as solar panels and/or a battery storage system, inverter(s), cabling, mounting, trackers – if applicable – and associated controls that may also include enhancement technologies that allow for grid stabilization) on the customer's rooftop or ground mount site. The minimum nameplate capacity per installation is 200 kW (AC), and the maximum nameplate capacity per installation is 2.25 MW (AC). Availability of this pilot program is capped at a total of 35 MW (AC), with 10 MW (AC) reserved for non-profit organizations such as school districts and local governments.

   This offering requires a lease agreement between the Company and the customer hosting the Customer Solution. For purposes of this rider, an eligible customer is defined by tax ID for non-governmental entities or a single unit of government (e.g., municipality, county, school district, etc.) with multiple accounts. Such customer may aggregate any of its eligible accounts under a single contract with the Company, up to a maximum number of accounts as determined by the Company on a case-by-case basis. Aggregation of such accounts will also be determined by the Company on a case-by-case basis, and the details regarding aggregation will be addressed in the lease agreement.

   All energy generated from the Customer Solution will be delivered to the Company's distribution system.

3. Rate

   A customer participating in this pilot program will receive a monthly lease payment for hosting a Customer Solution. A customer entering into a lease agreement under this pilot program will be responsible for all rates, charges, adjustments, and credits specified in the customer's otherwise-applicable rate schedule(s).

   Rates for Customer Solutions Involving the Installation of Solar Panels

   The lease payment paid by the Company to the customer for a Customer Solution involving the installation of solar panels, with or without the installation of a battery storage system, shall be the value of the Midcontinent Independent System Operator ("MISO") accredited capacity of the Customer Solution multiplied by the value of capacity, as defined below, up to the lesser of (i) the customer's firm demand at the time the service agreement is entered into and (ii) five megawatts (5 MW). The lease

ALLIANT ENERGY
Wisconsin
Power and Light

Volume III, Original Sheet No. XX
Amendment XXX, Schedule CHR-1

CUSTOMER-HOSTED RENEWABLES PILOT

payment shall be paid to the customer in monthly installments equal to one-twelfth (1/12th) of the annual amount.

The value of capacity for a Customer Solution will be determined by MISO's Business Practice Manual ("BPM") current at the time of execution of the lease agreement between the Company and the customer and will be fixed for the duration of the lease agreement. The value of capacity will be the MISO zone 2 cost of new entry ("CONE") for the MISO Resource Adequacy Planning Year in which the lease agreement is executed, and this value of capacity definition is subject to change.

Customers with multiple accounts, as identified by tax-id or a single government entity, may host more than one Customer Solution and may aggregate their retail billed Customer Demands from eligible accounts up to 5 MW.

A participating customer may, at its sole discretion, elect to receive any Renewable Energy Credits ("RECs"), as defined in Wis. Stat. § 196.378(3), generated by a Customer Solution hosted by that customer. If the customer elects to receive RECs, if any, the lease payments made to the customer by the Company will be reduced by the value of the RECs. Each month, the value of the RECs will be determined by multiplying the market price for RECs at the time the lease agreement is executed by the quantity of RECs generated by the Customer Solution(s) hosted by that customer in the prior month. The value of RECs will not be adjusted during the term of the lease agreement. This election must be made at the time of execution of the lease agreement, and the participating customer's election will be binding for the term of the lease agreement. If the participating customer elects not to receive the RECs, all rights to RECs generated by the Customer Solution(s) hosted by that customer will be retained by the Company.

Rates for Customer Solutions that Do Not Involve the Installation of Solar Panels

For a Customer Solution that is solely a battery storage system, the battery storage system area lease will be based on the capacity (expressed in MW) of the battery storage system. The capacity of a battery storage system is based on the MISO definition, in which the capacity (expressed in MW) is equal to the energy discharge over four hours:

$$\text{Battery Storage System Capacity (in MW)} = \frac{\text{MWh of discharge over 4 hours}}{\text{4 hours}}$$

The annual lease rate will be an amount equal to the product of (i) the battery storage system capacity (in MW), multiplied by (ii) $1,500. The monthly lease payment paid by the Company to the customer will be an amount equal to one-twelfth (1/12th) of the annual lease rate.

ALLIANT ENERGY
Wisconsin
Power and Light

Volume III, Original Sheet No. XX
Amendment XXX, Schedule CHR-1

CUSTOMER-HOSTED RENEWABLES PILOT

4. Other Terms and Provisions

Each lease agreement will address, among other things, the following:

a. Duration of the lease agreement;
b. Customer Solution(s) size and description;
c. Basis of lease payments;
d. Insurance requirements related to the Customer Solution(s);
e. Survival of the lease agreement, and all associated terms, if the property is sold or transferred during the term of the lease agreement;
f. Provisions addressing expiration or termination of the lease agreement, including, among other things, retirement and removal of the Customer Solution(s) and site restoration;
g. Ownership of the RECs, if any, generated by the hosted Customer Solution(s), and
h. The value of each REC, if any, generated during the term of the lease agreement, if the customer elects to own the RECs.

The Company will retain ownership of and be responsible for operations and maintenance of each Customer Solution subject to this pilot program.

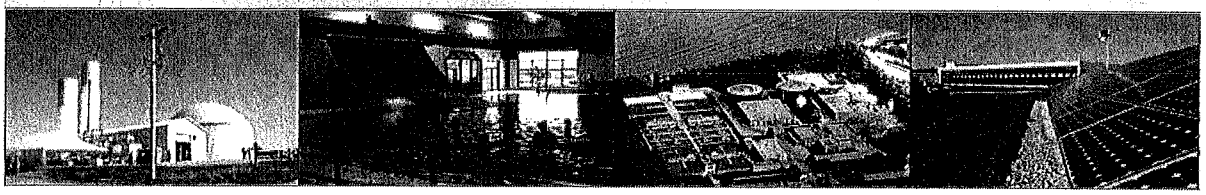
Participation in this pilot program may be limited by the Company. For example, the Company reserves the right to limit customer participation in this pilot based on a customer's bill payment and collection history and the cost to interconnect the solar or storage resource to the distribution system. Further, participation shall be subject to an assessment of the solar or storage resource and structural, environmental, or engineering suitability of the identified rooftop or ground mount location.

All other terms and conditions of a customer's applicable rate schedule(s) shall apply. If there is a discrepancy between the base rate schedule and this tariff, this tariff shall govern.

Energy On Wisconsin

Moving WI toward energy independence: 25% renewables by 2025

25 x '25



/Subscribe

Energy News Without the Spin

June 2019

Trending

Community Solar - Energy Efficiency & Health - Focus on Energy - Electric Bike Fleet - Rent-a-Roof - Ethanol - Corporate 100% Goals - MadiSUN

DIRECTOR'S NOTE

Summer Solstice just passed, so we're half way through 2019 and only 6 years away from 2025 - the year to achieve Energy Independent Community (EIC) Goals. More than 140 Wisconsin communities signed EIC resolutions (many back in 2009 and 2010), committing to generate 25 percent of their energy from renewable sources locally by 2025. Several are using that as an interim goal on the way toward 100 percent clean energy goals.

UW-Madison Extension and the Office of Energy Innovation, through the Energy On Wisconsin Program, are teaming to learn the status of EIC communities so that we can offer targeted assistance toward their success. We will be sending a survey to those communities soon.

To inspire, here's the story of one community's progress. The City of Middleton should surpass their 25% x '25 goal by the end of 2019; and, they will be half way to reaching their 100 percent renewable electricity goal by 2035 for city operations. This big increment will be added by purchasing 10 percent of the solar electricity from MGE's new 5 MW community solar garden (see Policy below). The Middleton-Cross Plains School District will purchase 20 percent of the solar electricity from the project as well.

Middleton residents and businesses will be able to purchase up to half of their electricity use from this second solar garden in Middleton. The 2018 Middleton Resolution to Address Global Warming through Clean Energy, sets a community-wide goal of 100 percent renewable electricity by 2040 (see EnergyOnWI News, July 2018). Residents and businesses, especially those without solar access, suitable roofs or financial ability to install solar on their own properties, will be encouraged to sign up for community solar to help reach the community-wide goal.

Other Wisconsin communities are working to transition to a stronger local clean energy economy as well as to local energy resilience. Many factors in motion will help EICs achieve their goals by 2025: Declining prices of solar, wind, and battery storage; Innovative financing like the Washburn/ Bayfield approach (see below); PACE Wisconsin financing for businesses; A strong Focus on Energy program; Utilities and developers building large scale renewable energy generation; The private sector like Organic Valley, Kohler, Target and Facebook driving the marketplace (see below); Research and innovation (see UW, Imagen and M-WERC below); State and local policy addressing the climate crisis; and, the transition to electric vehicles.

May your clean energy efforts flourish with the long days of summer and help communities move toward energy independence.

Sherrie Gruder

NEWS

Policy

PSC Approves More Community and Utility-Owned Solar

Community solar programs and pricing for MGE and Alliant Energy were approved by the PSC June 20, 2019. Also approved was Alliant Energy's request to provide utility-owned solar through, what's typically referred to as, a Rent-a-Roof program, similar to the controversial program adopted by We Energies last year (see New Berlin School District article below). The concern is about loss of free-market accessibility for solar.

MGE has contracted with OneEnergy Renewables to build a 5 MW solar garden in Middleton at the Middleton Municipal Airport. The system will generate 9 million kWh a year of electricity for 1,000 households and eliminate 16 million pounds of carbon dioxide annually. That same night, Eric Udelhofen of OneEnergy Renewables presented the environmental impact assessment at a Middleton public hearing to show that the 16,000 single-axis tracking solar PV panels are compatible with aviation and environmental resources. If accepted by the FAA, project construction will begin in August and be completed by the end of the year.

Alliant Energy is meeting with the City and County of Fond du Lac to find a five-acre site to locate their 1 MW community solar garden. WSJ

Dem bill would create public funding for renewable energy startups

Democratic lawmakers in Wisconsin are pushing legislation to form a new state development authority designed to kick-start the state's clean energy economy.

The bill, introduced last week by Rep. Katrina Shankland (D-Stevens Point) would create a Wisconsin Renewable Energy Development Authority, which would be authorized to issue grants and loans to state-based businesses or residents engaged in producing energy, fuels or other products from renewable resources...

Local Stories

UW Research: Energy Efficiency Saves Lives

Energy efficiency not only provides savings on energy bills, but saves lives and costs through improved public health, according to a paper by UW researchers Air Quality-Related Health Benefits of Energy Efficiency in the United States, in *American Chemical Society Publications*. Their study quantified air emissions from power plants in the summer with mortality impacts, focusing on nitrous oxide (NOx), sulfur dioxide (SO2) and carbon dioxide (CO2) emissions, along with fine particulate matter (PM2.5).

They concluded that a 12 percent increase in summertime energy efficiency would reduce exposure to air pollutants, especially fine particulates and ozone, which would save the lives of 475 Americans annually. These savings equate to almost 5 cents per kWh of energy used or $4 billion a year. The UW researchers would like their findings to inform both policymakers and the energy industry on the connections between energy efficiency, saving money, and improving human health and air quality. UW News

Wisconsin Focus on Energy Delivers

Wisconsin's Focus on Energy programs delivered $3.66 in direct economic benefits per dollar spent as a result of working with more than 6,000 businesses and 130,000 households in 2018, as analyzed by the Cadmus Group. During the quadrennial of 2015-2018, Focus delivered $5.09 in benefits for every $1.00 in costs incurred. The $100 million public benefits program helped participants avoid $90 million in annual electricity costs and prevented nearly 28.5 million tons of carbon dioxide emissions.

Focus saved over 15.4 million MMBtu's over the quadrennium, meeting and exceeding the PSC's goals for energy efficiency. The programs that contributed the greatest savings were: Retail Lighting and Appliance for residential electricity, New Homes and Home Performance with ENERGY STAR for residential natural gas (rural sector especially), and Large Energy Users for electricity and natural gas for nonresidential sectors.

Lawrence Berkeley National Lab showed Focus on Energy as one of the most cost-effective efficiency programs in the nation 2009-2015, requiring 1 cent of administrative costs for every kilowatt-hour saved. Focus on Energy, provides savings to consumers, and helps reduce overall energy demand and the high costs of power plants and transmission lines. WSJ

Imagen Energy Finalist in DOE Solar Prize Set! Contest

Imagen Energy LLC of Milwaukee was selected as one of ten finalists in the American Made Challenges Solar Prize Set! Contest. Imagen team's SiC Based Multi-Port System will be awarded an $100,000 cash prize from US DOE's Office of Energy Efficiency and Renewable Energy and program vouchers for use at National Renewable

Energy Laboratories and connector facilities. They are eligible to continue to the final phase- the Go! Contest, to compete for an additional $500,000 in cash prizes.

The team developed an extremely compact (>6 kW/L), high efficiency 50kW-50W-100kW, three-port power conversion system based on three level SiC modular power configuration (PEBB based). This configuration can be applied to electric vehicles including V2G (Vehicle-to-Grid) and V2L (Vehicle-to-load). NREL

Madison First to Go All-Electric BCycle Fleet

Trek, the organizer of BCycle bike share program, transitioned Madison's entire BCycle fleet to electric bikes in June. Although, Trek has begun this process in other U.S. cities, Madison is the first to reach 100 percent electric-assist bicycles citywide.

With 45 stations and 300 electric bikes, BCycle now provides more Madison riders the opportunity to use low carbon transportation. Nationally, Trek found that BCycle memberships have gone up and trip use has increased two to five times with electric bikes. This may be due to decreased travel time and to expanded accessibility to people with mobility issues, and to older and casual riders. BCycle annual membership cost will increase, but free memberships for low-income individuals are available through partnerships with community organizations throughout Madison. Fast Company, The Cap Times

Energy Projects

New Berlin Solar Project - The First-of-its-kind

New Berlin School District is partnering with WE Energies and SunVest Solar of Pewaukee to install more than 2 MW of solar PV at three schools. Through this first project of We Energies' Solar Now program, which has the goal to provide 35 MW of renewable energy to its customers, the electricity from New Berlin School District's 8,000 panels will go directly into the grid to power an estimated 400 homes.

The school district will receive $94,500 a year for the next 20 years from the utility for the use of their roofs (rent-a-roof), although the district is responsible for any interim reroofing and the costs to decommission and reinstall the solar systems on the new roofs. The rooftop systems being installed now should be completed late August, with the ground mount array to be completed in September. While not supplying electricity directly to the schools, the solar systems can be used as a learning opportunity for students. JS

Innovative Funding Underpins Washburn/Bayfield Public Solar Projects

Four public solar PV projects, joined by innovative group financing, are advancing in the Washburn and Bayfield area. Two 100 kW ac solar projects are at wastewater treatment

plants (WWTP). Both received Focus on Energy RECIP grants. The Greater Bayfield WWTP solar project is 80 percent owned by the City of Bayfield and 20 percent by Pikes Bay Sewer District in the Town of Bayfield. It is under construction and, in July, the City of Washburn's WWTP solar project will start construction.

Bayfield County jail and highway garage will host a 17 kW roof mount solar array plus a 90 kW ground mount system with funding from both Focus RECIP and PSC Energy Innovation grants. The fourth system, at two schools in the Washburn School District, is still in process. This project received RECIP, Energy Innovation, and Solar for Good grants. The School District will borrow the remaining $105,000 at 4% from the Board of Commissioners of Public Lands (BCPL- listed under funding below).

Bill Bailey of Cheq Bay Renewables and Niels Wolter of Madison Solar Consulting partnered to develop the solar projects with a group financing package. The projects were bid on a tiered pricing system, so that the greater the number of projects that went through, the less expensive they would be. Eagle Point Solar is the contractor for each of the projects.

National

Ethanol - The Fastest Growing US Agricultural Export

A recent analysis conducted by the U.S. Grains Council shows that non-beverage ethanol is the fastest growing U.S. agricultural export by a significant margin. Within the last decade, the U.S. went from being the world's largest ethanol importer to the world's largest exporter. The volume of ethanol exported has increased by 18 percent annually over the past 5 years. In 2018, 6.5 billion liters of ethanol (1.72 billion gallons = 609 million bushels of corn equivalent) were exported valued at $2.7 billion, according to USDA's Foreign Agricultural Service. Ethanol primarily used for fuel blending is increasingly used for industrial applications. Ethanolproducer

Facebook Leads Investment in Corporate Renewable Market

Facebook pledged, in 2018, to use 100 percent renewable electricity by 2020 from new renewable energy projects on the grid of their data center locations. They surpassed 50 percent renewables in 2017, and reached 75 percent renewables in 2018. Their greenhouse gas reduction goal is 75 percent by 2020. To achieve additionality with renewables, Facebook just finalized an agreement for its first direct investment in a renewable energy project - a 379 MW solar PV project in West Texas. Where Facebook will use the majority of RECs from the project as its sole tax-equity investor, Shell Energy North America will acquire the power through a 12-year power-purchase agreement (PPA).

Facebook signed a PPA for 122 MW of new solar power in Utah as well, to further power a data center with renewables there. Both projects are slated for completion in 2020. Their

goal is to achieve a 75 percent reduction in greenhouse gas emissions by 2020. Facebook has signed deals for solar across country, making them the leading corporation to contract for renewable energy in 2018, and so far, in 2019. US corporations in the Renewable Energy Buyers Alliance with Facebook, contracted for 6.63 gigawatts (GW) in 2018, and 1.49 GW of renewable power through May 2019. GTM

Target's Bullseye- 100% Renewables by 2030

Target Corporation announced a 100 percent renewable energy goal by 2030 for all company operations including its stores, distribution centers and offices. Currently at 22 percent renewable electricity, Target has set interim goals of sourcing 60 percent of electricity from renewables by 2025 that will include 500 solar PV installations on its own roofs. Additionally, Target has entered into power purchase agreements with large wind farm and solar developers across the country for more than 222 MW of power to come online 2019 through 2020. Target's LED lighting retrofits to almost all of its 1,800 stores have resulted in a 10 percent reduction in energy use. It's plan includes adding electric vehicle charging stations at over 100 sites across more than 20 states, as well. Renewables Now, Windpower

Best Buy Sets Carbon Reduction Goals for The Company and Its Customers

After reducing its carbon emissions 45 percent since 2009, Best Buy just released its goals to reduce carbon emissions 75 percent by 2030 and 100 percent by 2050 in its 2019 Corporate Responsibility and Sustainability Report. The plan is to invest in on-site solar, renewable energy credits, hybrid vehicle fleets, and LED lighting, and to implement new distribution processes. Also, Best Buy will help their customers to reduce their carbon emissions by 20 percent by 2030 by encouraging them to purchase ENERGY STAR-labeled products. This could ultimately save them $5 billion in utility costs. Green Biz, CBS Minnesota

New Energy Efficiency Label for Window Coverings Could Save Consumers Hundreds Annually

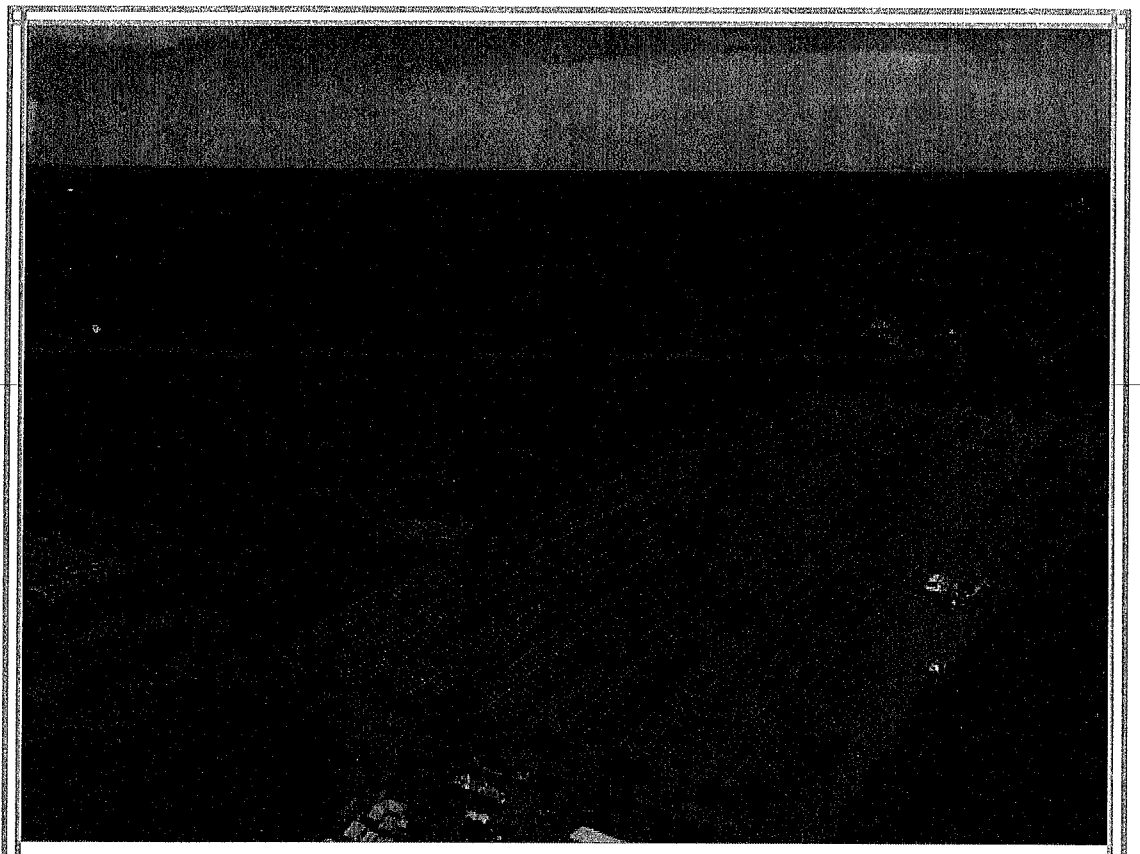
A new label on window attachments such as blinds, shades and storm windows will be used to help consumers achieve the greatest energy savings for their climate. Like ENERGY STAR labels on appliances, these labels will show expected energy savings for window attachments in warm and cool climates and enable consumers to compare products based on energy efficiency. The Energy Improvement label, created by the Attachments Energy Rating Council (AERC), was designed for consumers and also for utilities and other efficiency program administrators for use in developing incentive programs.

