

2010

**Wisconsin Energy Independent
Community Partnership**

**25 x 25 Plan for Energy
Independence**

**Report completed by:
The Energy Independence Team
of Polk County Government**

December 29th, 2009

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Overview

Introduction

The Wisconsin Office of Energy Independence (OEI) administers energy programs to assist Wisconsin to profitably and sustainably promote energy efficiency and renewable energy resources. The goal of the Wisconsin Energy Independent Community Partnership administered by the OEI is to effectively increase energy independent assessments for Wisconsin communities. Currently, there are many communities across the State of Wisconsin interested in implementing and adopting renewable energy and energy efficient projects. This program will assist 10-15 communities that could be potential pilots or models for completing an energy independence assessment, allowing the community to then move forward with energy efficiency and/or renewable energy projects.

Definition

- Energy Independent Community (EIC) – a community that is willing to set a goal of “25 by 25” to increase our energy independence, and promote a sustainable energy policy for the State of Wisconsin

Objectives

The objectives of the Wisconsin Energy Independent Community Partnership are to:

- Increase the use of renewable energy and renewable fuels by 25% by 2025 in across the State of Wisconsin.
- Increase and promote public awareness regarding the benefits of increased energy conservation, energy efficiency, and renewable energy use by counties and municipalities around the state. These benefits include and are not exclusive to: clean air and water, intelligent land management, rural and urban economic development, as well as state and national energy independence.

Background

In 2006, Governor Jim Doyle offered up a challenge to Wisconsin communities to have 25% of their energy come from renewable sources. Shortly thereafter on June 17th, 2008, Polk County became the 1st county and Osceola (which is in Polk County) became the 1st community in Wisconsin to pass resolutions taking on that challenge. Polk County applied to be an Energy Independent Community in 2008 and 2009. The application in 2008 was a joint application between Polk County, the City of St. Croix Falls, and the City of Amery. In 2009, Polk County applied on its own to study its own energy usage and develop a 25% plan.

Prior to the aforementioned resolution, the Polk County Board had already created the ad-hoc Renewable Energy Committee. The interest and concern around energy security and renewable energy was the impetus for the creation of this committee, especially regarding the development of a waste-to-energy plant.

This same Renewable Energy Committee was essentially used to develop the Energy Independence Team needed for this process. Since the formation of the REC and with its helping and backing, Polk County has passed a 2% annual fuel reduction resolution, incorporated a Energy and Sustainability Element into our comprehensive plan, passed no idling policies, and developed an annual energy fair, to name a few. Polk County has been working towards sustainability, energy reduction, and renewable energy for a long time. There is a healthy groundswell of support in the county for renewable energy and sustainability policies. This grassroots support, along with the political will of the elected officials, are the reasons why Polk County has advanced as far as it has to date. Progress has happened at varying rates over the years. It is our hope that by participating in this process, we will have our goal of 25% out in the public view and ways to achieve the goal will be detailed so that it will more likely be achievable and to give us an advantage in funding possibilities for the pathways to 25%. Additionally, the 25 by 2025 grant opportunities allowed for us to continue working on the means to further the tremendous progress already made here in Polk County.

What was measured? Why?

Polk County reviewed the energy data for the facilities that we own, including some spaces that are under our ownership but rented out by another entity. This presents a challenge in terms of regulating or reducing energy usage. In those buildings that are rented, we have little control over how the facility is used and what conservation or efficiency measures can be applied. We could install efficiency measures and/or renewable energy measures but the current set up would not lead to a savings in money to the county. At current times, the financial consideration of any measure will be of vital importance for anything that Polk County will consider.

Polk County facilities are spread throughout the County. The County seat, Balsam Lake is the most centrally located municipality in the county. The Government Center, Justice Center, Adult Development Center, Library/Head Start Building, and the Highway Shop campuses are located within Balsam Lake. The Recycling Center is located on Hwy 8 in the Town of St. Croix Falls. The county-owned nursing home, Golden Age Manor, is located in Amery. There are satellite highway facilities scattered throughout the county as well. We measured nine buildings in all for this project.

Fuel usage at the county was also measured. The county has its own filling station at the Highway Department shop. Most county vehicles fill up at this facility on a regular basis. Obviously those occasions when travel is required, filling up happens on the trip, not at the county pumps. The records for the pumps at the county are decent, but could use some additional information and better tracking. One issue is that much of the fuel usage is not assigned to a specific vehicle, just an ID number. There are numerous instances in which the ID number stays the same and the vehicle assigned to it changes, however that change is not represented in the records. This makes it difficult to work on changes to fuel economy. If we do not know what vehicle the fuel usage is assigned to, how can we know if a replacement vehicle is an improvement?