Window attachments can reduce heating and cooling energy use by as much as 20%, which could add up given that 150 to 225 million window attachment products are shipped

in the United States every year. A map developed by AERC, shows potential residential energy savings in Chicago at $153 and Minneapolis at $223 per year. ACEEE

Photo of the Month

Community Solar Shines on Chequamegon Bay



Xcel Energy's 1MW Solar*Connect Community solar garden in Ashland, WI is sited next to Xcel's field office. This is Xcel's 3rd community solar installation in Wisconsin. Subscribers are able to offset up to 100 percent of their average annual electricity use up to 400 kW.

Drone photo courtesy of Cheq Bay Renewables

FUNDING

NEW WERCBench Labs, 2019 - 2020 Accelerator Program

Start-up companies in the Energy, Power and Controls sector can complete a 16-week program lead by WERCBench Labs Accelerator which will allow them to advance in investor readiness and create valuable connections. This program provides energy industry entrepreneurs with access to seasoned professionals, laboratory space, and production equipment. Businesses can receive up to $40,000 in grants and royalty-based financing along with the opportunity to receive a $10,000 top prize on "Demo Day."

Applications due: **July 31, 2019**
For more information and to apply: WERCBench Labs Accelerator

NEW MadiSUN - Backyard Solar Grant

The MadiSUN program is expanded with $4[illegible],000 of new funding for the MadiSUN

Backyard Solar Grant. This grant competition is intended to serve diverse, low-income residents and neighborhoods by fostering access to solar power for Madison community organizations and housing providers that serve City of Madison residents. Grants may fund up to 20% of the cost of the solar array (not to exceed $10,000 per solar installation). Include a solar site assessment with the completed application.

Applications due: 5:00 PM August 19, 2019
For more information and to apply: Backyard Solar Grant
Send questions to heather@renewwisconsin.org

WPPI RFP for Non-Profit Renewables

WPPI Energy is offering $150,000 in grant funding for renewable energy projects by non-profit entities that are customers of WPPI Energy's member utilities, including schools, colleges, universities, and units of government. Funding is for solar PV projects up to 80 kW, wind projects up to 10 kW and other electric generating technologies. Per project incentive request can range up to $100,000, and expected project capacities may not exceed the customer's average annual energy use. Projects must be located at and owned by the non-profit for the duration of the project life and must be interconnected to the member utility distribution system.

Applications due by: **July 3, 2019**
Recipients notified by: **August 2, 2019**
For more information about the request for proposals (RFP)
Direct questions to the Energy Services Representative at the WPPI Energy member utility

Focus on Energy Appliance Recycling Incentive

Wisconsinites can receive a $20 incentive check along with free pick-up through Focus on Energy to recycle a working standard size refrigerator or freezer (10-30 cubic feet). This applies to residential customers whose electric utility participates in Focus on Energy. Participants can recycle up to two appliances per year per household.

For more information and to register: Focus on Energy

Focus Incentive Doubled for Rural Residents

New in 2019, Focus on Energy has doubled the incentive for rural homeowners to up to $4,000 toward solar PV installations. The Rural Residential Solar Renewable incentive is additional funding, up to $2,000 with a maximum total incentive cap at $4,000, or 12 percent of the project costs, for residential solar installations in eligible ZIP codes across Wisconsin. No additional application needed aside from the standard solar application.

Total Rural Residential Solar Renewable Budget: **$140,000**
Direct questions to renewables@focusonenergy.com.

REAP Grants for Rural Renewable Energy and Energy Efficiency

USDA's Rural Energy for America Program (REAP) provides guaranteed loan financing and grant funding to agricultural producers and rural small businesses to purchase or install renewable energy systems or make energy efficiency improvements. Eligible applicants include agricultural producers with at least 50 percent of gross income coming from agricultural operations and small businesses in eligible rural areas.

For more information or to apply for a REAP grant
Direct questions to your State Rural Development Energy Coordinator.

BCPL Funds School Clean Energy Projects Again

Effective immediately, the Board of Commissioners of Public Lands (BCPL) is making loan funds available to Wisconsin School Districts for school energy efficiency and renewable energy projects. The reversal follows the election of a new board, which includes the Wisconsin Attorney General, State Treasurer, and Secretary of State. The new board

recognizes the economic materiality of climate change and potential impacts of climate change on investments. BCPL manages $1.2 billion in State Trust Funds that benefit K-12 public schools and the University of Wisconsin. Press release

Applications found here
For more information about the funding opportunity
Direct questions to the BCPL Loan Officer.

$3 Million Solar Manufacturing Prize

The second round of US DOE's $3 million American-Made Solar Prize was announced March 22, inviting entrepreneurial competitors with solutions that can revitalize U.S. solar manufacturing to enter the challenge. First, contestants will identify a critical issue and come up with a marketable solution. Innovators will be helped by the National Renewable Energy Lab and industry partners. Teams that are selected will participate in demonstration days, where they will pitch their ideas. At these national events, a panel of expert reviewers will evaluate competitors based on the quality of their solution and the progress made during the contest period. Watch the Video.

Applications due by **July 16, 2019**
For more information about the funding opportunity

RESOURCES

The EPA says burning wood to generate power is 'carbon neutral.' Is that true?, an article written in May 2018 by William Moomaw, a scientist and the coordinating lead author of the Intergovernmental Panel on Climate Change report on renewable energy, reviews the EPA's decision to consider burning biomass as a carbon neutral practice. He reviews the various stakeholders' positions, invokes carbon accounting, and provides links to research. His overall findings are that, although biomass doesn't introduce new carbon into the system, it transfers carbon from forest to atmosphere, where it is trapped and contributes to climate change.

EPA Guidebook for Energy Efficiency Evaluation, Measurement, and Verification
This guidebook helps government air and energy officials and utility energy efficiency implementers develop an evaluation, measurement, and verification process that is best for them. The guide may assist new jurisdictions in implementing their air and energy goals, evaluating their success, and planning new policies and programs. Also, it might bridge the gap between air officials and energy counterparts, to yield the greatest air quality and health benefits.

EVENTS

MREA: Training Catalog 2019

DOE Office of Indian Energy: Jobs and Economic Development for Tribal Energy Projects
June 26, 2019

ENERGY STAR Webinar: Portfolio Manager: Ask the Expert
June 26, 2019

ENERGY STAR Webinar: Portfolio Manager 201

June 27, 2019

ENERGY STAR Webinar: Portfolio Manager 101, 201, 301
July 2-23, 2019

Clean Energy Group Webinar: EVs and the Electricity System
July 2, 2019

ENERGY STAR Webinar: How to Track Waste and Materials Management in Portfolio Manager
July 9, 2019

ATTRA: Midwest Farm Energy Conference
July 10 - 11, 2019
Morris, MN

Energy Star Webinar: Ask the Expert
July 10, 2019

NREL Webinar: Up to the Challenge
July 10, 2019

EPA Webinar: Spruce Up! Using Green Roofs and Green Spaces to Beat the Heat
July 11, 2019

ENERGY STAR Webinar: ENERGY STAR and Green Building Rating Systems
July 11, 2019

MREA: Summer Solar Training
July 15 - 19, 2019
Custer, WI

Focus on Energy: Air Sealing Done Right
July 16, 2019
Appleton, WI

Focus on Energy: Air Sealing Done Right
July 22, 2019
Eau Claire, WI

Infocast: Storage Week Plus
July 23 - 25, 2019
San Fransisco, CA

Energy Star Webinar: Ask the Expert
July 24, 2019

Focus on Energy: Advanced Lighting Control System Class
July 24, 2019
Wisconsin Dells, WI

Focus on Energy: Air Sealing Done Right
July 25, 2019
Milwaukee, WI

SEPA: Grid Evolution Summit - A National Town Meeting
July 29 - August 1, 2019
Washington D.C.

DOE Webinar: Energy Considerations When Designing and Constructing New Tribal Buildings
July 31, 2019

ASES: Solar Conference 2019: Race to Renewables

August 5 - 9, 2019
Minneapolis, MN

ACEEE: 2019 Summer Study: Energy Efficiency in Industry
August 12 - 15, 2019
Portland, OR

Contact:
Sherrie Gruder, LEED APBD+C
UW-Madison Extension
Sustainable Design Specialist
Energy Program Manager
(608) 262-0398
sherrie.gruder@wisc.edu

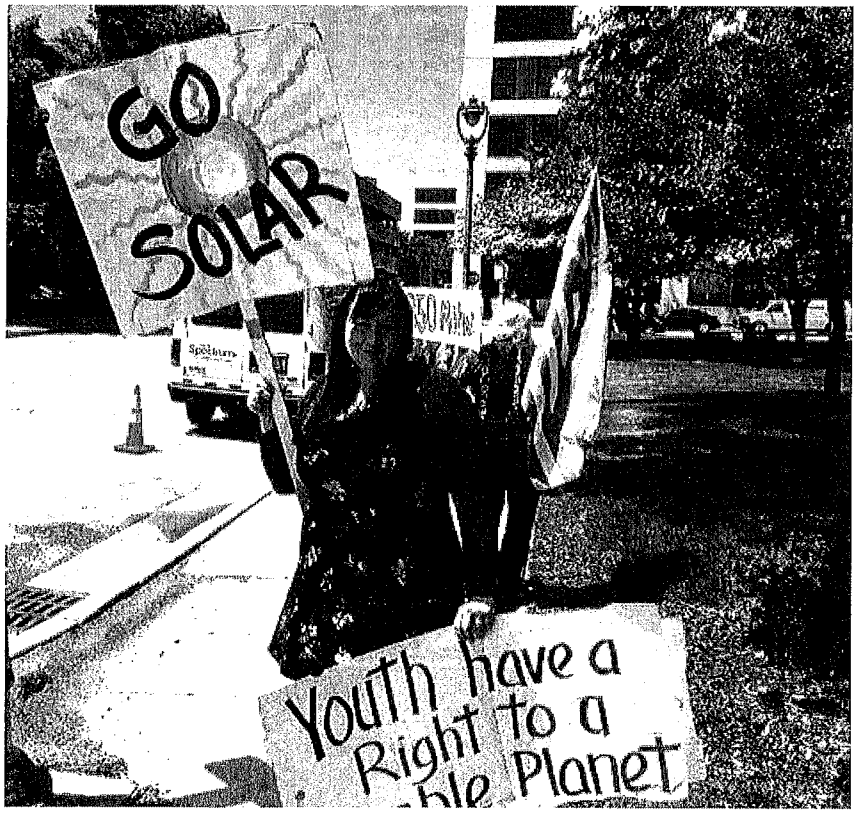
University of Wisconsin-Extension

Get to know us:
Energy On Wisconsin

Share Tweet Forward

We Energies drops proposal for surcharge on homeowners, small businesses that go solar

Lee Bergquist, Milwaukee Journal Sentinel Published 5:21 p.m. CT July 15, 2019 | Updated 5:44 p.m. CT July 15, 2019



Amalisa Bodien of Milwaukee was among those who recently protested We Energies' proposed surcharge on residential and small business customers who have solar panels. *(Photo: Tom Daykin / Milwaukee Journal Sentinel)*

As the spotlight on solar power grows brighter, We Energies has agreed to drop a proposal to bill homeowners and small businesses an added charge on those that generate their own power from solar systems.

The Milwaukee-based utility and Renew Wisconsin said Monday they had reached a settlement over the surcharge that We Energies asked for (/story/money/business/energy/2019/06/03/we-energies-surcharge-could-cut-savings-solar-power-20/1279743001/) as part of a larger rate case that is now before state utility regulators.

Solar advocates saw the charge as an impediment to building more small-scale renewable energy, while We Energies maintained that customers with solar panels weren't paying their share of utilities' fixed costs to deliver electricity.

The agreement comes as the price of solar power and solar systems are declining and, more broadly, large-scale renewable energy increasingly is being embraced by utilities, including We Energies.

Other power companies nationally have sought similar charges. In Michigan and Iowa, regulators have recently rejected the fees on customers with solar panels.

As part of the agreement, Madison-based Renew, a nonprofit that advocates for more electricity from wind and solar, has agreed to support We Energies' plans for a utility-scale solar project.

Details have not been announced. The company's parent, WEC Energy Group, says it wants to reduce carbon emissions by 80% from 2005 by 2050.

In the rate case before the Public Service Commission, We Energies had been seeking a $3.53 a month surcharge for each kilowatt of electricity that a homeowner or small business generates.

Companies and government units with larger systems were not part of the proposal.

On average, the charge for these smaller users would have totaled $15.88 a month — or nearly $191 a year for more than 400 customers and small businesses with solar at the end of 2018.

Costs would likely have been higher for those building new systems, which tend to be larger and more efficient.

On top of that charge, customers with solar panels would still pay the fixed charge other residential customers pay. That is currently $16 a month, or $192 a year.

Despite the agreement, the "fairness issue remains," said Brendan Conway, a spokesman for the utility.

He said the larger issue is how to account for less revenue from an anticipated increase in small-scale renewable power.

"What is the best solution so that it is fair to all customers?" Conway said.

Tyler Huebner, executive director of Renew, said his group was pleased with the agreement. "It will help return certainty back to customers who are looking at solar, and the industry that is in business to provide these solar energy solutions," he said.

Tom Content, executive director of the Citizens' Utility Board, said his group had concerns about the surcharge and the impact on customers who invest in such systems.

His group still has issues with We Energies on several fronts over the utility's rate proposals, including what he said is a double-digit increase for residential customers over the next two years.

Reply all | Delete Junk | ...

[CAUTION: External] EnergyOnWI News June 2019

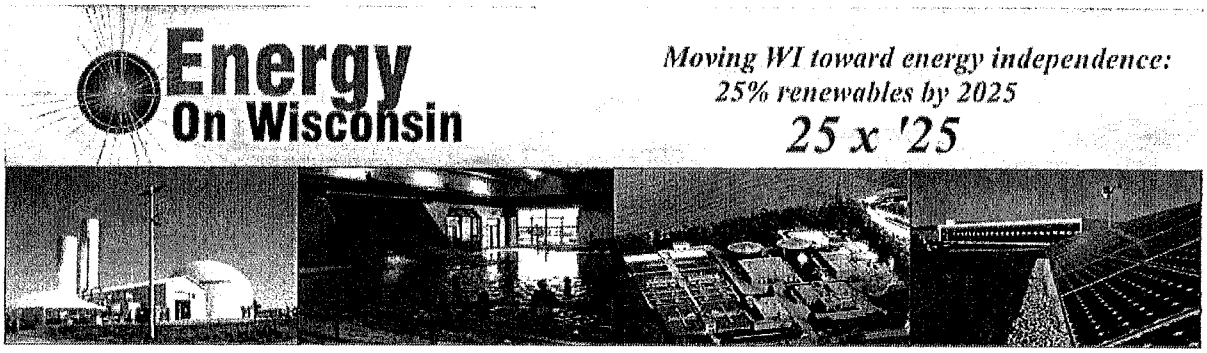
B bounce-mc.us7_19764771.2430729-496c9cbfc7@mail126.sea61.rsgsv.net

Reply all |

Today, 4:15 PM
Nancy.Turyk@ces.uwex.edu

Inbox

Report Spam Unsubscribe



/Subscribe

Energy News Without the Spin

July 2019

Trending

Solar Tax Settlement- Clean Car Rules Rollback - Appliance Standards - Solar + Storage - 100% RE - SolSmart - Community Solar - Butter Solar Begins - Ratepayer Refunds - PACE - Coal Underwriting Ban

DIRECTOR'S NOTE

July 2019's news reflects Wisconsin's escalating engagement in a rapid transformation to clean energy. Strong opposition to We Energies' filing for a solar surcharge on individuals and small business that have installed their own solar projects prevailed. Protest came from local government officials, businesses, nonprofit organizations, and individuals. Sierra Club and 350-Milwaukee delivered a petition and letters to We Energies. A billboard went up across the street from the utilities' headquarters and Wisconsin Solar Coalition mobilized and held a press conference.

People of Wisconsin are involved in their local energy decision-

decisions, like the Cardinal-Hickory Creek transmission line, is notable (Energy On WI News, May 2019).

Wisconsin mayors across the state have signed onto support the Paris climate agreement; and, six cities and one county have adopted 100 percent clean energy resolutions (beyond the 150 that adopted a 25% renewable goal by 2025). In July, the City of La Crosse adopted a 100 percent goal city-wide and the Milwaukee City Council introduced a resolution to commit to a 100 percent clean energy future through a task force on climate and economic justice. The City of Racine is evaluating its codes, permitting and plans with SolSmart assistance to streamline solar adoption, as are 9 other Wisconsin cities.

.

Local investment in renewable energy projects from solar, to biogas, to clean fleets are being made. Wisconsin tribes just brought in $2 million in federal grants to install solar and storage in their move toward local resilience. Forty-two of 75 county governments have adopted PACE financing to support clean energy projects for their businesses.

Also, in July and through to the fall, the Wisconsin Conservative Energy Forum, which supports free-markets for renewable energy, is continuing their tour of renewable energy projects to educate and engage state and local officials.

While Wisconsin public utilities are retaining ownership approaches of renewable generation through rent-a-roof programs, renewable energy riders (RER), and limited net metering, which restrict faster free-market progress toward a clean energy economy, they are making large investments in decarbonizing their power and partnering with municipalities. MGE's first RER with Middleton and the Middleton-Cross Plains School District for 1.5 MW of a 5 MW community solar garden, will be followed by an RER with Dane County for an 8 MW solar project, both on local government airport land. Xcel just sold out its last 1 MW of 3 community solar gardens to Ashland area residents and businesses. Alliant is working to site a 1MW solar garden in Fond du Lac. On a large scale, We Energies and MGE just filed to invest $195 million into 150 MW of solar from the Badger Hollow solar development.

It is clear that the transition to a clean, low carbon energy economy is happening in Wisconsin and, that there is growing robust public engagement in how that happens and the pace to success.

Sherrie Gruder

NEWS

Policy

Governor's Budget Funding for Electric Vehicle Charging Stations Challenged in Veto Power Lawsuit

Governor Evers used his partial veto, in the state budget he signed in early July, to designate that up to $10 million for electric vehicle charging stations be allocated from VW settlement funds. That is among four partial vetoes being challenged on behalf of three individuals by the Wisconsin Institute for Law and Liberty in a lawsuit that has petitioned to

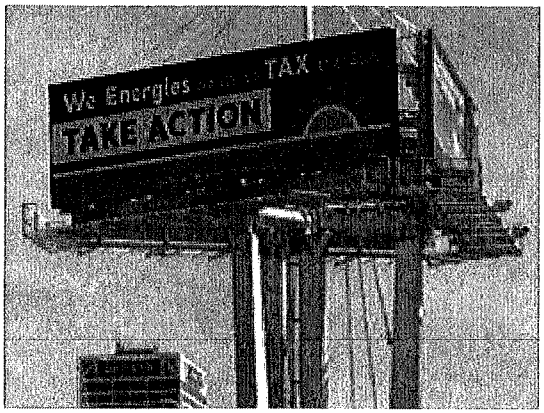
Electric Scooters Bill Cleanly Coasts into Law

A new law, 2019 Wisconsin Act 11, was signed by Governor Evers that allows electric scooters of up to 100 pounds to travel at 15 mph on roads, sidewalks and bike paths subject to local jurisdiction regulations over the details. The bipartisan bill specifies that electric scooters do not have to be registered with the DOT but must meet lighting and brake requirements of Electric Personal Assist Mobility Devices. The cities of Milwaukee and Madison are formulating pilot programs to test approaches to safety and business development through rentals for this new, carbon-free, low-cost mode of transportation. PressRelease, wpr

Settlement With We Energies Removes Plan to Tax People's Solar

We Energies has withdrawn the portion of its rate filing with the PSC to increase fees on residents who have installed solar on their own properties (see Energy On WI News May, 2019). Met with strong opposition from many stakeholder groups, We Energies entered into an agreement with RENEW Wisconsin to withdraw the fixed-cost recovery charge, which would have totaled an average of $190 a year, in return for support for their upcoming utility-scale solar project. There are nearly 100 customer-owned renewable energy projects in their service territory, currently.