Discoveries/Surprises

- § In many ways, the discovery that our Justice Center uses as much energy as it does was surprising, considering it is by far our newest building, being constructed back in 2002. Part of the reason this building consumes the amount of energy it does is due to the fact that it is a 24/7 operation, while our other buildings are not. Even still, it seems that the Justice Center uses more energy than it should and the reasons for this should be investigated.
- § Another surprise was how sporadic tracking of fleet fuel data was at the county level. Improvements are being made to collection of energy data and should continue to ensure that Polk County Government is being a responsible energy user. Having standards and even a centralized place to collect and track energy data would be a recommendation for improvement for the future. By implementing this, we would know exactly where we are in terms of energy usage as well as costs for energy usage.
- § Building energy usage is being tracked, but not analyzed or reviewed for trends, spikes, unusual usage amounts, etc. This primarily due to lack of staff time available to review and crunch these figures. Tracking this in Portfolio Manager or other means should be a priority to see whether our efforts are making a difference and to obtain rationalities for differences in usage, such as unusually hot or cold periods in the year.
- § The different metering of building energy use and the different HVAC setups. We have an instance where HVAC systems are located in one building but supply HVAC service to more than one building. This means that basically much of the natural gas used for both buildings is accounted for on one bill. However, even though the HVAC system is shared, the same situation has separate electrical meters. In addition, our Government Center and the newer Health and Human Services addition have separate HVAC systems and separate metering even though there are physically part of the same building. This difference in how our buildings are metered made it more difficult to determine energy usage of individual buildings.
- § We have very general metering for our energy usage in buildings. It would be more helpful for evaluation of where within each building we are using a lot of energy to have more detailed sub-metering of usage by specific items.
- § When the Polk County Energy Independence Team conducted solar hot water site assessments on the Justice Center and Golden Age Manor, it came as quite a surprise to us the extraordinarily long payback period.
- § We found that it was not easy to find ways to meet the goal. Securing alternative fuels for our fleet, not just efficient vehicles, is a challenge for a rural county of our size. Finding ways to generate, process, store, pump, and utilize alternative fuels for fleet is challenging and expensive.

Total Projects Considered

- § Window replacement at Golden Age Manor
- § Window replacement at Library/Head Start
- § Lighting project at Government Center
- § Lighting project at Justice Center garage
- § Lighting project at Adult Development Center
- § Lighting project at Highway Department shop
- § LED exit lighting
- § Outdoor lighting projects
- § Waste oil furnaces at Highway Department shop and Recycling Center
- § Window coverings
- § Small/low-hanging fruit efficiency measures (boiler/chiller piping insulation, more precise HVAC controls, etc.)
- § Adjusting thermostat up/down seasonally
- § Fuel efficiency/fuel reduction of 2% annually
- § Energy meters to discover or prove what office appliances actually use in terms of electricity
- § Virtualization of the servers and desktop computers
- § Solar hot air at Recycling Center
- § Golden Age Manor updating and replacement of facilities (boilers, lights, dishwashers, clothes washers and driers, hot water, etc.)
- § Ideas from Employee Surveys
- § Purchasing policy updates
- § Geothermal at Justice Center
- § New Highway Department building/campus
- § Solar hot water at Justice Center and Golden Age Manor
- § Biomass heating of Government Center and Golden Age Manor
- § Four-day work week for county employees
- § Purchasing various scale wind turbines
- § Purchasing power from renewable energy sources
- § Tube lights in buildings during roof repair or replacement

Pathways to 25 x 25

Definitive Pathways

- § Window replacement at Golden Age Manor
- § Window replacement at Library/Head Start
- § Lighting project at Government Center
- § Lighting project at Justice Center Garage
- § Lighting project at Highway Shop
- § Lighting project at Adult Development Center
- § LED exit lighting
- § Exterior lighting
- § Waste oil furnaces at Highway Department shop and Recycling Center
- § Purchasing policy updates
- § Other “low-hanging fruit” efficiency projects identified by Johnson Controls and Focus On Energy Audits
- § 2% annual fuel reduction
- § Energy meters to discover or prove what office appliances actually use in terms of electricity
- § Virtualization of the servers and desktop computers
- § Solar hot air at Recycling Center
- § Updating and replacement of facilities at Golden Age Manor (boilers, lights, dishwashers, clothes washers and driers, hot water, etc.)

Possible Pathways

- § Ideas from Employee Surveys
- § New Highway Department building/campus
- § Solar hot water at Justice Center
- § Biomass heating at Government Center and Golden Age Manor
- § Four-day work week for county employees
- § Purchasing various scale wind turbines
- § Purchasing power from renewable energy sources
- § Tube lights in buildings during roof repair or replacement

Explanation of these pathways is included on the following pages.

Projects Selected – Explanation

For this process, Polk County's Energy Independence Team decided that it would outline more than one path to get to the 25%. We wanted to showcase that there is flexibility in getting us to the 25% goal and to show that we need to remain open to different pathways in case one or more show themselves to be better pathways than another in the future. The project explanation section has been organized into those things that we know will be implemented and those things that could be implemented in order to get us to the 25% goal.

Definitive Pathways

Window Replacement at Golden Age Manor

Windows are typically not the first thing that one looks at when spending money to increase energy efficiency. However, in the case of our nursing home, Golden Age Manor, it is. The excessive air infiltration around the through these windows is the main reason for upgrading them. A Focus On Energy audit done prior to this grant showcased an anticipated energy savings of nearly 5500 therms annually. The upgrade to windows in this setting means more than in a typical office building or other county building, as nursing homes have different temperature requirements that they must maintain for their residents. Being required to have a higher winter temperature inside the building only exacerbated the leaky window problem. The expenditure and installation of new windows at Golden Age Manor was approved and is underway.

Window Replacement at Head Start/Library Building

We had another instance where windows in a Polk County owned building needed replacing. The Library/Head Start Building has some windows that are broken and/or cracked. These windows are thermal pane windows and therefore lose their seal and insulating value if cracked or broken. Since this is the case, installing replacement windows will significantly improve the insulating value of the windows, however we do not know the specific amount of savings we will achieve until the project is bid out and we have contractor specifications.

Lighting Projects at Justice Center, Government Center, and Library/Head Start Building

These lighting projects are a continuation of process that has already begun to delamp fixtures and relamp with lower wattage bulbs in the lighting fixtures of the above buildings. Significant progress has been made already in completing this project and these upgrades will continue. A few separate upcoming projects include changing the lighting in the Justice Center garage and in the Highway Department shop to reduce energy consumption.

Adult Development Center lighting upgrades

This project was planned to be implemented during this planning process. While some approval from the Adult Development Center board is needed to begin the

replacement process, as they need to approve the purchase of the 600 bulbs, it is highly likely that all the bulbs in this building will be replaced in the next 15 years. The replacement bulbs will be 25watts and will replace 32watt fluorescents.

LED Exit Lighting

The conversion of non-LED exit lights to LED exits lights is well underway for Polk County. The Government Center and Justice Center have all of the exit lights converted. The conversion of these lights will continue until all exit lights in Polk County Government-owned facilities.

Exterior Lighting

This project is looking at replacement of the fixtures in the outside parking lots of the Justice Center replacing the existing high-pressure sodium lights with induction lighting. Also under consideration in the project is putting the lights on timers or motion sensors so they turn off when not being used.

Waste Oil Furnaces at Highway Shop and Recycling Center

Propane has been the heating source for the Recycling Center of Polk County historically over the years. The Recycling Center takes in waste oil from oil changes and other activities from the public for proper disposal. The County used to sell this oil and truck it offsite. A decision was made that it should be investigated as to how a waste oil burning furnace would work and what the cost/benefit would be. Several years ago a waste oil furnace was installed at the Recycling Center and has proved economical as the citizen-delivered oil has been burned there and has almost solely been responsible for providing heat for the shop area.

Based on the Recycling Center experience, consideration was given to installing another waste oil furnace at the highway shop that would burn waste oil from oil changes and lubricants of county vehicle and equipment maintenance. The furnace was installed during this grant process and we are just starting to see figures on how much oil is being burned and how much natural gas we are offsetting by utilizing this waste oil furnace.

Purchasing Policy Updates

Part of the plan to reach 25 by 2025 is to look into energy efficiency and renewables when equipment and buildings are to be replaced. While this is not the easiest to calculate exactly when something will need replacing or upgrading, as well as quantifying the difference in energy consumption, we are nonetheless placing in our plan that whenever Polk County purchases new equipment, energy efficiency and renewable technologies be considered. Already in the works are purchasing policy updates that allow for life-cycle costs to be accounted for in purchasing permitting the purchasing of products that potentially have a higher initial purchase cost but last longer and use less energy.