The parties agreed to collaborate in discussions over the next two years about issues of distributed consumer-sited renewable energy generation and We Energies' transition to clean energy. The agreement came two weeks before the utility filed with the PSC for approval for a $130 million investment in 100 MWs of a utility-scale solar farm in western Wisconsin. We Energies has been moving to build more solar both through utility-scale projects and their Solar Now pilot ("rent-a roof"), as it works toward meeting its pledge to reduce its carbon emissions 80 percent by 2050. communityjournal, jsonline



Rule Rollback for Clean Cars Meets Diverse Opposition

Twenty-four governors representing 52% of US population have asked the Trump administration to stop the rollback of rules for auto emissions. Wisconsin is not among them.

fearing it will hurt their bottom line as states will continue to enforce the stricter standards of the Obama administration. Electric utilities, which have been investing in vehicle-charging infrastructure, are opposed to weakened rules that would slow the transition to electrified transportation. The chemical industry has objected too, as they are involved in developing technology to lightweight vehicles that is growing jobs and advancing innovation. nytimes

New EPA Proposal Suggest a Modest Increase in Biofuel Quotas

The EPA's proposal to reset the Renewable Fuel Standard (RFS) would require refiners and importers to increase their renewable fuel use in 2020 by 0.6 percent from 19.92 billion gallons to 20.04 billion gallons. Fifteen billion gallons would need to come from corn-based ethanol with 5.04 billion gallons from advanced biofuels. A 2.43 billion gallon quota for biomass-based diesel in 2021 was suggested as well. The EPA is taking public comments on their proposal now. The plan is slated to be completed by November 30th. Bloomberg, AgPro

Calling Out Proposed Rules on Federal Appliance Standards ASAP

US Department of Energy (US DOE) actions to weaken efficiency standards for gas furnaces, water heaters, dishwashers and light bulbs are being called out by The Appliance Standards Awareness Project (ASAP) and ACEEE. A 2016 report by ASAP on how national energy efficiency standards can drive energy economic and environmental benefits "found that condensing technology has the potential to save consumers and businesses over $100 billion on their utility bills by 2050".

The proposed rule for gas furnaces and water heaters, published July 11, is supported by the gas industry. The proposed rule for dishwashers is opposed by manufacturers and energy efficiency supporters. Comments on DOE's proposed rules are due 60 days after publication in the Federal Register. ACEEE, utilitydive

Local Stories

Bad River and Forest County Potawatomi Tribes Awarded $1 Million Each for Solar

Bad River Solar + Storage: The Bad River Band of Lake Superior Tribe of Chippewa Indians was awarded $1 Million of US DOE grant funds for a $2 Million solar plus storage project on three essential tribal buildings. Installations on the Waste Water Treatment Plant and the Health Clinic will be equipped with battery energy storage systems and "smart" controls capable of operating independently of the grid. A third building will have a 20kW RTI (ready-to-install) PV system that will be used for training. It will have a small

The systems are expected to offset 100% of annual electric usage at two of the buildings and are estimated to reduce electric bills by $841,000 over 25 years. An RFP for contractors will be sent out this winter with project construction expected summer of 2020. The Tribal contact is Dan Wiggins. The grant proposal was written by a team that included the Tribe, CBR, Madison Solar Consulting with technical support from muGrid. This will be the largest battery storage project on Dairyland Power's system.

Forest County Potawatomi Solar on Facilities: US DOE awarded more than $1 Million to the Forest County Potawatomi Community to install and operate 1,068 kW of solar PV at eight tribal facilities in Milwaukee and on the Tribe's reservation lands. The eight installations will range in size from 8 kW to 280 kW and will displace between 4 and 99.9 percent of total current energy usage from those buildings. Annual savings in electric costs are projected at $106,000. DOE

La Crosse 100% Renewables by Unanimous Vote

The City of La Crosse unanimously passed a resolution to reach 100 percent clean, renewable energy and carbon neutrality by 2050 community-wide, to do their part to limit the impacts of climate change. Representatives from the city planning department, the Sustainable La Crosse Commission, and the Coulee Region Sierra Club's Ready for 100 team drafted the resolution.

La Crosse is an Energy Independent Community that already was working toward generating 25 percent of their energy from renewables locally by 2025. In light of scientists' emergency warnings about climate change impacts, recurrent and severe local flood events, and positive Economic and Health Benefits of 100% In-State Energy Production, that goal will become a milestone on their path toward 100 percent. Mayor Kabat is a signatory of the Mayors for 100% Clean Energy Endorsement and is a member of the Climate Mayors.

City projects already underway or planned to move toward carbon neutrality include energy efficiency upgrades to city building lighting, heating and cooling, solar installations, electric bus purchases, and methane conversion to renewable natural gas at the wastewater treatment plant. La Crosse is the seventh local government in Wisconsin (see Energy On WI News: May 2019, March 2019, July 2018, March 2017) to pass a 100 percent renewable energy resolution. La Crosse Tribune, Sierra Club, WKBT

City paving the way for more solar energy

The City of Racine is in the process of making its ordinances more friendly to solar energy. The city is working with SolSmart, a national program that works pro bono with communities to cut red tape and streamline solar applications, so they will be "open for

SolSmart's team has evaluated the city's ordinances and zoning codes and compiled a preliminary list of proposed changes… The Plan Commission recommended city staff continue to work with SolSmart…

[Director's suggestion: For more information of Wisconsin cities that have achieved or are pursuing SolSmart designation, see midwestrenew]

Xcel's Wisconsin Solar Gardens Sold Out

Xcel Energy's three Solar Connect Community solar gardens in western Wisconsin are now fully subscribed. They include three 1 MW systems: Eau Claire in 2017, Cashton, west of La Crosse completed in May 2019, and Ashland, July 2019. Residential and commercial subscribers were able to enroll for up to 100 percent of their annual electricity usage. Subscribers made a one-time payment up front and receive monthly bill credits equal to their subscription amount. Xcel Energy has committed to generate 100 percent carbon-free electricity by 2050, with an 80 percent by 2030 carbon emissions reduction goal company-wide.

Energy Projects

Middleton and School District to Buy 1.5 MW of Solar Electricity from MGE Community Solar Garden on Move Toward Energy Independence

Madison Gas & Electrics' (MGE) first renewable energy rider (RER) was approved by the Public Service Commission (PSC) in July. The RER is a partnership that allows businesses to buy renewable energy from their utility to power some or all of their facilities. The City of Middleton and the Middleton-Cross Plains School District negotiated an RER to obtain 1.5 MW of electricity from the 5 MW community solar garden MGE will build this winter with developer OneEnergy Renewables on Middleton Airport's Maurey Field.

The 500 MW purchased by the city, along with 3 new solar systems to be installed on Middleton City buildings, will provide 50 percent of city operations electricity use from renewables by 2020. The RER enables Middleton to surpass their 25 x '25 goal and move more significantly toward their 100 percent renewable electricity goal by 2035 for City operations. The school district will purchase 20 percent of the solar garden, or 1 MW of power, and contribute to the community-wide goal of 100 percent renewable electricity by 2040.

The RER is an approach used in states with regulated utilities to be able to attract the growing number of large companies that will locate only where they can receive 100

goals. These include companies in the renewable energy supply chains

Beloit Coal Plant Turned LEED Student Center

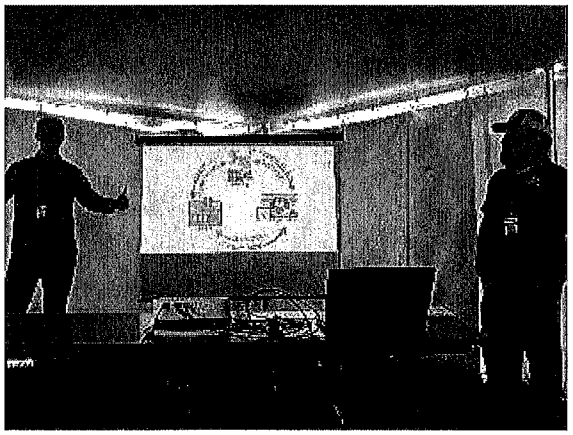
The Beloit College Powerhouse, redesigned and renovated from the 100-year-old Blackhawk coal-fired Generating Station along the Rock River, will become a model of energy efficiency. It will use the river water in radiant panels integrated into the building's surfaces to heat and cool the structure as part of its LEED Gold strategy. The 120,000 square foot, $38 million Powerhouse will contain a recreation gym and fitness center, track, and competition pool along with auditorium, student spaces, and conference center.

Beloit College Powerhouse, designed by Studio Gang, won the 2018 World Architecture Festival prize in the Reuse category and was a finalist in their health- futures projects category as well. It should be open Fall 2019. See photo of the month below. StudioGang, WIFR

Fennimore Solar Project Completed

The ribbon has been officially cut on the new 18 acre solar farm in Fennimore. Finishing this project makes Fennimore home to the largest solar array in Wisconsin for the time being until Arcadia's array goes online.

The Fennimore project is part of what is known as the Butter Solar portfolio, a group of 10 different solar projects located in Wisconsin, Minnesota and Iowa. The project began as a collaboration between Organic Valley, OneEnergy Renewables and the participating communities… The renewable energy credits generated from the locations will be purchased by Organic Valley, the City of Madison, Dr. Bronner's and NativeEnergy… "Electricity generated by the Butter Solar portfolio will directly service the local communities where the projects are located." …



Eric Udelhofen of OneEnergy Renewables and Stan Minnick of Organic Valley presenting at the MREA Energy Fair. They discussed the business partnership that is enabling the Butter Solar portfolio - building more than 30MW across 10 projects in 3 states including southwest Wisconsin.
Photo courtesy of Sherrie Gruder

Paris Solar Farm faces mammoth hurdles

Identification of archaeologically significant areas — such as the sites where Kenosha's

upward of 5,000 acres west of I-94 and adjacent to Highway 142, was given an extensive pre-application to-do list by the state Department of Natural Resources and Wisconsin Public Service Commission…

…it is estimated a 200-megawatt farm in Paris would provide $800,000 in shared revenue annually, $330,000 of which would go to the town…The 50-megawatt battery proposed to be used in Paris would be the biggest used for this purpose nationwide and the first of its kind in Wisconsin, according to the U.S. Energy Information Administration.

Economy

Wisconsin ratepayers to see refunds thanks to lower energy costs in 2018

Four of Wisconsin's largest for-profit utilities will refund more than $25 million to ratepayers this fall as a result of lower-than-expected energy prices in 2018. Lower natural gas prices, the addition of renewable generation, and a stronger wholesale electricity market were among the reasons cited for the savings.

Madison Gas & Electric customers should see the largest of the refunds, which should range from about $3 to $20 for most households, based on the rates approved Thursday by the Public Service Commission…Alliant spokeswoman Annemarie Newman said if the plan is approved, the average residential customer could see refunds totaling about $20 next year, while small businesses could save up to $90…WPS and Xcel reported over-collections of $7.1 million and $3.7 million and will issue refunds of about 0.9 cents and 0.7 cents per kilowatt-hour…

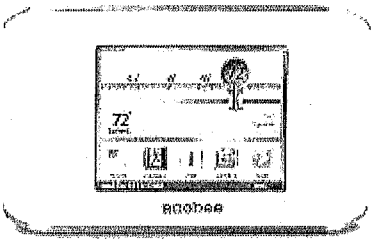
Smart Thermostat Programs Help Reduce Peak Load

Xcel Energy and Madison Gas and Electric (MGE) are offering smart thermostat programs to help balance their utilities' peak loads while saving residents energy and money. Smart thermostats collect data on users energy use and temperature preferences to maximize energy efficiency. Users receive energy consumption reports to help them identify where they are using energy that has the potential for savings. Also, users have the ability to control the smart thermostat at anytime from anywhere using a mobile app.

Once a customer is enrolled in a smart thermostat program, their utility is granted access to adjust a resident's thermostat settings at peak load times through an online connection. However, program participants have the option to opt out of the adjustment.

Balancing peak energy loads plus energy use reductions, may help prevent the need for

Wisconsin consumers can receive a $75 rebate on a $250 smart thermostat through Wisconsin's Focus on Energy. Additionally, Xcel offers a $45 rebate and $25 bill credit each year to participants. MGE participants receive a $25 VISA card once enrolled and an additional $25 VISA card each year they remain in the program. WSJ



This is one of the qualifying smart thermostats in the utilities' programs.

42 WI Counties Offer PACE Financing

Forty-two Wisconsin counties now offer Property Assessed Clean Energy (PACE) financing for commercial energy efficiency, renewable energy and water saving projects. Marquette and Columbia Counties are the newest jurisdictions to sponsor. PACE helps commercial, industrial, and non-profit property owner's access affordable, long-term financing for meaningful energy upgrades to their buildings. PACE WI

Hotel to Finance $2.5 Million in Energy Upgrades through PACE

TownePlace Suites in Oak Creek, Wisconsin is the first Milwaukee County business to benefit from Property Assessed Clean Energy (PACE) financing though PACE Wisconsin. Milwaukee County partnered with PACE Wisconsin to offer its commercial sector the opportunity to save energy, reduce costs and improve building performance. Twenty-two PACE financing projects have been approved to date in Wisconsin with more coming soon.

Drexel Hotel Investment, LLC incorporated $2.5 Million of PACE financing into the overall project cost, which will cover: roof and wall insulation, upgraded windows, interior and exterior LED lighting, energy-efficient HVAC equipment (air conditioners and furnace), energy-efficient pool heater, and low-flow faucets and showers. This is their second project to receive PACE financing.

Over the life of these energy efficiency improvements, the building owner will recover the cost of the investment through energy savings. McFarland State Bank provided the upfront, market-based C-PACE financing component of the project capital budget.

Twenty-two PACE WI financing projects have been approved to date with more coming soon.

The frac-sand company Emerge Energy Services says it owes at least $13 million to Wisconsin contractors in a bankruptcy case filed this week, on the heels of falling demand for the company's products.

Emerge, which owns eight sand pits and processing plants in Wisconsin through its subsidiary Superior Silica Sands, has been under pressure in recent years from falling oil prices and increased frac-sand production in Texas. The company, which processes sand for use primarily in oil production and in building products and foundries, filed for Chapter 11 bankruptcy protection on Monday…

Giant batteries and cheap solar power are shoving fossil fuels off the grid

This month [July],officials in Los Angeles, California, are expected to approve a deal that would make solar power cheaper than ever while also addressing its chief flaw: It works only when the sun shines. The deal calls for a huge solar farm backed up by one of the world's largest batteries. It would provide 7% of the city's electricity beginning in 2023 at a cost of 1.997 cents per kilowatt hour (kWh) for the solar power and 1.3 cents per kWh for the battery. That's cheaper than any power generated with fossil fuel…

The new solar plus storage effort will be built in Kern County in California by 8minute Solar Energy. The project is expected to create a 400-megawatt solar array, generating roughly 876,000 megawatt hours (MWh) of electricity annually, enough to power more than 65,000 homes during daylight hours. Its 800-MWh battery will store electricity for after the sun sets, reducing the need for natural gas–fired generators…

Chubb Bans Coal Underwriting and Investment

Chubb is the first big US insurance firm to ban coverage for coal companies. Chubb will not sell insurance to any new coal-fired power plants or to companies that generate greater than 30 percent of their revenue through thermal coal mining. Utilities that generate more than 30 percent of their energy from coal also will be banned from underwriting new risks. The coverage of existing coal mines will be phased out by 2022 and utilities' coverage will be phased out beginning in 2022. These changes were made due to increasing exposure to risks from climate change induced severity and frequency of natural disasters from wildfires and flooding to hurricanes. The new coal policy is expected to have little impact on Chubb's premium revenues and investment performance. LATimes

National

The 2019 City Clean Energy Scorecard

The 2019 City Clean Energy Scorecard by the American Council for an Energy Efficient

areas were scored including: local government operations, community-wide initiatives, buildings, energy and water utilities, and transportation. Among the top ranked cities, stringent building energy codes and investment in improved transportation in all parts of the city, including low income areas, resulted in the largest energy saving payoffs.

The top five cities are Boston, San Francisco, Seattle, Minneapolis, and Washington. They excelled in stringent building energy codes, benchmarking, building and transportation policies, energy and water utilities. Milwaukee, WI is ranked 44th.

Some of the findings are that there is uneven progress toward and measurement of community-wide climate goals. Cities are beginning to increase engagement and make clean energy investments for low-income communities and communities of color. There is increased focus on reducing energy consumption in new and existing buildings. Efforts to reduce transportation emissions increased as well. There was wide disparity between leading cities and those at lower rankings. Forbes, energymanagertoday

The Race to Fuel the Buses of Future is On

There's no denying it: Oil, once the lifeblood of America's buses and trucks, is no longer king of the fleets. Two decades ago, diesel and gasoline fueled virtually all of the country's municipal buses. Now, they burn in less than 45%...

While bus and truck pools account for just a fraction of the vehicles on America's roads, they're responsible for generating 80% of the smog and as much as a quarter of the nation's transportation emissions. That has local and state governments across the country working to overhaul their fleets, touching off a race to gain an early edge and dominate an industry that consumes 1 billion gallons of fuel a year and spends $5 billion annually on buses alone...

New York Policies Spark Private Solar Development

Stuyvesant Town - Peter Cooper Village in Manhattan installed more than 9,000 solar panels on 22 acres of rooftop, making it the largest array to ever be installed on an apartment complex. This added 3.9 MW with the capacity to power 1,100 apartments. An even larger project may be installed in the Bronx soon.

The state of New York passed its own "Green New Deal" in January that doubled the state's solar capacity goal, raised the renewable energy goal to 70 percent by 2030, and set a zero-carbon electricity target by 2040. The bill improved incentives making solar power a more appealing choice for business and building owners. Additionally, the City of New York enacted an ordinance requiring solar or green roofs on most new buildings. NYTimes, GTM

The Solar Energy Technologies Office (SETO) and five DOE National Laboratories are working with stakeholders in Puerto Rico to build a solar-integrated power system that can withstand disruptions from natural disasters and other events. They have been holding workshops to discuss the relevant data, tools, and training that will create a more reliable and secure energy system. NREL

Scientists Advise Preparedness for Solar Flares

Scientists from NASA and NOAA warn that, in the next five years, the most solar flares in decades may occur, which could cause major disruptions to energy grids. Solar radiation can interfere with cell phones and GPS satellites to shut down communications networks and cause physical damage to the energy grid by frying transformers. Quebec Canada went dark in 1989 as a result of an explosion of the sun.

Experts advise that to prevent the devastation of grid shut down from solar flares, policy to support funding better forecasting is needed so the grid can be shut down before a strike occurs. Transitioning the United States power grid to a more interconnected system and upgrading the grid could help displace the impacts of solar flares when they do strike. NBCnews,USGAO, NOAA

Photo of the Month

Beloit College Powerhouse

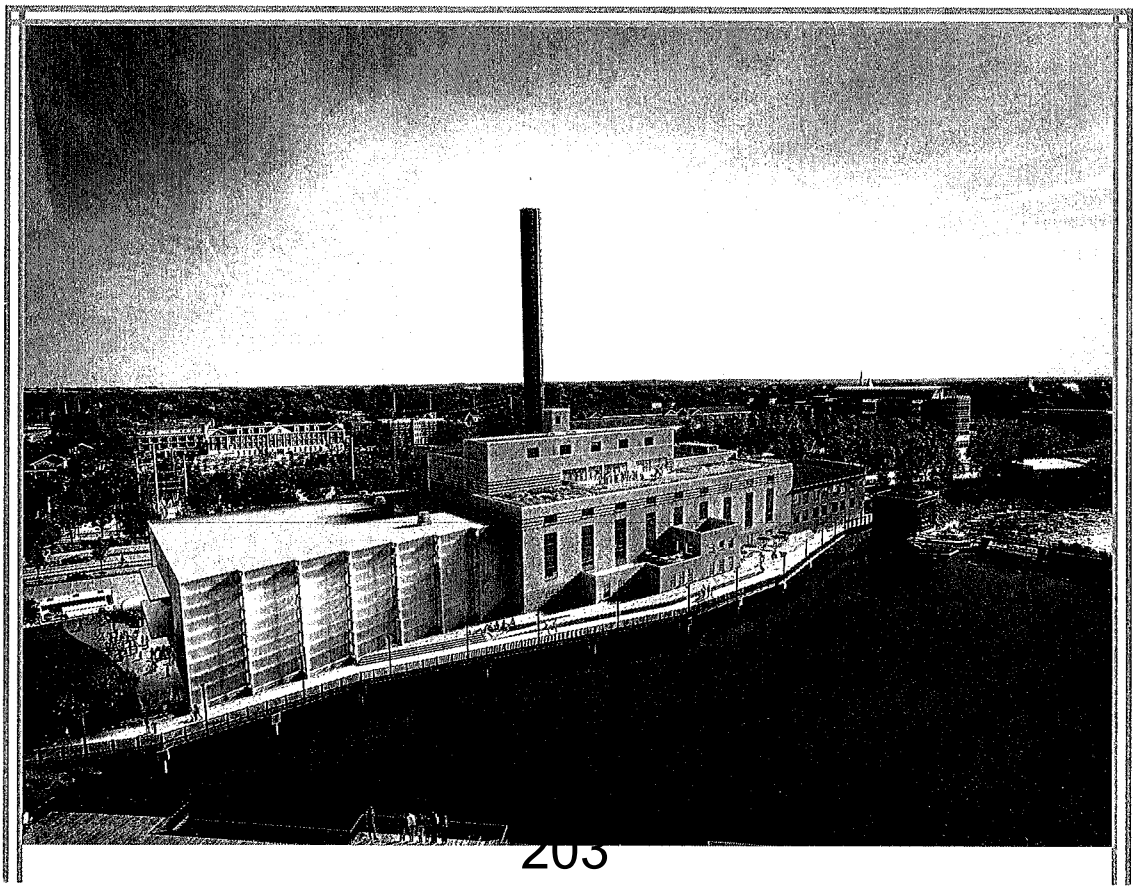


Photo courtesy of Beloit College

FUNDING

New Focus Incentive: Grain dryer tune-up

Starting **August 1**, farm and agribusiness customers can earn a **$150 incentive** after completing a grain dryer tune-up with Focus on Energy.

For more information and to apply: Focus on Energy

New Focus Incentive: Modulating dryer controls

Beginning **August 1**, business customers can receive an incentive for installing modulating gas dryer controls on commercial laundry equipment in their facilities. Incentives range from $50/dryer to $350/dryer based on capacity. For a table of incentives and the application for funding, visit Focus Business Programs website on or after August 1.

For more information and to apply: Focus on Energy

MadiSUN - Backyard Solar Grant

The MadiSUN program is expanded with $40,000 of new funding for the MadiSUN Backyard Solar Grant. This grant competition is intended to serve diverse, low-income residents and neighborhoods by fostering access to solar power for Madison community organizations and housing providers that serve City of Madison residents. Grants may fund up to 20% of the cost of the solar array (not to exceed $10,000 per solar installation). Include a solar site assessment with the completed application.

Applications due: 5:00 PM August 19, 2019
For more information and to apply: Backyard Solar Grant
Send questions to heather@renewwisconsin.org

Focus on Energy Appliance Recycling Incentive

Wisconsinites can receive a $20 incentive check along with free pick-up through Focus on Energy to recycle a working standard size refrigerator or freezer (10-30 cubic feet). This applies to residential customers whose electric utility participates in Focus on Energy. Participants can recycle up to two appliances per year per household.

For more information and to register: Focus on Energy

Focus Incentive Doubled for Rural Residents

New in 2019, Focus on Energy has doubled the incentive for rural homeowners to up to $4,000 toward solar PV installations. The Rural Residential Solar Renewable incentive is additional funding, up to $2,000 with a maximum total incentive cap at $4,000, or 12 percent of the project costs, for residential solar installations in eligible ZIP codes across Wisconsin. No additional application needed aside from the standard solar application.

Total Rural Residential Solar Renewable Budget: **$140,000**
Direct questions to renewables@focusonenergy.com.

REAP Grants for Rural Renewable Energy and Energy Efficiency

USDA's Rural Energy for America Program (REAP) provides guaranteed loan financing and grant funding to agricultural producers and rural small businesses to purchase or

from agricultural operations and small businesses in eligible rural areas.

For more information or to apply for a REAP grant
Direct questions to your State Rural Development Energy Coordinator.

BCPL Funds School Clean Energy Projects Again

The Board of Commissioners of Public Lands (BCPL) makes loan funds available to Wisconsin School Districts for school energy efficiency and renewable energy projects. The Board recognizes the economic materiality of climate change and potential impacts of climate change on investments. BCPL manages $1.2 billion in State Trust Funds that benefit K-12 public schools and the University of Wisconsin. Press release

Applications found here
For more information about the funding opportunity
Direct questions to the BCPL Loan Officer.

RESOURCES

Pathways to Deep Decarbonization in the United States is published by Energy and Environmental Economics, Inc. (E3), in collaboration with Lawrence Berkeley National Laboratory (LBNL) and Pacific Northwest National Laboratory (PNNL). November 2014. The Deep Decarbonization Pathways Project (DDPP) is a collaborative global initiative to explore how individual countries can reduce greenhouse gas (GHG) emissions to levels consistent with limiting the anthropogenic increase in global mean surface temperature to less than 2 degrees Celsius (°C).

Next Generation Standards: How the National Energy Efficiency Standards Program Can Continue to Drive Energy, Economic, and Environmental Benefits Appliance Standards Awareness Project, August 2016 Report A1604

EVENTS

MREA: Training Catalog 2019

Focus on Energy: 2019 Training Session Calendar

Focus: Energy Management and Technology: Fundamentals and Beyond
September 12, 2019
Tomah, WI

ASES: Solar Conference 2019: Race to Renewables
August 5 - 9, 2019
Minneapolis, MN

ACEEE: 2019 Summer Study: Energy Efficiency in Industry
August 12 - 15, 2019
Portland, OR

SEPA: Addressing Four Challenges For Faster Regulatory Processes
August 15, 2019

Wisconsin Biogas Council: Advancing Cybersecurity in the Industry, Energy, Water Nexus

Reply all | Delete Junk | •••

MREA: Wisconsin Solar Tour
October 5, 2019

EUCI: Advanced Battery Storage
October 23 - 24, 2019
Denver, CO

EUCI: Safety in Battery Storage
October 25, 2019
Denver, CO

Contact:
Sherrie Gruder, LEED APBD+C
UW-Madison Extension
Sustainable Design Specialist
Energy Program Manager
(608) 262-0398
sherrie.gruder@wisc.edu

UW Extension
University of Wisconsin-Extension

Get to know us:
Energy On Wisconsin

Share Tweet Forward


mailchimp

0

Receive Updates Enter Email Address Go

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

Clean Energy for Low Income Communities Toolkit Now Available!

DOE Office of Energy Efficiency and Renewable Energy sent this bulletin at 08/08/2019 06:00 AM EDT

Thank You for Participating – *State, Local, and K-12 Leadership: Unlocking Energy Affordability* View in browser

ENERGY.GOV
Office of
ENERGY EFFICIENCY & RENEWABLE ENERGY

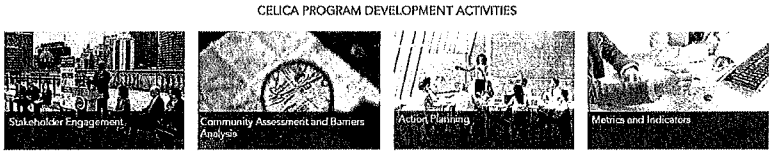
State & Local Spotlight

August 8, 2019

The State and Local Spotlight is a monthly update from the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy's (EERE) Weatherization and Intergovernmental Programs Office (WIP). This update for state, local, and K-12 officials features energy efficiency and renewable energy technologies and innovative practices across the United States by a wide range of government, community, and business stakeholders, in partnership with state and local organizations and community-based nonprofits.

News

New Clean Energy for Low-Income Communities Toolkit



The U.S. Department of Energy's (DOE) Better Buildings Initiative recently released the Clean Energy for Low-Income Communities (CELICA) Toolkit, which provides materials to help program administrators reduce energy burden for low-income communities by enhancing and expanding upon work funded through utility, state, or federal programs. These materials are the product of CELICA's two-year collaboration with more than 30 partners from the government, utility, and nonprofit sectors, with support from national technical assistance partners. The materials include CELICA partner model programs, case studies, templates, and solution examples related to both program development and design. Access the toolkit to learn more, and join the webinar Wednesday, August 14, from 3–4 p.m. Eastern Time to hear from CELICA partners and learn how they overcame key barriers and developed targeted low-income energy solutions.

Energy Efficiency and Distributed Generation for Resilience: Withstanding Grid Outages for Less

Many communities across the United States experience extreme weather-related events that lead to disruptions in electric service. In 2017 alone, the nation experienced droughts, floods, freezes, hurricanes, and wildfires that cumulatively cost more than $300 billion in damages and led to longer and more frequent disruptions in power. A new resource, *Energy Efficiency and Distributed Generation for Resilience: Withstanding Grid Outages for Less*, describes how energy efficiency can be integrated into planning for microgrids for resilience at critical public facilities, lowering the cost of a new system that can sustain operation during a grid outage. It includes real-world examples as well as modeled scenarios to illustrate how efficiency can achieve energy and cost savings. Download the resource.

Commercial PACE Resources Now Available

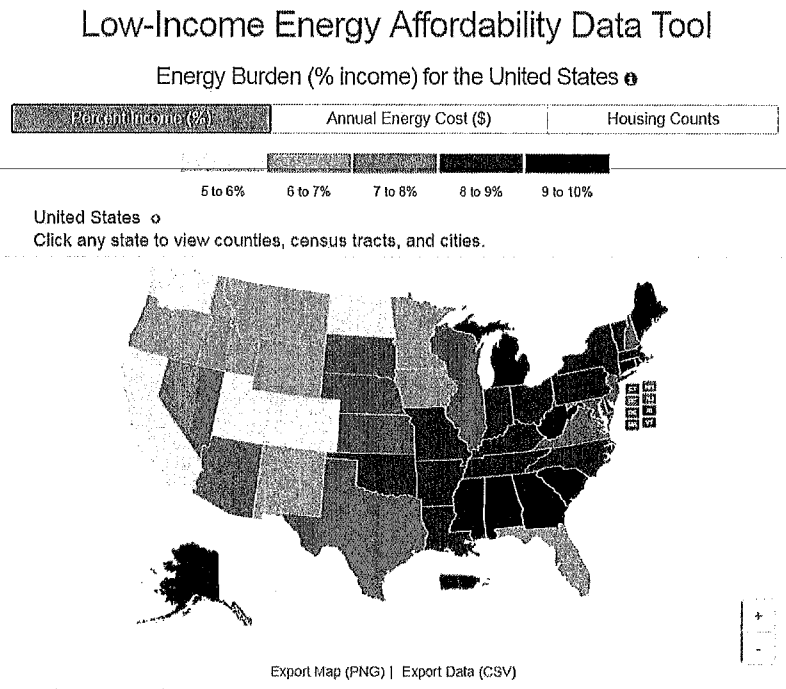
Commercial property assessed clean energy (C-PACE) is one of the fastest growing financing mechanisms in the country. To fulfill the technical assistance needs for this up-and-coming financing mechanism, EERE released two C-PACE resources that highlight best practices from established programs and address key stakeholder issues in the C-PACE process.

- C-PACE Working Group Year in Review (2018–2019) – Showcases resources and opportunities for all state and local governments interested in learning more about C-PACE and highlights energy savings and investments the C-PACE Working Group, a cohort of state and local governments working together to learn about, launch, and refine C-PACE financing programs, is working to achieve. The goal of these efforts is to stimulate $60 million in C-PACE investments by 2022.
- Commercial PACE Financing and the Special Assessment Process: Understanding Roles and Managing Risks for Local Governments – Addresses two specific barriers local governments may face regarding C-PACE programs:
    - Uncertainty about the likelihood of tax foreclosure on properties in default of C-PACE payments and the risks local governments bear
    - Uncertainty about the staff labor commitment associated with administering the program, including the execution of the special tax assessment process.

Toolkit Helps Rural K–12 Schools Improve Energy Efficiency Knowledge

The Rural K–12 School Facility Workforce Development and Training Toolkit is a collection of materials, trainings, and certification courses for building operators of rural K–12 school facilities who seek actionable steps to improve their energy efficiency knowledge and create comfortable, cost-saving, and energy-efficient learning environments. The toolkit features descriptions of common energy efficiency trainings and certifications that building operators of rural K–12 schools can take advantage of, listing all of the important information in one place. For more details, access the toolkit.

New Interactive Web Platform Helps Users Understand Household Energy Characteristics



The Low-income Energy Affordability Data (LEAD) Tool helps stakeholders make data-driven decisions about energy goals and program planning by improving their understanding of low-income and moderate-income household energy characteristics. Whereas a previous version of the tool was spreadsheet based, the new version of the LEAD Tool is easily accessible with a web browser and provides an interactive platform that allows users to build their own national, state, city, or county profiles. Such profiles include estimated low-income household energy characteristics associated with various income levels (now including analysis using Federal Poverty Level-based income as well as Area Median Income models) and housing types, vintages, and tenure. The tool includes 2016 data updates, data on Puerto Rico, and interactive maps showcasing energy burden across multiple regions. Whereas the previous version allowed a look at one local area, the new version also allows users to create their own customized profile and compare differences among several specific geographies at the same time. In addition, users will be able to save their profiles, download visuals and data, and share their customized profiles and comparisons with anyone via an auto-generated web link. Launch the LEAD Tool.

Residential Energy Efficiency for Local Governments

In the United States, residential buildings account for 21% of total energy consumption. Household expenditures for energy exceed $219 billion per year, with annual household costs averaging nearly $1,900 per year. Local governments that have established energy savings goals can develop and implement a range of programs and strategies to reduce residential energy use in their communities. A resource guide, Residential Energy Efficiency for Local Governments, can help local governments develop and implement policies and programs for improving the energy efficiency of single-family and multifamily homes in their communities. It highlights replicable programs demonstrated by

communities across the country and provides informational resources, including analytical tools and model programs for a wide range of communities and demographic regions, to support successful program development and implementation. Check out the resource guide.

Achieving Results with Energy Efficiency: EPA's New Guidebook for Energy Efficiency Measurement and Verification

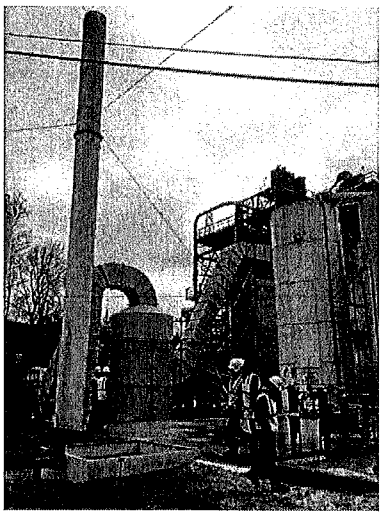
Jurisdictions around the country use proven energy efficiency policies and programs to meet electricity demand, support economic growth, and avoid generation and pollution from power plants. Every U.S. state currently administers some type of demand-side energy efficiency program, while 25 have adopted a statewide energy efficiency resource standard and others require utilities to deliver "all cost-effective energy efficiency."

The U.S. Environmental Protection Agency's (EPA) new Guidebook for Energy Efficiency Evaluation, Measurement, and Verification draws from and builds on decades of state, local, and private-sector experience quantifying and verifying savings from energy efficiency projects and measures. The guidebook is designed to help state, local, and tribal air and energy officials—as well as key stakeholders such as utility energy efficiency implementers—learn about, establish, or refine their measurement and verification (M&V) approaches. The guidebook can also help air officials understand the basics of M&V and work with their energy counterparts to capture the air quality and public health benefits of these existing investments. Download the Guidebook for more information.

Success Story: Washington State Increases Energy Savings Performance Contract Projects Through an Energy Performance Management Strategy

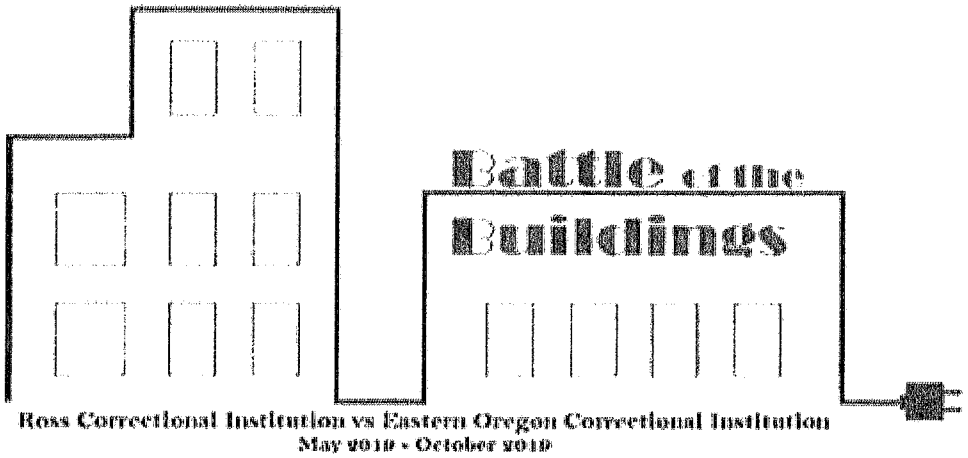
With competitive financial assistance from the EERE's State Energy Program, Washington created a benchmarking-to-retrofit protocol for installing energy efficiency upgrades in high-priority state-owned buildings. The protocol requires that state agencies input energy data into ENERGY STAR® Portfolio Manager, and if a state building receives an ENERGY STAR score below 50, the agency is required to utilize the state's Energy Savings Performance Contracting (ESPC) Program to implement energy efficiency measures. As a result of these efforts, state agencies increased benchmarking compliance from 17% to 72% in less than two years and investments in energy efficiency projects increased from $4.8 million in 2014 to $6.7 million in 2015. Read the success story.

Success Story: Energy Efficiency Site Assessments Provide Energy Savings for Pennsylvania Companies



An investment from the DOE EERE's State Energy Program helped the Pennsylvania Energy Programs Office provide energy efficiency site assessments and retrofit recommendations to 50 Pennsylvania companies. If the recommended energy efficiency upgrades are installed, they are estimated to result in a cumulative energy savings of 7.8 million kilowatt hours (kWh) and almost $1 million in cost savings. One participating company, U.S. Silica, a silica sand supplier, was looking to reduce operating costs in its Mapleton plant. Through a site assessment, PennTAP recommended energy efficient lighting measures and upgrades to a sand drying system that ultimately saved 320,000 kWh of energy per year, equating to annual energy savings of $39,000 for U.S. Silica. Read the success story.

Oregon Department of Corrections Launches 2019 Energy and Water Conservation Challenges



The Oregon Department of Corrections is competing against the Ohio Department of Rehabilitation & Correction in a Battle of the Buildings! On May 1, 2019, Eastern Oregon Correctional Institution in Oregon and Ross Correctional Institution in Ohio began competing to reduce their energy and water consumption over the next six months. The sustainability champion will be the facility that shows a greater reduction in energy and water use intensity and registers higher participation by inmates and staff in energy and water trainings. Stay tuned for results!

Events

Thank You for Participating in *State, Local, and K–12 Leadership: Unlocking Energy Affordability*!

The State, Local, and K–12 Leadership: Unlocking Energy Affordability conference, held July 8–9 in Arlington, VA, was a success thanks to the participation of 60 state, local, K–12 school district, and stakeholder representatives. Interactive discussions at the event were jam-packed with peer exchanges on best practices and collaborative technical assistance planning. Thank you to all who made this event engaging and worthwhile! Stay tuned for a high-level event summary that will highlight key takeaways.

Thank You for Coming to the *2019 Better Buildings, Better Plants Summit*!

Thanks to those of you who attended the *2019 Better Buildings, Better Plants Summit*. Your willingness to share your perspective, experience, and solutions was critical to the success of the Summit. We hope you left with new ideas, strategies, and connections that will help you move forward on energy efficiency.

Session presentations will be available on the Better Buildings Solution Center soon. And, if you haven't already, please take a moment to share your Summit experience using this feedback form. Your feedback is important and helps inform future Summits.

Stay tuned for **2020 Summit** news and dates!

Infrastructure Investments in the News

PACE equity deal first in nation to combine PACE funding and an Opportunity Zone fund: PACE Equity recently completed funding $4.3 million for the construction of a new Hyatt House hotel in Rochester, Minnesota. It is notably the first Opportunity Zone fund project in the nation to include PACE funding.

Massive solar plus storage deals signed for Moapa tribe in Nevada: EDF Renewables North America and NV Energy signed a power purchase agreement for a new 200-megawatt solar farm and a 75-megawatt, 5-hour battery storage system project located on the Moapa Band of Paiute Indians Reservation in Nevada.

Michigan YMCA receives $1.3 million for energy efficient upgrades: Petros PACE Finance, LLC has closed a $1.3 million C-PACE transaction to finance energy efficiency upgrades for the Battle Creek YMCA, marking the first C-PACE deal in Calhoun County, Michigan.

Share your success! Submit your stories to be featured in next month's Spotlight. Email your contributions to stateandlocal@ee.doe.gov.

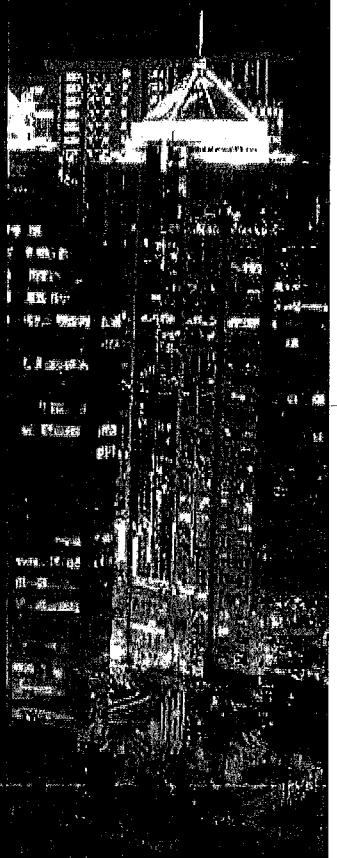
Subscribe to the **SPOTLIGHT NEWSLETTER**

About WIP

WIP is part of DOE's Office of Energy Efficiency and Renewable Energy and supports a national energy strategy to create greater energy affordability, security, and resiliency. WIP's mission is to enable strategic investments in energy efficiency and renewable energy technologies through the use of innovative practices across the United States by a wide range of stakeholders, in partnership with state and local organizations and community-based nonprofits.

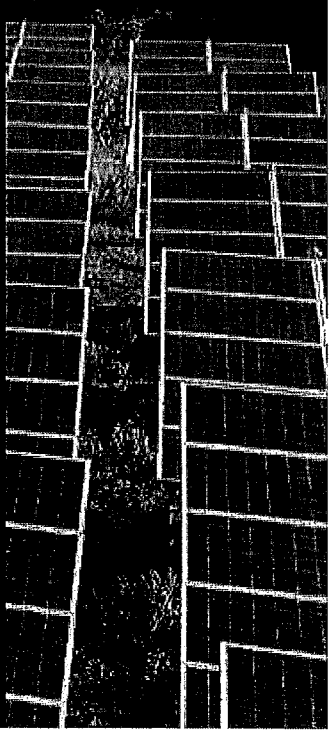
Greentech Media White Paper

gtm.



Checklist for Engaging Your Utility on Renewable Power

An energy buyer's guide to finding the right partners to achieve your clean energy goals.



The Corporate Electricity Landscape

Large corporations have been at the helm of adopting aggressive clean energy mandates in the business community in recent years.

With their big balance sheets, ample political influence and dedicated sustainability teams, it's not surprising that companies like Apple, Google and Walmart were behind a banner year for corporations as offtakers of clean energy projects in 2018. Large corporations were responsible for nearly 6 gigawatts' worth of wind and solar power-purchase agreements last year, according to Wood Mackenzie Power & Renewables, accounting for nearly a quarter of all PPA contracts.

Moving forward, however, the options for affordable, clean, low-carbon energy are increasingly available to companies of all sizes, many of which are dedicated to their sustainability mandates. And, while there are lots of partners to choose from in the energy market, the distribution utility that already serves your organization may be the best place to start.

At first glance, incumbent utilities may seem to be at odds with new, more distributed types of power generation. But many utilities across the globe are eager to engage with their customers in new ways in order to retain their business. At the same time, many regulators and legislators are asking utilities to turn toward distributed and low-carbon energy resources that can lower costs overall.

In this paper, we will discuss a framework for engaging your utility to move toward achieving your clean energy goals, whether the driver is sustainability, reliability, cost savings or a combination thereof. With more than 3,000 utilities and 52 regulatory bodies in the U.S., not every nook and cranny can be explored in a single paper. However, the same macrotrends can be applied broadly to the benefit of customers and utilities alike.

Get to Know Your Utility and Regulatory Environment

It's not as painful as it sounds

What kind of distribution utility do you have? That may sound like a simple question, but there are lots of ways to slice and dice them. Here are the most important characteristics to consider before engaging your utility about clean power options.

Is it a cooperative, municipally-owned or investor-owned?

The ownership of your utility can be an important factor. Investor-owned utilities (IOUs) are beholden to regulators and shareholders, which is not necessarily a bad thing when it comes to clean energy, whereas cooperatives and public power entities are beholden to members and city leaders, respectively.

Cooperatives. Co-ops can often move quickly and respond more readily to customer needs, as its members are its owners. However, co-ops tend to be smaller and may lack the resources to take on novel projects. Still, more than 90 percent of co-ops in the U.S. are investing in renewables, especially smaller-scale projects like community solar. In some cases, it may make sense to engage the organization that buys the cooperative's electricity, as it can pursue projects with greater economies of scale by developing projects that span multiple cooperatives.

Public power. Public power entities are owned by the municipality that they serve. If there are substantial low-carbon or clean energy priorities in the municipality, the utility may be incentivized

to move aggressively. Like co-ops, they are often small entities. Because they are run as a branch of government, a coalition of businesses could lobby local government to make utility-led clean energy options a priority.

Investor-owned utilities. IOUs serve the majority of Americans and often span multiple states. They are for-profit power companies that are regulated by state and federal commissions. Some are incentivized more than others to develop innovative business models and invest in renewables, while others are not. Given the opportunity to offer new services and the threat of customer defection, especially on the part of large corporate customers, many IOUs are interested in working with customers in new ways if it is within their regulatory mandate. (The starkest example is MGM Resorts, which paid nearly $87 million in exit fees to cut ties with NV Energy in 2016 in order to secure clean power on the open market.)

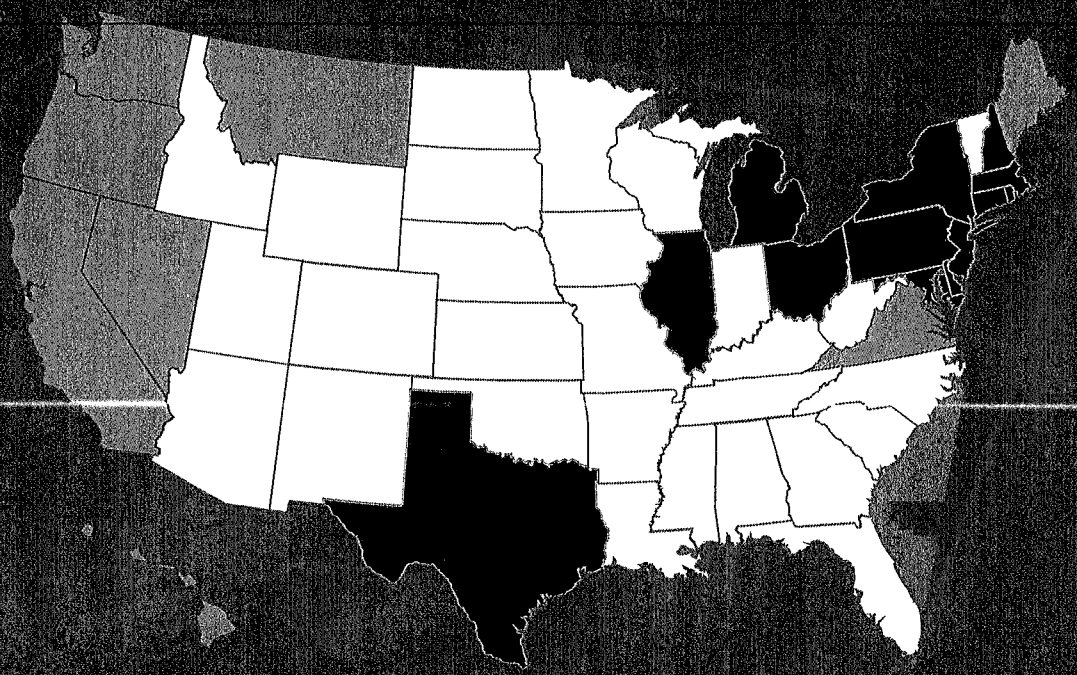
What kind of state do you live in?

This question isn't about whether the wind blows across the plains or if the sun shines all day. Instead, it's about the flavor of energy deregulation – and it matters a lot.

No energy market is entirely deregulated; rather, that refers to whether the entities that produce and sell energy to customers are separate from the entities that deliver power. The latter scenario is traditionally what people think of when they think of their power utility.

Vertically integrated utilities in regulated states own everything, from the power plants to your meter. Some are incentivized to add clean generation to their mix, but others are incentivized to maximize the economy of the existing assets no matter the environmental profile, which may include natural gas or coal-powered plants.

Regulated vs. deregulated?



Fully Deregulated | Limited Deregulation | Regulated

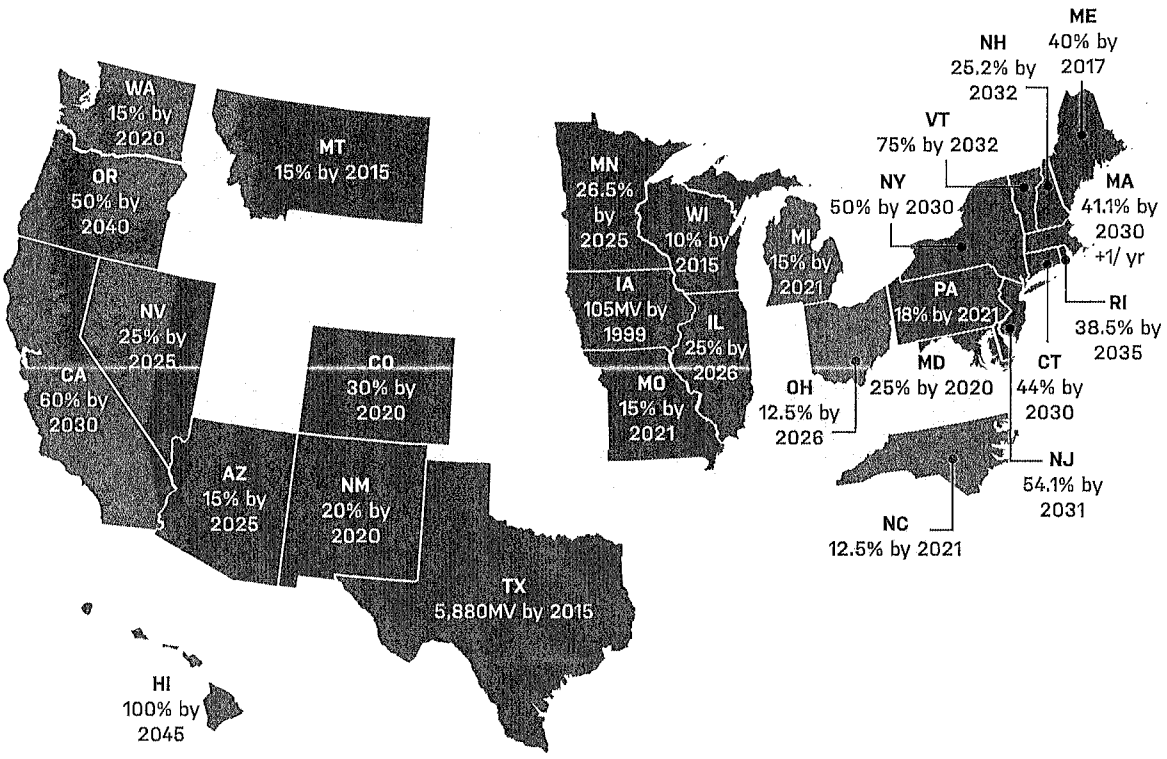
In deregulated states, the utility that owns the poles and wires doesn't own the power plants. In some cases, that may make a distribution utility more inclined to work with customers to help them site their own renewable energy or find it elsewhere, even though the distribution utility cannot own the generating asset. Partially deregulated states have allowed a small number of the largest energy users to select an alternative energy supplier. Less than 1 percent of commercial and industrial customers have this option in these states.

How ambitious is your state on clean energy targets?

Simply put, states with more ambitious clean energy or low-carbon energy targets are more likely to have the mechanisms in place to help businesses embrace renewables and encourage local utilities to help them do so. There are also state agencies, such as the New York State Energy Research & Development Agency and California's Clean Energy Commission, that offer various incentives for businesses tied to meeting those state-level goals.

Renewable Portfolio Standard Policies Exist in 29 States and DC

*Apply to **55%** of Total U.S. Retail Electricity Sales*



Source: Berkeley Lab, October 2018

Technology (and finance)

There is a solution for everything

While solar and wind are the primary sources of renewable power generation that businesses invest in, there are also other clean energy options, with benefits and drawbacks depending on desired outcomes, such as improved resiliency, lower demand charges, carbon footprint reduction and more.

Onsite Options

Supply. On-site generators can be anything from diesel or natural gas generators to solar arrays. Combined heat and power, or cogeneration, provides both electricity and thermal energy for heating and can be powered by fossil fuels or renewable options.

Storage. Energy storage, usually in the form of batteries, can provide power, but in many regions can also be used to provide grid services and earn money in return. Storage may also provide back-up power depending on the size.

Demand. Energy efficiency comes in many forms, from swapping lightbulbs to large capital projects. Energy use can also be shifted during certain times to take part in demand response programs or reduce demand charges to earn money or simply reduce monthly bills.

Vehicles. Electrified transportation can help meet sustainability goals, especially if they are charged using clean energy. There are various options of charging for fleet vehicles or charging for employees.

Offsite Options

Physical vs. virtual PPA. A physical power-purchase agreement allows the offtaker to buy the actual electrons coming off a project and is usually used by a large entity that needs a lot of power. By comparison, a virtual power-purchase agreement allows a corporation to buy renewable energy credits (RECs) from a project, yet still get their power delivered from their traditional energy supplier.

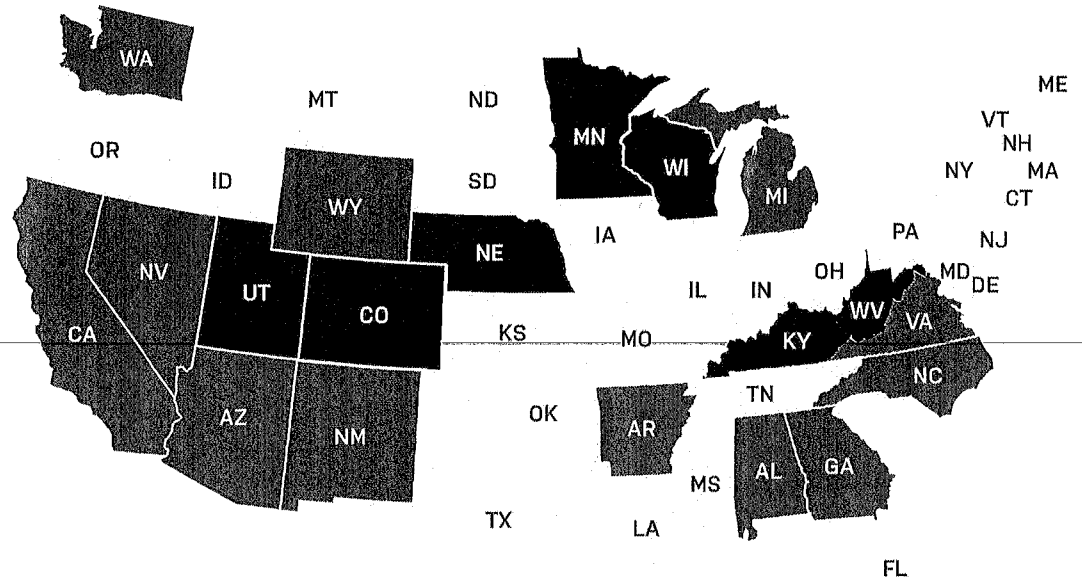
Community solar. Community solar is a smaller-scale solar farm located in your community. Local companies and residents can usually participate as subscribers. In the special-purpose entity model of community solar, a group of businesses or individuals can form a business enterprise to develop a community solar project and then work with the local utility to find more subscribers.

Green tariffs. Green tariffs, also known as green riders, allow utilities in regulated markets to allow customers to buy both the electrons from a renewable project and the RECs. There are various flavors of green tariffs emerging, but a few popular ones include: sleeved PPAs, market-based rate programs and subscriber programs.

	Energy (Volumetric)	Power (Demand)	Blue Sky Reliability	Major Storm Resilience	Sustainability
On-Site Infrastructure					
Solar	X		Potentially	Potentially	X
Thermal Generator		X	X	X	
Combined Heat & Power	X	X	X	X	X
Storage		X	X*	Potentially	X
Demand Management		X			X
Energy Efficiency	X	X			X
EV Charging					X
Off-Site Infrastructure					
Community Solar	X				X
PPAS	X				X
Green Tariffs	X				X

* Assuming the storage devices is sized to ride-out short outages

Green Tariff Program Availability by State, Q2 2018



Source: Wood Mackenzie Power & Renewables and World Resources Institute

Organic Valley Case Study

Organic Valley began its renewable energy journey more than a decade ago. Since then, it has worked with other local businesses, stakeholders across the community, municipal utilities and a municipal energy buying group to make its projects a reality.

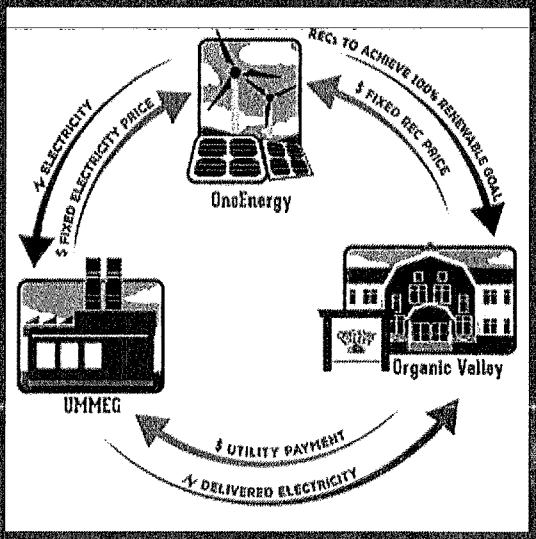
The organic farming cooperative, which has more than 2,000 family farms as members, has been supporting renewable operations at its offices and across its operations since it first installed an 8-kilowatt solar tracking system in front of its headquarters in La Farge, Wisconsin in 2008.

For years, the company had an internal goal of 100 percent renewables, but with 15 to 20 percent growth annually, there was a constant need for new solutions. After investing in on-site projects including solar electric and solar thermal, Organic Valley began conceptualizing a wind project in 2011.

Organic Valley partnered with local healthcare provider Gundersen Health System on the wind project and formed an LLC. The project is sited next to Organic Valley's distribution center in Wisconsin. The LLC paid for the construction and expansion of the substation. The power and renewable energy credits then flow to the Upper Midwest Municipal Energy Group, which buys energy for 15 municipal utilities in the region. UMMEG supplies power to the local municipal utility in Cashton, which then sells the power to Organic Valley. The two-turbine wind farm came online in 2012 and has a nameplate capacity of nearly 5 megawatts.

Organic Valley then continued to invest in solar. After a 2013 fire at its headquarters, the organization wanted to rebuild with rooftop solar, but first had to engage local stakeholders and first responders who worried about the impact of solar in the case of another emergency. In 2015, a nearly 100-kilowatt roof-mounted solar array was installed at its newest office building, as were solar thermal and a geothermal system.

The next project was also solar, but this time offsite. A local organization approached Organic Valley in late 2015 about a 1-megawatt project that would serve the company and surrounding communities. Around the same time, Organic Valley was growing more comfortable with a public commitment to 100 percent renewables by 2020.



Organic Valley worked with developer OneEnergy Renewables directly, planning on a power-purchase agreement. But in order for the project to work in the existing regulatory environment, the municipal utility needed to hold the PPA, so the developer, Organic Valley and other companies, including personal-care products manufacturer Dr. Bronner's, built a coalition of interested municipal utilities. The end result has been the construction of over 33 megawatts of community solar.

Now that the cooperative has reached its own goal of being powered 100 percent by local, renewable power, it is also helping its farmers do the same. The cooperative's sustainability team assists its member farmers from their initial point of interest in renewables, through auditing and reviewing quotes, and on to securing grants. The cooperative expects its own operations to be carbon-neutral by 2023.

Partners, Frenemies and Competitors

It's complicated

Your distribution utility is not the only organization interested in meeting your energy needs. Depending on the geography of your operations, your scale and your company goals, a variety of different organization types could be interested in serving as your trusted partner. Your distribution utility will view these potential suppliers on a partner to competitor spectrum discussed below.

Deregulated utility subsidiary

☑ Partner ☑ Frenemy ☐ Competitor

Deregulated utility arms often can offer a full variety of customer solutions. In territories where the distribution utility and deregulated subsidiary have common ownership and permission to operate from the regulator, these organizations will often act more like partners. In territories where the distribution utility does not also own generation, deregulated utility subsidiaries may operate as a frenemy, responding to utility incentives and goals.

Retail utility (outside of Texas)

☐ Partner ☐ Frenemy ☑ Competitor

Retail utilities, sometimes called energy suppliers, operate in a total of 20 states, six of which only allow retail utilities to market to a limited set of large customers. In these states (with the exception of Texas), customers are defaulted onto the base distribution utility electricity supply service unless they choose a competitive supplier. For distribution utilities, retail utilities often dilute their earnings on retail services and can reduce the efficiencies of scale that are offered to the billing and retail services team.

Energy service company

☑ Partner ☑ Frenemy Competitor

ESCOs offer services across broad swaths of the country but are particularly active in markets with robust energy-efficiency policies. They come in many flavors, from local players to international conglomerates. These organizations are best at coordinating major capital upgrades to increase energy efficiency, enhance customers' control of their energy, install distributed energy resources (DERs) and reduce energy bills. Utilities often work with ESCOs to run energy-efficiency programs and rely on many of these organizations to achieve state energy efficiency goals.

DER provider

Partner ☑ Frenemy ☑ Competitor

DER providers, such as solar developers, most commonly offer on-site solar, but increasingly offer standalone or paired fossil generation, storage, energy efficiency and building management. These organizations are interested in developing and potentially financing and owning on-site DERs.

These providers may be working in direct conflict with a distribution utility with its own generation, or operating as a frenemy that is working to develop projects that are helpful for both the customer and the grid.

Technology conglomerate

Partner ☑ Frenemy Competitor

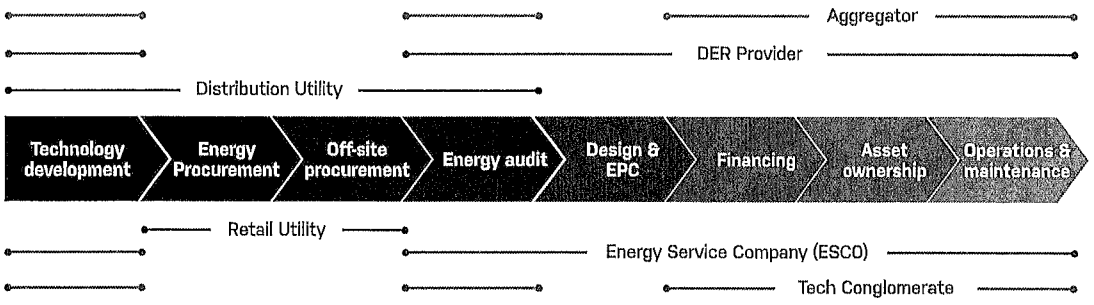
Tech conglomerates such as Siemens, Schneider Electric and ABB offer a subset of building management, energy management and services to enhance operations. These players are increasingly partnering with DER providers to offer a larger suite of products to support customers. As this product set increases, their relationship with utilities is becoming analogous to that of a DER provider.

Aggregator

☑ Partner Frenemy ☑ Competitor

Aggregators typically provide services to customers that help monetize distributed energy resources and demand flexibility. Aggregators seek to enroll customers in flexibility programs to help customers control their energy consumption in a way that

Typical Capabilities Map for C&I Energy Services by Service Provider Type



Source: Wood Mackenzie Power & Renewables

We have chosen to exclude deregulated utility subsidiaries from this chart as these entities can have widely different service portfolios and business models.

simultaneously reduces their energy bills and allows them to collect utility incentives or generate revenue through wholesale electricity market participation. In several competitive markets, these providers will compete with utility-run programs for customers, while elsewhere in the country, they will often be contracted by utilities to build and manage their demand-side flexibility portfolios.

Support organizations

☑ Partner ☐ Neutral ☑ Competitor

Support organizations such as the Renewable Energy Buyers Alliance, regional clean energy groups, market-specific sustainability organizations and state agencies like California's Clean Energy Commission can all act as resource centers and conduits to engage utilities and other necessary stakeholders to invest in clean energy options.

The Checklist

What are you trying to achieve?

☑ Depending on whether you want to hit sustainability goals, help bring clean energy to the community, increase resiliency or cut costs, there are different solutions that may be ideal. Maybe it's onsite solar-plus-storage you're looking for, or if your goal is simply to lower costs, exploring a new green tariff or first tackling energy efficiency may be the best place to get started. Be clear about what you want to get out of any project, even if you have multiple objectives.

How is energy used across your organization?

☑ It's helpful to understand some of the largest energy hogs in your organization, whether that's HVAC, cold storage or data centers. In addition, it's important to know how that use pairs up with your buildings, which may be leased or owned. By evaluating which facilities or assets may be most ripe for clean energy solutions, you can better decide which external stakeholders to engage.

What type of utility are you dealing with?

☑ Besides knowing who owns the utility and its regulatory structure, do a little digging around the utility's website to look for any mentions of novel ways it is working with commercial customers. If you have an account representative, start there. Also try a quick internet search to look for news reports indicating whether your utility is - or isn't - working with stakeholders to invest in clean energy or resiliency.

Who needs to come to the table internally?

☑ If your CEO or CTO isn't already a champion, find someone in the finance department who is. Build C-suite support as the process evolves. Also engage facilities and operations managers early on. Don't wait too long to bring in marketing and public relations, as they can help round out the picture for the C-suite when it comes to understanding the benefits of clean energy projects.

Who else should you talk to?

☑ Regional companies also interested in clean energy, such as hospitals, data centers and others large energy users, may be open to banding together to approach the local utility. Commercial clean energy developers that work in the region may also have experience working with the utility and can help move the project along faster.

How much do you need to bring to the table?

☑ It's important that you have a basic understanding of your fixed, volumetric and demand charges to know what sort of solutions will help you meet your goals. Additionally, it's also vitally important to be aware of the potential tax implications for your organization and financing schemes that are feasible.

Supporting policy action

☑ If your state or region does not openly embrace renewable energy, consider local organizations and/or clean energy nonprofits that can lobby for policies to encourage a conducive environment for renewable investment. In some cases, that may mean working with the distribution utility to submit plans to state regulators for new mechanisms, such as green tariffs.

A Greentech Media Service

gtm:

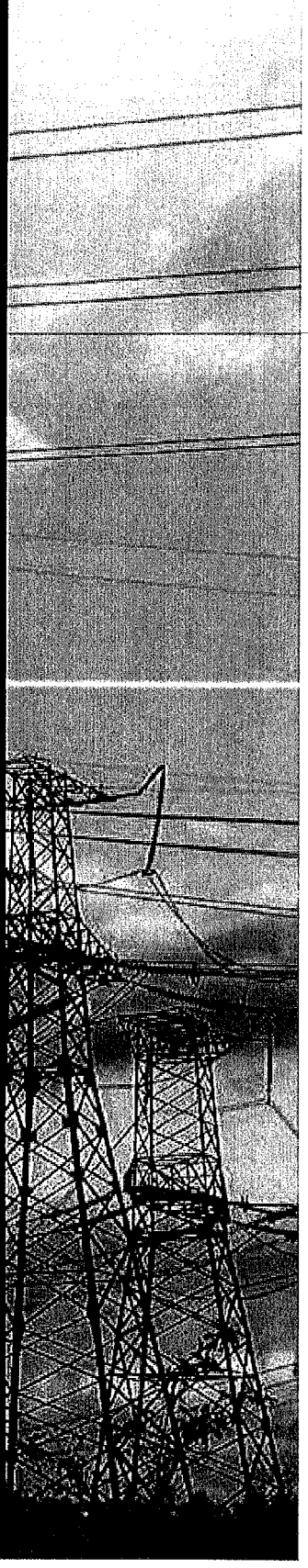
Checklist for Engaging Your Utility on Renewable Power

An energy buyer's guide to finding the right partners to achieve your clean energy goals.

Authors

Ben Kellison
Wood Mackenzie Power & Renewables, Research Director

Katie Tweed
Greentech Media, Chief Content Strategist



To learn more about Greentech Media, visit www.greentechmedia.com.

ACEEE
American Council for an Energy-Efficient Economy

PRESS RELEASE

Media Contact(s): Casey Skeens
202-507-4043, Communications Manager

Senate Bill Would Extend Benefits of Utility Efficiency Programs Nationwide

Washington, DC—Today, Senator Tina Smith (D-Minnesota) introduced the American Energy Efficiency Act of 2019 with cosponsors Senator King (I-Maine) and Senator Merkley (D-Oregon). The bill sets a national energy efficiency resource standard (EERS), administered by the states, to lower utility bills for consumers and reduce emissions that contribute to climate change. EERS programs work by setting energy consumption reduction targets for electricity and natural gas, with targets slowly ratcheting up over time. Utilities meet these targets by offering efficiency programs to help their customers save energy, reduce waste, and save money.

Steve Nadel, Executive Director, American Council for an Energy-Efficient Economy (ACEEE):

"We commend Senators Tina Smith, Angus King, and Jeff Merkley for introducing the American Energy Efficiency Act of 2019, which would save consumers and businesses $150 billion dollars over 25 years of programs while saving energy and reducing emissions. Energy efficiency is the cheapest, fastest way to address climate change, as indicated by the broad coalition of support from stakeholders, unions, and industry. The bill creates an Energy Efficiency Resource Standard to be administered by the states with staggering impact: saving 128 quadrillion Btu of energy (quads) over more than 25 years (which is more energy than the US uses in a year),

reducing carbon dioxide emissions by more than 6 billion metric tons (more than the total US emissions in a year), and eventually resulting in 400,000 added jobs."

Read the coalition letter of support here.

To read the press release online, visit: https://www2.aceee.org/e/310911/ate-bill-would-extend-benefits/bvzts4/382804703?h=0KVA6tvrAPYbQeUhG1UqViLJuIjbmfaPZHvbabQKdQ8

###

*The **American Council for an Energy-Efficient Economy** acts as a catalyst to advance energy efficiency policies, programs, technologies, investments, and behaviors.*

Connect with us on social media:

ACEEE, 529 14th Street., N.W., Suite 600, Washington, DC 20045
Sent by aceeenews@aceee.org

Reply all | Delete Junk | ...

ITC Extension Bill Introduced | Solar Means Business 2018

SA SEIA Weekly Array
Thu 7/25/2019 3:06 PM
To: nancy.turyk@ces.uwex.edu

Reply all |

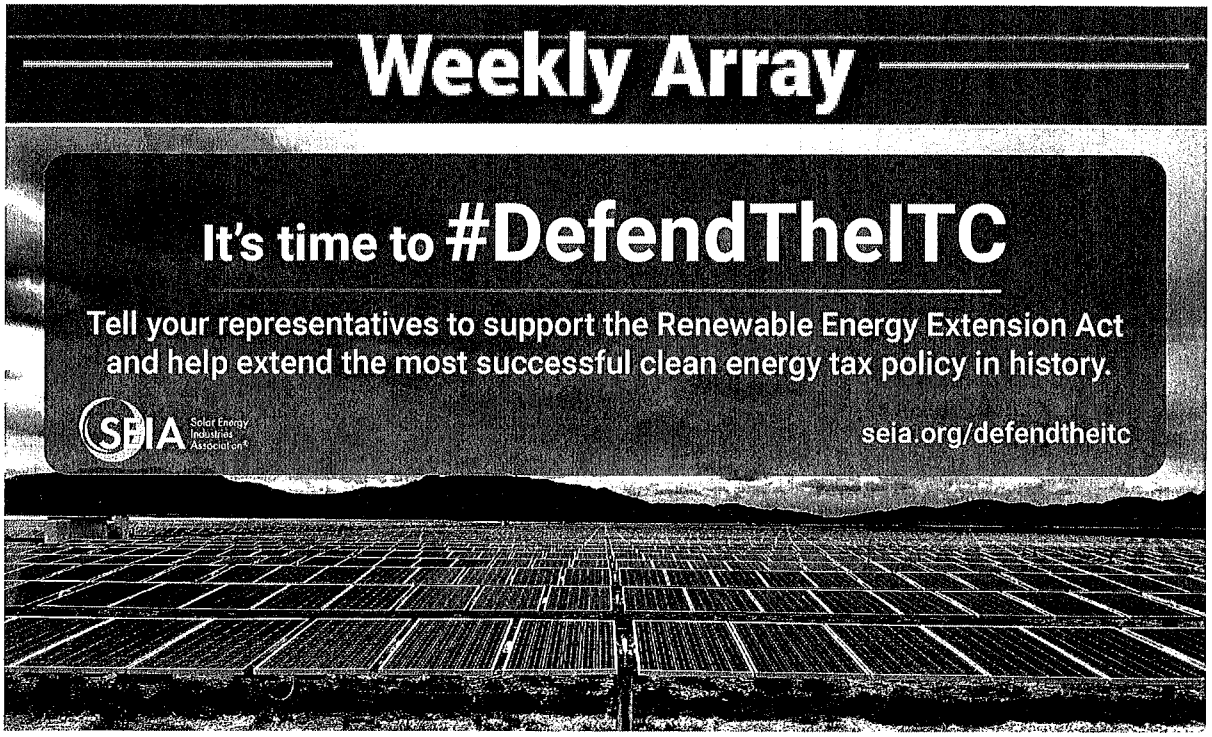
Inbox

Report Spam Unsubscribe

Apple, Amazon and Target Lead on Solar

SEIA Solar Energy Industries Association

Join SEIA



BREAKING: Solar ITC Extension Bill Introduced

Bipartisan Members of Congress introduced the Renewable Energy Extension Act to extend tax credits

Congress Introduces 5-Year ITC Extension Bill

Senator Catherine Cortez Masto (D-NV) and Representatives Mike Thompson (D-CA), Paul Cook (R-CA), and Brian Fitzpatrick (R-PA) today introduced companion bills with a **five-year 30% extension** of Section 48 and Section 25D Solar Investment Tax Credits (ITC). **The Renewable Energy Extension Act** will call for the extension of the tax credits. SEIA is urging lawmakers to pass this critical legislation that is responsible for creating hundreds of thousands of jobs, sparking more than $140 billion in private investment and growing solar deployment by more than 10,000%.

"These bills are clear, easy wins members of Congress can deliver to their constituents that create jobs, bolster the economy and address climate change," said Abigail Ross Hopper, SEIA President and CEO. "Polling shows that Americans across the political spectrum are concerned about our changing climate and they strongly support solar. We are grateful to Sen. Cortez Masto, Rep. Mike Thompson, Rep. Cook and Rep. Fitzpatrick for their leadership and eager to build on the bipartisan support this legislation already enjoys."

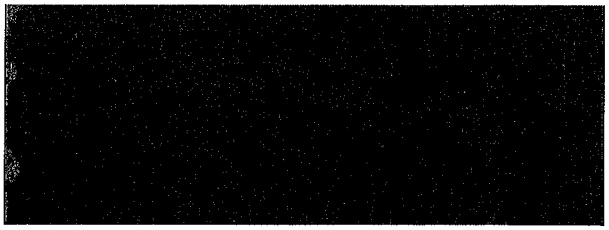
Read More

Stepping Into the Sun: A Mission to Bring Solar Energy to Communities of Color

ITC Extension Could Boost Us Solar's Output One-Third by 2030, Says SEIA

Apple Leads Second-Biggest Year for Commercial Solar Installations: SEIA

Names Apple Top Company in the US for Solar



CNBC - The business with the most installed solar capacity in the U.S. is Apple, according to a new report from the Solar Energy Industries Association (SEIA). Released Thursday, the Solar Means Business Report for 2018 looked at both off and on-site solar installations at businesses in the U.S.

Apple, with 393 megawatts (MW) of installed capacity, takes the top spot. Apple says that its headquarters in Cupertino, California, is powered by 100% renewable energy from "multiple sources". These include an on-site 17 MW rooftop solar installation and 4 MW of biogas fuel cells. Amazon and Target make up the top three with 329.8 MW and 242.4 MW of installed capacity, respectively. Other firms in the top 10 include major businesses such as Walmart, Google and real estate investment trust firm Prologis.

Read More

POLICY UPDATES

EXECUTIVE POLICY

SEIA CEO Testifies Before House Natural Resources Committee to Expand Solar on Public Lands

Today, SEIA President and CEO Abigail Ross Hopper testified before the House Natural Resources' Subcommittee on Energy and Mineral Resources to promote the deployment of renewable energy on public lands. The proposed Public Land Renewable Energy Development Act of 2019 (H.R. 3794) will ensure additional resources and expertise are available to make solar development more viable.

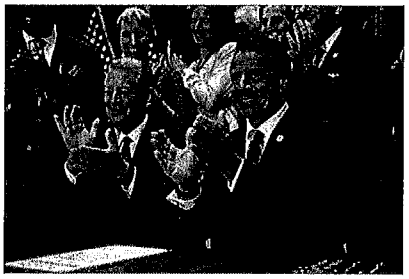
"At a time when demand for solar energy is growing, federal lands are a valuable resource," said Abigail Ross Hopper. "Working together, private industry and the federal government can help reduce red tape, keep costs low and help rural families and communities with economic growth and job creation."

Read More

House Leaders' 100 Percent Clean Energy Plan Draws Support From Solar Industry

STATE POLICY

SEIA Commends New York State for Signing Historic Renewable Energy Mandate into Law



Last week, Governor Cuomo signed the Climate Leadership and Community Protection Act into law, one of the most aggressive renewable energy mandates in the United States. The historic law will require the state to procure 6 gigawatts of distributed solar by 2025 and for the state's utilities to get 70% of its electricity from renewable energy by 2030.

"This legislation will encourage significant growth of the solar industry in the Empire State for years to come," said Abigail Ross Hopper, president and CEO of the Solar Energy Industries Association, "We commend Governor Cuomo and the State Legislature for their commitment to using solar to eliminate emissions, create well-paying jobs and protect public health and low-income communities. Solar will undoubtedly play a major role in helping New York reach its climate goals. This law will go a long way to making the 2020s the decade where solar combines with storage, electric vehicles and other technologies to reshape our energy future."

Read More

Northeastern States Primed to Be the Next Major Energy Storage Market

Hawaiian Electric finalizes largest-ever renewables procurement

Renew Wisconsin, WE Energies Announce Solar Settlement

Please be advised that the Washington Metropolitan Area Transit Authority (WMATA) has posted an amendment 1 to its Request for Proposals #20-01 (Solar Ground Lease) on its website. The Amendment provides greater detail about the site visits that will follow the pre-proposal conference scheduled on July 25, 2019.

Read More

EVENTS

Jul. 29 WEBINAR	#DEFENDTHEITC - HOW YOU CAN SUPPORT SEIA'S EFFORTS
Aug. 8 CHICAGO, IL	VETERANS ADVANCED ENERGY SUMMIT
Aug. 20 WEBINAR	DIVERSITY, EQUITY & INCLUSION: UNCONSCIOUS BIAS TRAINING
Sep. 23-26 SALT LAKE CITY	SOLAR POWER INTERNATIONAL
Nov. 7 WASHINGTON, DC	SOLAR GOES CORPORATE

Click Here for a Full List of Events

Welcome to Our Newest SEIA Members!

Solar Vision, LLC | Ott | PSG Energy Group | Good Steward Consulting | RRE Power LLC | Beacon Roofing Supply | Inspiration Solar | Public Service Solar

SEIA TWEET OF THE WEEK

Solar Industry
@SEIA

Follow

The world's largest brands are investing in #solar in historic numbers. Our new #SolarMeansBiz report shows that Fortune 500s make up 15 of the top 25 corporate solar users in the U.S. #SolarIsNow #TheSolarDecade

cnbc.com

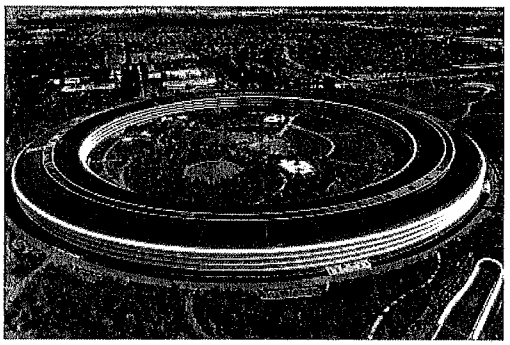
Apple beats rivals to be named top company in the US for solar

Major businesses in the U.S. are seeking to green their operations in a number of ways.

9:41 AM – 25 Jul 2019

View on web

1 32 46 •••



Learn more about advertising opportunities in the SEIA Weekly Array.

To manage your email preferences, click here.

To unsubscribe, click here. To view a version of this email in your browser, click here.

Solar Energy Industries Association | 1425 K Street, NW Suite 1000 | Washington, DC 20005 | U.S.A | 202 682-0556

Better Buildings®
U.S. DEPARTMENT OF ENERGY

ALL ▼ | SEARCH SOLUTIONS

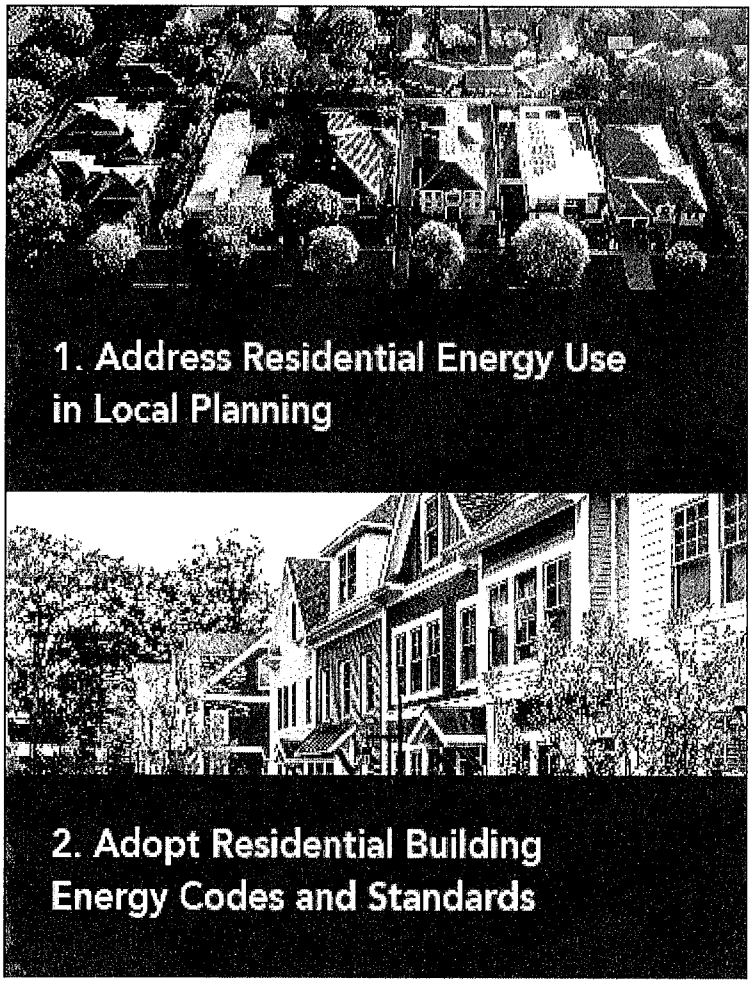
RESIDENTIAL ENERGY EFFICIENCY FOR LOCAL GOVERNMENTS

In the U.S., residential buildings account for 21% of total energy consumption. Household expenditures for energy exceed $219 billion per year, with annual household costs averaging $1,856 per year ($2,137/year for single family homes and $1,132 for multifamily units). Local governments that have established energy savings goals can develop and implement a range of programs and strategies to reduce residential energy use in their communities. Furthermore, lowering residential energy costs can contribute to other local government objectives, including housing affordability, energy reliability, improvements in health outcomes, updated aging housing infrastructure, investments in clean energy, and workforce and economic development.

The U.S. Department of Energy has worked with local governments to develop a range of strategies to improve residential energy efficiency. These include establishing energy efficient building codes for new homes, raising awareness of the energy performance of homes through labeling programs, increasing access to affordable financing to make home energy improvements, and starting initiatives to serve low-income households, rental properties and multifamily buildings.

This resource guide is intended to help local governments develop and implement policies and programs for improving the energy efficiency of single family and multifamily homes in their communities. It highlights replicable programs demonstrated by communities across the country, and provides informational resources, including analytical tools and model programs for a wide range of communities and demographic regions to support successful program development and implementation.

The following actionable strategies are highlighted:



3. Start a Home Energy Labeling Program

4. Enable Financing for Residential Efficiency Upgrades

5. Offer Incentives to Make Efficiency More Affordable

6. Upgrade the Efficiency of Affordable Housing in Your Community

Each strategy in the guide includes information answering the following questions:

- What is the strategy and why is it important?
- Who should be engaged when implementing this strategy?
- Which DOE tools and resources can help?
- What other resources are available?
- How are these strategies in action by local governments?

Additional Resources:

- DOE's Better Buildings Residential Network: Connects energy efficiency programs and partners to share best practices and learn from one another to increase the number of homes that are energy efficient. Local governments can learn from the experiences of their peers through peer exchange calls and other forums for sharing information on topics of interest. Contact: bbresidentialnetwork@ee.doe.gov
- DOE's Residential Program Solution Center: A repository for lessons learned, resources, and knowledge from program administrators and industry experts across the country. Find information to help plan, operate, and evaluate residential energy efficiency programs.

Office of Energy Efficiency & Renewable Energy

Energy Department Recognizes Gundersen Health for Energy Efficiency Leadership

JULY 23, 2019

Today, the U.S. Department of Energy (DOE) recognized Better Buildings Alliance (BBA) partner Gundersen Health System at their Sparta Clinic for impressive portfolio-wide energy efficiency advances. As part of its Envision Sustainability Program, Gundersen is pursuing energy efficiency through low-energy design standards coupled with renewable energy. Since 2008, Gundersen has saved more than $11 million dollars through energy efficiency upgrades and Gundersen's Sparta Clinic uses less than 50% of the energy that the average clinic uses today.

Sparta Clinic was built with sustainable design features aimed at achieving its energy usage goal of 35 kBtu per square feet. After being open just over a year, the clinic surpassed its energy savings goal by 9% which resulted in an annual energy savings of more than $68,500. In May 2017, the clinic was certified LEED Gold for Building Design + Construction.

In addition to its energy efficient design, the Sparta Clinic also integrates renewable energy through solar and geothermal systems. The clinic utilizes both on-site and off-site solar, with a rooftop array of solar photovoltaic (PV) panels capable of producing 100 kilowatts (kW) of energy and 280 kW of solar energy purchased from a nearby Xcel Energy

community solar garden. The combined solar power generates enough renewable energy to offset the building's consumption. As of June 2018, the solar PV panels have produced more energy than the building has consumed establishing the clinic as an energy independent facility. The clinic also uses 40 geothermal wells, all 300 feet deep, to heat and cool the building. Gundersen was able to meet its goal by combining solar and geothermal with a variety of energy efficiency building features including a heat recovery ventilation system, building automation system and plug load controls.

More than 900 organizations now partner with DOE in Better Buildings and have saved more than $8.4 billion in energy costs to-date. Through Better Buildings, DOE partners with leaders in the public and private sectors to make the nation's homes, commercial buildings, and industrial plants more energy-efficient by accelerating investment and sharing of successful best practices. Greater efficiency saves billions of dollars on energy bills, reduces pollution and greenhouse gas emissions, and creates jobs.

Discover more than 1,500 proven solutions in the Better Buildings Solution Center.

OFFICE of
ENERGY EFFICIENCY & RENEWABLE ENERGY

Forrestal Building

1000 Independence Avenue, SW

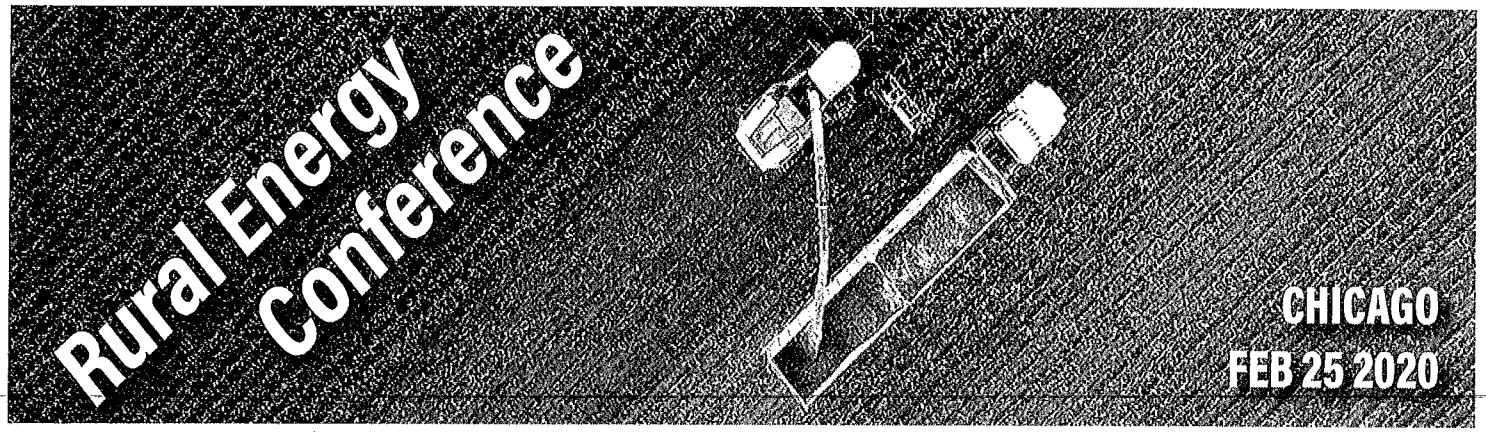
Washington, DC 20585

Mark your calendars for Rural Energy 2020!

Email not displaying correctly?
View it in your browser.

ACEEE
American Council for an Energy-Efficient Economy

RURAL ENERGY CONFERENCE 2020



Save the Date
Rural Energy Conference in the Windy City
February 25, 2020

Dear Nancy,

ACEEE is pleased to announce our second Rural Energy Conference. This dynamic one-day event at the Chicago Marriott Downtown Magnificent Mile will explore how energy efficiency and clean energy are increasing rural prosperity. Our interactive sessions, plenary panels, and networking breaks will connect you with leaders from utilities, government, industry, nonprofits, financial institutions, and academia.

This conference will give you the perfect opportunity to delve into clean energy solutions tailored for rural communities that will spur economic growth and energy affordability. Many rural residents spend a higher share of their income on energy costs than their non-rural counterparts. Join us to explore the power and potential of energy efficiency and clean energy to lower energy bills and improve the everyday lives of rural residents.

We will discuss the following topics as they relate to rural communities:

- Energy efficiency program design and financing
- Renewable and distributed energy resources
- Economic development
- Electrification of buildings and transportation
- Resilience and disaster recovery
- Energy affordability for low-income households
- 2018 Farm Bill and USDA programs
- Broadband access

Registration will open in Fall 2019.

Likely attendees include leaders from utilities, government, industry, nonprofits, financial institutions, and academia. A discount will be given to those also attending the 2020 Midwest Energy Solutions Conference presented by the Midwest Energy Efficiency Alliance (MEEA).

Visit the conference web page for more information and contact us with any questions, or contact Charlie Herron to learn about sponsorship opportunities.

ACEEE Quick Links

Rural Energy | Conferences | Blog | About Us

Connect with us on social media:

ACEEE, 529 14th Street., N.W., Suite 600, Washington, DC 20045
Sent by aceeeconf@aceee.org

July Newsletter

Hello friend,

We hope your summer is going well! We are pleased to release our 2018 annual report and showcase the impact of our work in the United States and abroad. Today, we are also releasing a topic brief on a new energy efficiency database that provides easily accessible information on state cost-effectiveness practices.

Please keep us posted on your own endeavors.

Best,

Steve

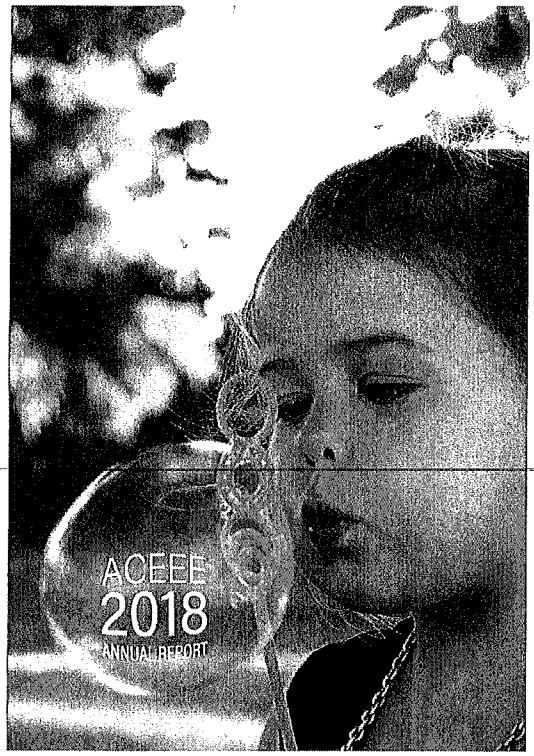
Steven Nadel
Executive Director

Research Spotlight:

Here's a Powerful New Tool to Advance Efficiency:

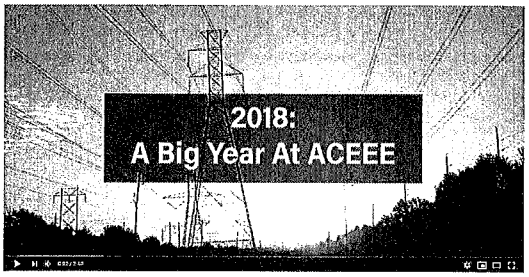
Our new topic brief highlights the uses of the National Efficiency Screening Project's Database of State Efficiency Screening Practices, the first tool to provide readily accessible information on state cost-effectiveness practices. Regulators, utilities, and other stakeholders can use this powerful tool to advance energy efficiency as a resource through accurate cost-effectiveness tests that account for efficiency's multiple benefits. You can read about the database in the NESP's quarterly newsletter.

Highlights



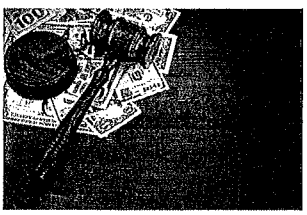
2018 Annual Report

ACEEE is advancing efficiency as the cornerstone of a clean energy future. This year, we published research on the health impacts of reduced energy use, launched the Rural Energy Initiative, and began partnerships with both the American Cities Climate Challenge and the Urban Sustainability Directors Network. Read about that and more in our latest annual report, and check out our summary video for a brief overview.



ACE Misses Chance to Slash Carbon Emissions

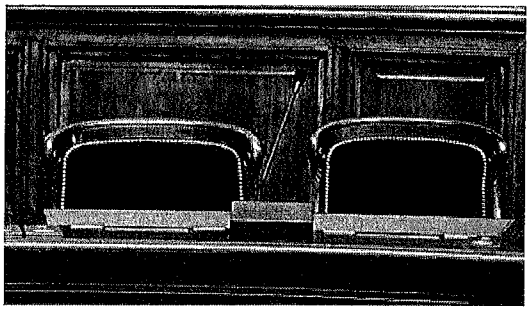
The Affordable Clean Energy Rule (ACE), announced by the US Environmental Protection Agency last month, misses a large opportunity to slash carbon emissions, reduce air pollution, and save money. The rule recognizes that energy efficiency measures at power plants can reduce both carbon emissions and consumer utility bills, but it will deliver relatively few savings.



Efficiency Rules and Emission Reductions

When efficiency standards are not increased, the lost energy savings accumulate over years — with dramatic impact. Learn more about pending federal proposals in this *Scientific American* article that quotes Neal Elliott, ACEEE senior research director.

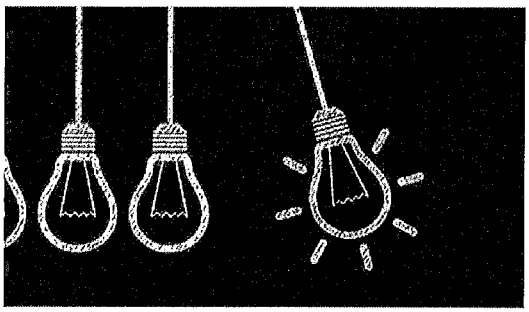
Reports & Blog Posts



DOE Refuses Public Hearing On Appliance Standard Proposal

by Andrew deLaski

The Department of Energy (DOE) has quietly issued a proposal that could seriously undermine US energy efficiency standards for many appliances and products. It refuses to hold a public hearing to discuss the change in testing rules.



Six Ways We've Slashed US Energy Use

by Steven Nadel

Major energy efficiency policies slashed US energy use by about 20% in 2017, saving a whopping 25 quads of energy — the amount used in California, Texas, and Florida, combined.

Upcoming Events

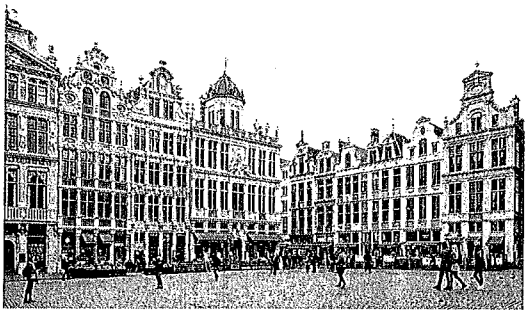
SSI 2019

2019 Summer Study on Energy Efficiency in Industry

August 12–15, Portland, OR

This dynamic biennial event will feature an impressive lineup of speakers, including Amory Lovins of the Rocky Mountain Institute, and a discussion on cutting-edge technologies, policies, and

processes that can inspire action for a sustainable future.



EFEX 2019

September 24, 2019, Brussels
The Energy Future Exchange program is hosting a don't-miss conference in Brussels to explore the power and potential of the transatlantic relationship to create clean, climate-friendly economies.

2019 National Conference on Energy Efficiency as a Resource

National Conference on Energy Efficiency as a Resource

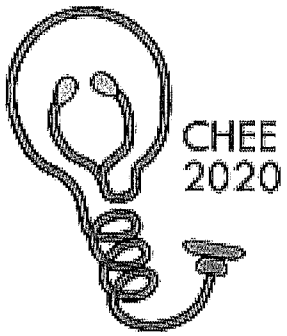
October 15–17, Minneapolis, MN
This biennial conference will highlight innovative policies and programs. It will explore electrification, climate plans, tech advances, grid modernization, low-income programs, system reliability, and utility business models.

behavior, energy & climate change becc

Behavior, Energy & Climate Change

November 17–20, Sacramento, CA
BECC will focus on scaling practices, policies, and programs to accelerate efforts that mitigate climate change. Early bird registration has been extended to June 7.

Conference on Health, Environment, and Energy

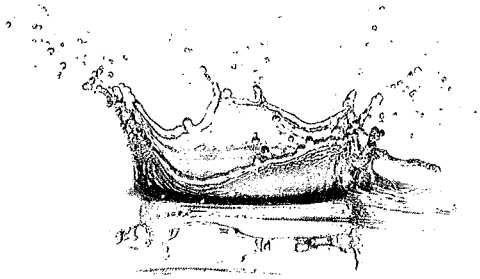


January 21–23 2020, New Orleans, LA
Join leaders from a variety of professions to explore how energy choices can affect our health and the environment.

Rural Energy Conference

February 25 2020, Chicago, IL
Explore the power and potential of energy efficiency and clean energy to lower energy bills and improve the everyday lives of rural residents.

Hot Water Forum



March 23–25, Atlanta, GA
Meet with industry leaders and fellow professionals in a welcoming community that is passionate about pursuing the smartest, most cost-effective ways to improve the efficiency of hot water systems.

Energy Efficiency Finance Forum

June 2–3, White Plains, NY
Explore major opportunities to finance projects that save energy, reduce costs, and create jobs. Discuss ways to overcome barriers and scale the industry.

Community News

The U.S. Green Building Council (USGBC) announced the recipients of the annual LEED Homes Awards, which celebrate residential projects, developers and builders using LEED to improve quality of life for residents, reduce a building's impact on the environment, and create healthier and more resilient communities.
Congratulations! Arkansas' Entegrity HQ office has become the first LEED Zero-certified building in the US.

MEEA is now accepting nominations for the 2020 Inspiring Efficiency Awards! The IEAs honor the Midwest's top energy efficiency leaders and programs across five categories. Applications are due Friday, September 13, so start yours today.

The NEEP Summit, "Pathways to Decarbonization in the Northeast" will be held in Brooklyn, New York, August 27-29, 2019, to address the opportunities, trends, and challenges of minimizing the carbon footprint of homes, buildings, and transportation in the Northeast United States.

E4TheFuture, coordinator of the National Efficiency Screening Project, announced the second *NSPM Quarterly*, a publication about the National Standard Practice Manual (NSPM) and a related state database. Milestones include the first commission order for implementing NSPM recommendations and an imminent launch of NSPM's next major phase.

Northwest Energy Efficiency Alliance (NEEA) has released its 2018 Annual Report. It highlights regional accomplishments and results over the past year.

Staff Spotlight — Welcome

After a 31-year career at Dow Chemical Company, Ed Rightor joins us as our new Industrial Program director. In recent years, he's focused on climate change issues at Dow's Environmental Technology Center. He has a bachelor's degree in chemistry from

Marietta College and a Ph.D. in inorganic chemistry from Michigan State.

Nick Henner joins us as our new policy analyst in clean energy finance. Before joining ACEEE, Nick worked at the City and County of Honolulu's Office of Climate Change Sustainability and Resiliency, where he focused on energy efficiency and equity projects. Nick earned a master of science in sustainability management from American University and a bachelor of science in finance from the University of Arizona.

Celine Park is our newest behavior intern. She is a rising junior at Princeton University studying mechanical engineering. She is interested in sustainable energy and technology as well as entrepreneurship and business development.

To contribute news, please email kdoughty@aceee.org.

Connect with us on social media:

Support Us

Our mailing address is:
ACEEE, 529 14th Street., N.W., Suite 600, Washington, DC 20045

Sent by aceeenews@aceee.org

Solar Panels Top 22 Acres of NYC Rooftops

SEIA Solar Energy Industries Association

Join SEIA

Weekly Array

'I Love My Solar' Targets Lawmakers for Awareness Campaign

The campaign allows solar advocates to send custom postcards directly to lawmakers

Nonprofits Team up on Postcard Writing Campaign

Vote Solar and Solar United Neighbors announced the launch of the "I ♡ My Solar" postcard campaign

yesterday. The campaign is hosted through a website which allows solar owners/supporters/general sun aficionados to create postcards of either their own or some generic rooftop solar installations, as well as a short message on the front and a more detailed, personal message on the back of the card. The card can then be mailed to the user's state legislators, governor and members of Congress.

"The I ♡ my solar campaign is an exciting way to give solar customers a voice in important policy debates in the state and federal government," said Abigail Ross Hopper, president and CEO of the Solar Energy Industries Association. "Solar customers, who encompass a broad range of Americans, can bolster campaigns such as the extension of the solar investment tax credit, and state policies that promote greater use of solar energy. The 2 million solar customers in this country are growing quickly and we want to make sure policymakers in all parts of the country are hearing them loud and clear."

Read More

Wind and Solar's Share Has Grown 700 Percent Without Reliability Issues

SEIA Members: Learn More About SEIA's New Divisions and Committees

SEIA Solar Energy Industries Association®

In a bid to get more members engaged in emergent solar energy issues, SEIA has added new divisions to focus on solar+ storage and solar manufacturing and it has added the **Energy Storage Committee and the Community Solar Committee.** The new structure is part of SEIA's broader governance plan to make the 2020s The Solar+ Decade, and establish solar as America's leading source of new electricity generation.

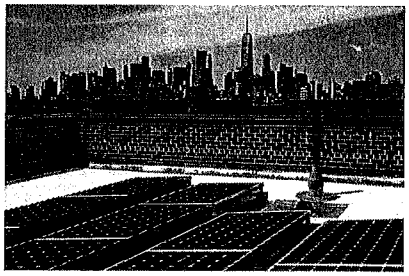
Members can join one division and multiple committees. Divisions each get one board seat and allow members the opportunity to engage with SEIA on issues related to their primary line of business. Committees offer SEIA policy input and engage in regular discussions with SEIA staff to help direct SEIA advocacy. These groups form the basis of our premium membership levels and provide valuable industry leadership opportunities for our members.

Read More

POLICY UPDATES

STATE POLICY

How New York City Is Turning Its Thousands of Roofs Into Power Providers



The New York Times - New York City is home to thousands of acres of rooftop, some of the most expensive electricity in the country and progressive leadership that has embraced efforts to combat climate change. Yet New York has been slower than other big cities in tapping into one constant source of clean energy: the sun.

Solar power accounts for only about two percent of all the electricity generated in the country, said Abigail Ross Hopper, chief executive of the Solar Energy Industries Association, a trade group. Ms. Hopper said the industry hopes to increase that share to 20 percent by 2030.

Read More

Deep in Coal Country, Solar Holler Harnesses the Sun

Florida's Utilities Keep Homeowners From Making the Most of Solar Power

Big push for more solar energy in Colorado Springs

ARLINGTON SOLAR AND EV CHARGER CO-OP

SOLAR UNITED NEIGHBORS

Solar United Neighbors: We're bringing homeowners and small businesses interested in installing solar and/or electric vehicle chargers together in a group, or co-op. Homeowners join the group at no obligation to receive discounted pricing and unbiased, installer-neutral support throughout the process.

We're excited to issue a Request For Proposal (RFP) on behalf of a group of 52 homeowners and businesses in Arlington, Fairfax, and Alexandria counties. We've worked closely with community stakeholders and volunteers to recruit interested homeowners for this group.

Read More

EVENTS

Jul. 18-19 PHILADELPHIA, PA	COMMUNITY SOLAR POWER SUMMIT	→
Jul. 22 INDIANAPOLIS, IN	THE VALUE OF RESILIENCE FOR DISTRIBUTED ENERGY RESOURCES	→
Sep. 23-26 SALT LAKE CITY	SOLAR POWER INTERNATIONAL	→
Nov. 7 WASHINGTON, DC	SOLAR GOES CORPORATE	→

Click Here for a Full List of Events

Welcome to Our Newest SEIA Members!

360 Managed Services, LLC | Merit SI, LLC | EcoSave Solar

SEIA TWEET OF THE WEEK

SEIA

Solar Industry
@SEIA

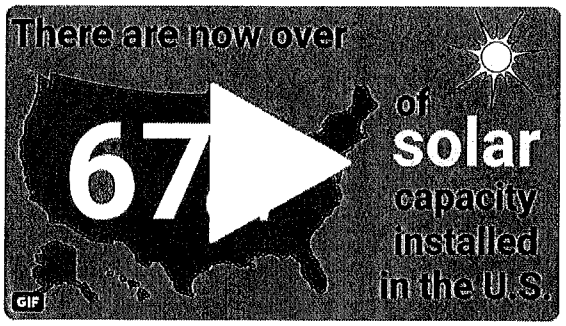
Follow

#Solar is a booming American industry, powering millions of homes and businesses, and more than 242,000 U.S. jobs. #SolarIsNow #TheSolarDecade

4:58 PM – 8 Jul 2019

View on web

33 53



Learn more about advertising opportunities in the SEIA Weekly Array.

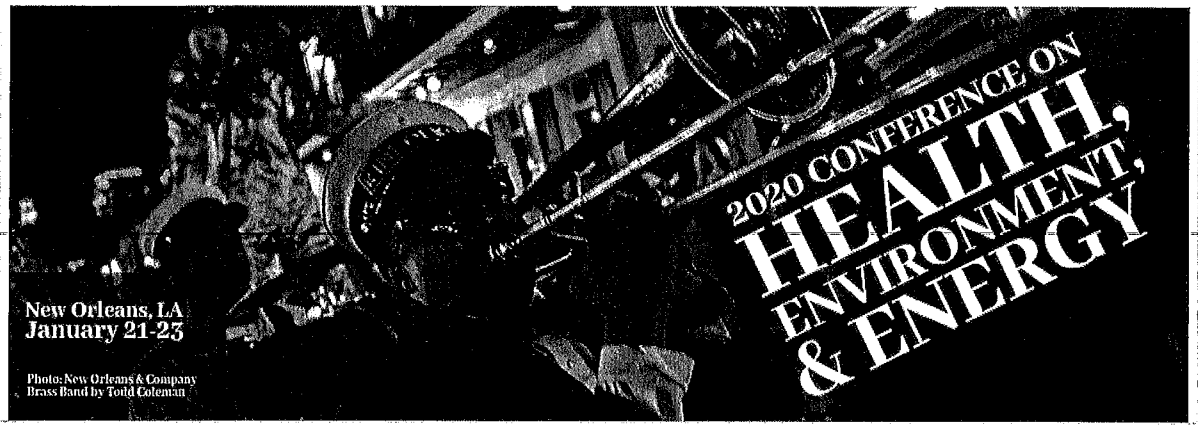
To manage your email preferences, click here.

To unsubscribe, click here. To view a version of this email in your browser, click here.

Solar Energy Industries Association | 1425 K Street, NW Suite 1000 | Washington, DC 20005 | U.S.A | 202 682-0556

ACEEE
American Council for an Energy-Efficient Economy

CHEE 2020



Register early and save for CHEE20!

Dear Nancy,

How do energy choices affect our health and the environment? Join innovative leaders from the health, energy, and environmental sectors to explore these impacts at ACEEE's popular Conference on Health, Environment, and Energy (CHEE), which returns to New Orleans on January 21-23, 2020. Participate in multiple tracks, plenary panels, moderated discussions, and interactive breakout sessions while enjoying lunches, a networking reception, and other fun activities in the birthplace of jazz!

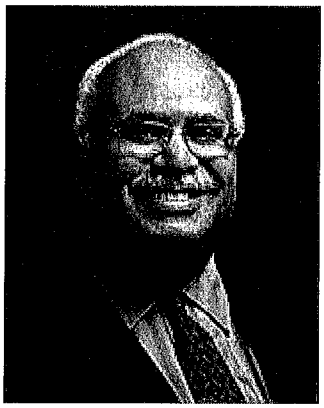
REGISTER

Here's a sneak peek at session topics:

- Translating Health and Clean Energy Targets into Action: Working with States and Cities
- Grassroots Green Homes: Achieving Healthy, High-Performance Housing through Collaboration and Community Engagement
- Understanding the Root Causes of Health Inequities

VIEW SCHEDULE

Keynote Speaker



Health policy leader, practitioner, and administrator **Georges C. Benjamin, MD** will deliver a don't-miss keynote address: "Climate Change: A Public Health Approach." Dr. Benjamin, a former secretary of health for the state of Maryland, is executive director of the American Public Health Association, the nation's oldest and largest organization of public health professionals. Read full bio.

Pre-conference Workshop

Come for a pre-conference training and earn the new Building Performance Institute's Healthy Housing Principles (HHP) professional certificate! The HHP provides an overview of the factors in a home that can negatively affect health and the fundamentals that make for a healthier environment. The training is open to all but conference attendees receive a steep discount. Learn more here.

Continuing Education Credits

Opportunities for conference attendees to earn continuing education credits are available for physicians, nurses, certified health education specialists, BPI healthy home evaluators, and architects. Learn more when you register.

Accommodations

All conference activities will be held at the Hyatt Centric French Quarter New Orleans. Book your room using the link below or call 503-281-6111 to receive our special group rate of $174+ single/double per night through **December 27, 2019**. To receive the group rate, reserve early and mention you are with ACEEE.

BOOK HOTEL

Likely Participants

Public health professionals; medical doctors; energy researchers; academic researchers; environmental regulators and advocates; local, state, and federal policymakers; low-income community advocates; utility staff; architects; general contractors; NGOs; consultants; and energy efficiency professionals.

We had a fantastic turnout for the first CHEE conference in New Orleans. Click here to see a list of the organizations that participated in 2018.

Contact ACEEE's conference team for any questions. For information on sponsorship opportunities for CHEE20 download our sponsorship flyer, or contact Charlie Herron. Visit the CHEE web page to find updates about the upcoming conference.

@ACEEEdc #CHEE2020

Platinum Sponsor

Advisory Organizations and Session Co-Hosts

Supporting Organization

NACCHO

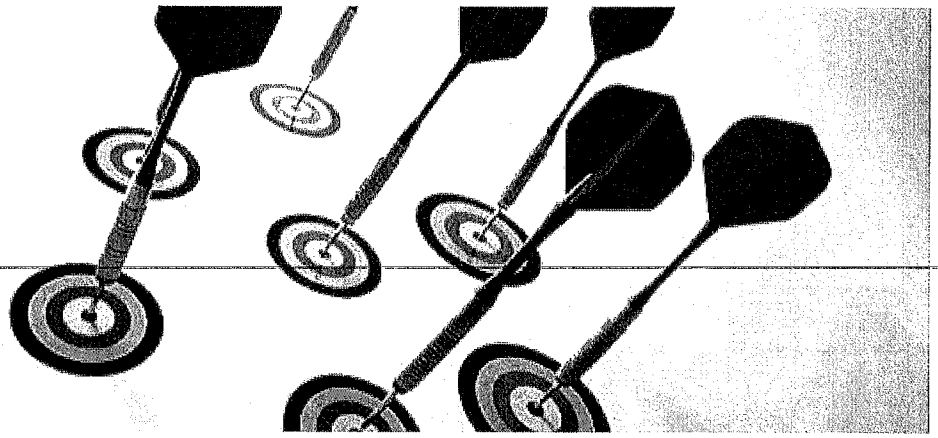
ACEEE Quick Links

CHEE Homepage | Conferences | Blog | About Us

Connect with us on social media:

ACEEE, 529 14th Street., N.W., Suite 600, Washington, DC 20045
Sent by aceeeconf@aceee.org

ACEEE
American Council for an Energy-Efficient Economy



BLOG POST

Media Contact: Casey Skeens
(202) 507-4043, cskeens@aceee.org

How to zero out emissions? More US states use energy efficiency

By Annie Gilleo, Senior Manager, State Policy

A growing number of states is adopting ambitious clean energy goals, aiming to zero out emissions in the power sector and, in some cases, the statewide economy.

In the past year, legislatures in California, Colorado, Maine, Nevada, New Mexico, New York, Puerto Rico, and Washington have all passed bills aimed at making their state's electricity sector carbon free by 2045-2050. More states have pledged to meet similar goals through executive orders and regulatory frameworks, most recently New Jersey, Minnesota, and Wisconsin. To date, 25 governors have signed on to the US Climate Alliance, pledging to reduce emissions in line with the goals of the Paris Agreement.

Using Efficiency to Meet Clean Energy Targets

While these goals mean transitioning to clean and renewable energy generation, each of these states will also need a big ramp up in energy efficiency to reach its targets. Energy efficiency reduces loads, cutting the amount (and therefore cost) of renewable energy needed to meet the goals. Efficiency also reduces energy needs on very hot and cold days, helping to aid grid reliability at times when the grid is most stressed. It is clear that states and regions will need to lean heavily on energy efficiency on the road to zero emissions. Many already are.

New Mexico was the third state to pass legislation requiring 100% of the state's electricity generation to come from renewables, following California and Hawaii. During its 2019 legislative session, New Mexico also passed legislation that will extend its energy efficiency targets and help incentivize utilities to save energy...

To continue reading the blog post, visit: https://www2.aceee.org/e/310911/ng-clean-how-energy-efficiency/bmgk9b/379809547?h=KoDM_yCeP0QSJ1kSbHRCKTOkHS_GIGSHjJc_TF34LE4

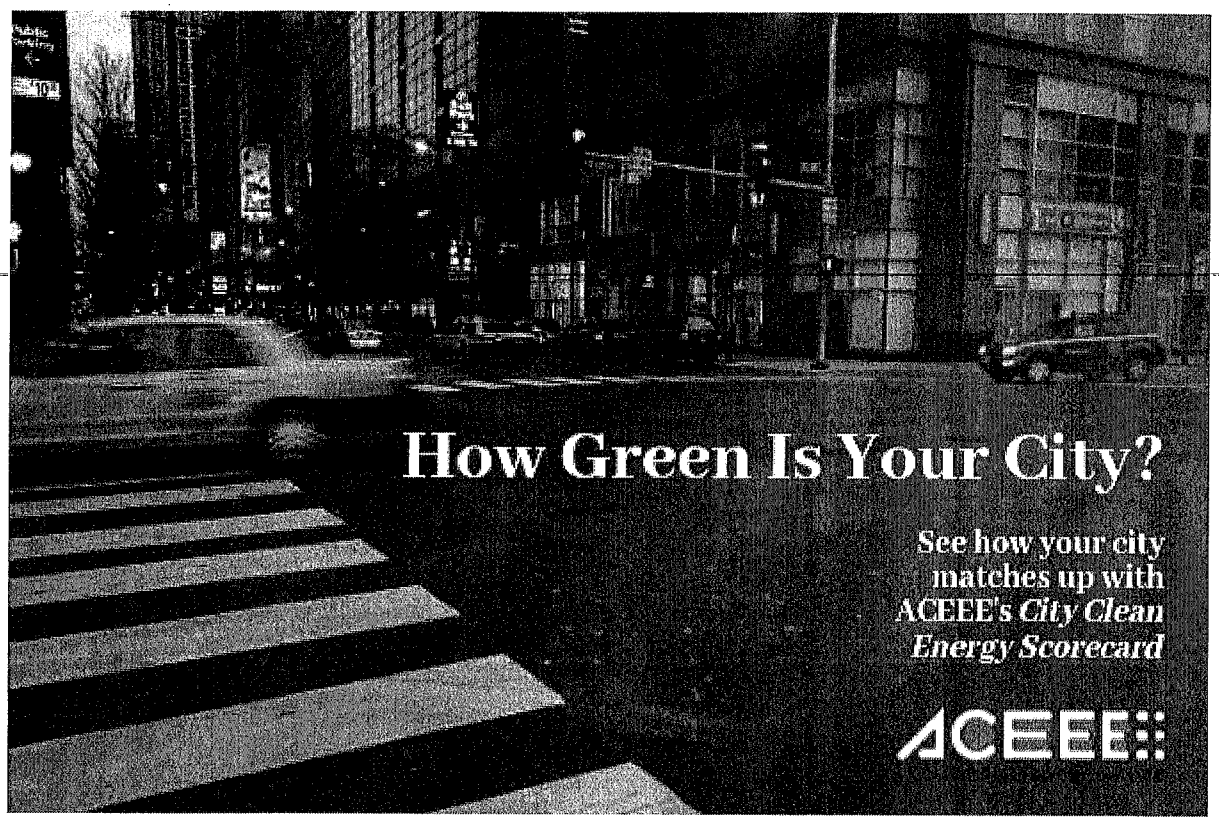
About ACEEE: The American Council for an Energy-Efficient Economy acts as a catalyst to advance energy efficiency policies, programs, technologies, investments, and behaviors. For information about ACEEE and its programs, publications, and conferences, visit aceee.org

###

Connect with us on social media:

ACEEE, 529 14th Street., N.W., Suite 600, Washington, DC 20045
Sent by aceeenews@aceee.org

ACEEE
American Council for an Energy-Efficient Economy



Announcement

Webinar: 2019 City Clean Energy Scorecard

Date: July 25, 2019 Time: 10:00 - 11:00 AM ET.

Cities are leading the way on climate action and clean energy policy. Which are doing best? How many will meet their climate goals? In the most comprehensive clean energy scorecard ever of US cities, the nonprofit American Council for an Energy-Efficient Economy (ACEEE) will highlight the leaders, the cities to watch, and emerging trends. To learn about the findings, join ACEEE and city experts for a webinar at 10 a.m. EDT/7 a.m. PDT on Thursday, July 25th.

Register for the webinar

The closely-watched scorecard of 75 large cities, based on more than 50 metrics, ranks cities for their efforts and success in advancing renewable energy, energy efficiency, and energy equity. Cities in the spotlight include (in alphabetical order): Austin, Boston, Chicago, Cincinnati, Denver,

Hartford, Los Angeles, Minneapolis, New York City, Oakland, Orlando, Portland, Providence, San Diego, San Francisco, San José, Seattle, and Washington, D.C.

Speakers:

- **Jacob Frey,** Minneapolis Mayor
- **Christopher Cook**, chief of environment, energy, and open space, City of Boston
- **Steven Nadel**, executive director, American Council for an Energy-Efficient Economy
- **David Ribeiro**, senior research manager, American Council for an Energy-Efficient Economy

Register for the webinar here: https://www2.aceee.org/e/310911/register-5761905323014375437/bnmzdg/380134943?h=Fskuy9kKlRcSGAsyt5qJsob0lV41DglnPEEmfJf5spc

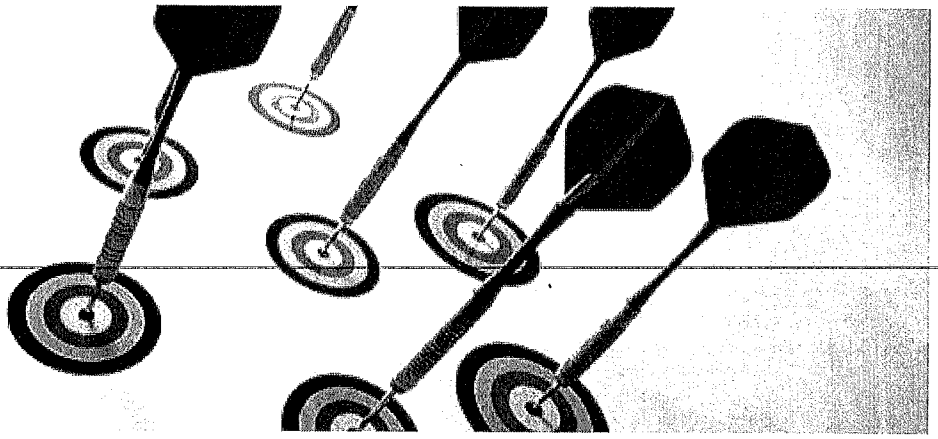
The American Council for an Energy-Efficient Economy is a nonprofit that acts as a catalyst to advance energy efficiency policies, programs, technologies, investments, and behaviors.

###

Connect with us on social media:

ACEEE, 529 14th Street., N.W., Suite 600, Washington, DC 20045
Sent by aceeenews@aceee.org

ACEEE
American Council for an Energy-Efficient Economy



BLOG POST

Media Contact: Casey Skeens
(202) 507-4043, cskeens@aceee.org

How to zero out emissions? More US states use energy efficiency

By Annie Gilleo, Senior Manager, State Policy

A growing number of states is adopting ambitious clean energy goals, aiming to zero out emissions in the power sector and, in some cases, the statewide economy.

In the past year, legislatures in California, Colorado, Maine, Nevada, New Mexico, New York, Puerto Rico, and Washington have all passed bills aimed at making their state's electricity sector carbon free by 2045-2050. More states have pledged to meet similar goals through executive orders and regulatory frameworks, most recently New Jersey, Minnesota, and Wisconsin. To date, 25 governors have signed on to the US Climate Alliance, pledging to reduce emissions in line with the goals of the Paris Agreement.

Using Efficiency to Meet Clean Energy Targets

While these goals mean transitioning to clean and renewable energy generation, each of these states will also need a big ramp up in energy efficiency to reach its targets. Energy efficiency reduces loads, cutting the amount (and therefore cost) of renewable energy needed to meet the goals. Efficiency also reduces energy needs on very hot and cold days, helping to aid grid reliability at times when the grid is most stressed. It is clear that states and regions will need to lean heavily on energy efficiency on the road to zero emissions. Many already are.

New Mexico was the third state to pass legislation requiring 100% of the state's electricity generation to come from renewables, following California and Hawaii. During its 2019 legislative session, New Mexico also passed legislation that will extend its energy efficiency targets and help incentivize utilities to save energy...

To continue reading the blog post, visit: https://www2.aceee.org/e/310911/ng-clean-how-energy-efficiency/bmgk9b/379809547?h=KoDM_yCeP0QSJ1kSbHRCKTOkHS_GIGSHjJc_TF34LE4

About ACEEE: The American Council for an Energy-Efficient Economy acts as a catalyst to advance energy efficiency policies, programs, technologies, investments, and behaviors. For information about ACEEE and its programs, publications, and conferences, visit aceee.org

###

Connect with us on social media:

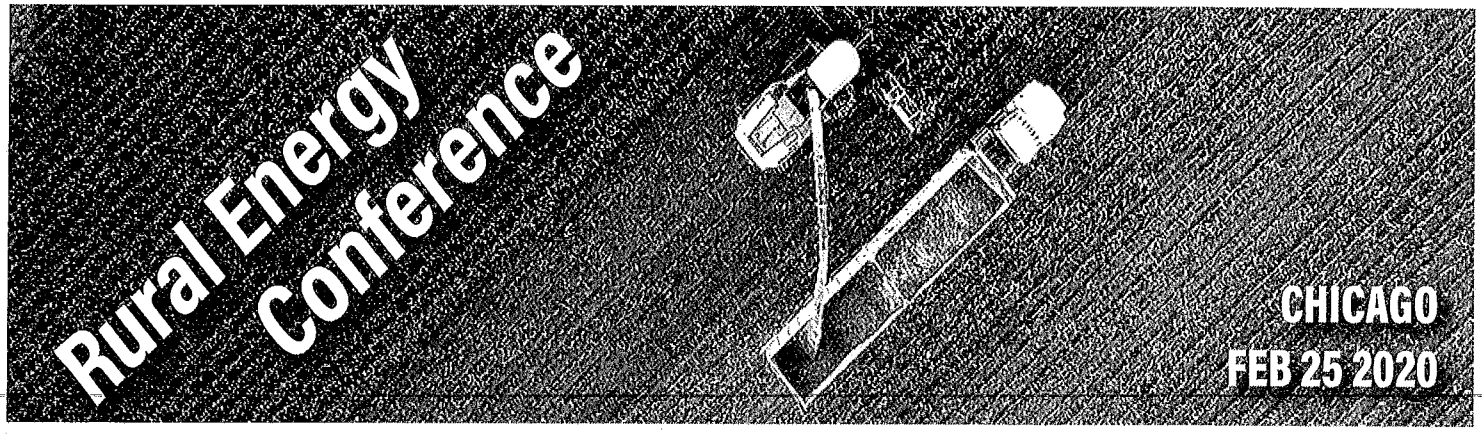
ACEEE, 529 14th Street., N.W., Suite 600, Washington, DC 20045
Sent by aceeenews@aceee.org

Mark your calendars for Rural Energy 2020!

Email not displaying correctly?
View it in your browser.

ACEEE
American Council for an Energy-Efficient Economy

RURAL ENERGY CONFERENCE 2020



Save the Date
Rural Energy Conference in the Windy City
February 25, 2020

Dear Nancy,

ACEEE is pleased to announce our second Rural Energy Conference. This dynamic one-day event at the Chicago Marriott Downtown Magnificent Mile will explore how energy efficiency and clean energy are increasing rural prosperity. Our interactive sessions, plenary panels, and networking breaks will connect you with leaders from utilities, government, industry, nonprofits, financial institutions, and academia.

This conference will give you the perfect opportunity to delve into clean energy solutions tailored for rural communities that will spur economic growth and energy affordability. Many rural residents spend a higher share of their income on energy costs than their non-rural counterparts. Join us to explore the power and potential of energy efficiency and clean energy to lower energy bills and improve the everyday lives of rural residents.

We will discuss the following topics as they relate to rural communities:

- Energy efficiency program design and financing
- Renewable and distributed energy resources
- Economic development
- Electrification of buildings and transportation
- Resilience and disaster recovery
- Energy affordability for low-income households
- 2018 Farm Bill and USDA programs
- Broadband access

Registration will open in Fall 2019.

Likely attendees include leaders from utilities, government, industry, nonprofits, financial institutions, and academia. A discount will be given to those also attending the 2020 Midwest Energy Solutions Conference presented by the Midwest Energy Efficiency Alliance (MEEA).

Visit the conference web page for more information and contact us with any questions, or contact Charlie Herron to learn about sponsorship opportunities.

ACEEE Quick Links

Rural Energy | Conferences | Blog | About Us

Connect with us on social media:

ACEEE, 529 14th Street., N.W., Suite 600, Washington, DC 20045
Sent by aceeeconf@aceee.org