Other “Low Hanging Fruit” Efficiency Projects Identified By Johnson Controls and Focus On Energy Audits

These projects include things such as: variable frequency drives, insulating pipes, insulating buildings, more precise dampers, motion sensors for lighting, vending misers, reducing excess electronic appliances, etc.

2% Annual Fuel Reduction

This was a resolution passed by the Polk County Board in 2007 to reduce the amount of fuel usage by volume by Polk County Government by 2% annually. The figures entered into the measures tool represent the average 2% reduction over the next 15 year period of this plan. This fairly generic recommendation allows for flexibility in how to meet the 2% objective. Here are some options for how this goal could be met:

- § Electric vehicles for “on campus” use
- § hybrid electric vehicles
- § High-mileage passenger vehicles
- § Enhanced vehicle usage log to incorporate usage information
- § Need to evaluate vehicle trips to see the viability of this measure and then look at costs of these vehicles, lifespan, etc.
- § Utilize bio-fuels to offset gasoline and diesel usage

Energy Meters

Energy meters were purchased with grant funds during this process. A few of these meters will be kept here for use by Polk County Government and the rest will be distributed to the area public libraries. The meters that go to the libraries can be checked out like a book so that residents of Polk County can understand their energy usage better and hopefully make meaning changes in their homes for energy efficiency. The goal of this is to spread the effect of this grant and its goal of energy efficiency beyond Polk County Government.

The energy meters that are kept here at Polk County Government will be used to monitor energy usage of items like computers, printers, vending machines, etc. By using the meters, we can give accurate usage information and thus make more informed decisions on how to improve our energy efficiency.

Virtualization of Desktop PC's and Servers

This is a project that our Information Technology Department is planning to implement. The idea in the case of the desktop PC's is to replace the standard box with hard drive and the associated accessories with a stand along box that accesses files from a server instead of the hard drive. Hard drive processing and the power supply backup required for the standard PC account for much of the energy usage. With a virtualized PC, there is no hard drive and no need for the power supply backup, thus resulting in significant energy savings.

Solar Hot Air System at the Polk County Recycling Center

This is a system that has been researched for several years now and grants have been investigated as well. The possibility of grant funding is a key factor to this project making our list of selected projects. The company that has done preliminary investigations for Polk County on this system, Rural Renewable Energy Alliance, recommended a system that would offset 25% of the heating load for the office space in the Recycling Center. Currently the Recycling Center has a waste oil burning furnace which heats the main shop area. The oil is provided by residents of Polk County as they do oil changes, etc. they bring the oil in.

Updating and replacement of facilities at Golden Age Manor

This plan covers the next 15 years and it is likely that upgrades to existing facilities will be needed at Golden Age Manor in that timeframe. Currently upgrades are done on an as needed basis, therefore we have no way of knowing what will be replaced or upgraded in the next 15 years and thus do not know exactly how much energy may be saved by these projects.

Possible Pathways

Ideas from Employee Surveys

Employee surveys were sent out as part of this planning process. Here are some of the ideas that came from the survey:

- § do more on-site trainings via teleconference versus traveling for trainings and other meetings
- § adjust employee habits
 - o turning off computers, printers, and copiers at the end of the day
 - o shutting off lights when one leaves a room
- § put together a staff working group on energy issues
- § Four-day work week of 10-hour days (this idea has already been kicked around at the county, but support for it was reiterated in this survey)

- § Reduce temperature of hot water
- § Consider adjusting thermostat warmer in summer and cooler in winter and advise employees to dress accordingly
- § Establish a ride share program
- § Put energy saving tips in the employee newsletter
- § Make energy consciousness part of employee trainings
- § Consider allowing telecommuting

New Highway Shop/Campus

The existing highway shop is way past its prime and useful life. A lot of money at the county level will go into keeping this building going and it has far too many problems to justify its existence for much longer. The Polk County EIT felt it was likely that this building would be replaced in the next 15 years, though not likely in the next five years. It is the hope and will be an effort of the Polk County Renewable Energy Committee to help ensure that the new facility is energy efficient and that any proposal considers implementing renewable energy as part of

the new construction. The goal we set is for the new highway shop to be 50% more energy efficient than the current one. Part of this assumption is based on the experience of Washburn County, which was able to double the square footage of their new highway shop, while cutting energy usage in half. In addition, the goal of the EIT/REC is to have 25% of the energy needs of the new Highway Dept campus come from onsite renewable energy. Geothermal, solar, and wind are the most likely candidates to accomplish this goal.

Solar Hot Water at the Justice Center

This project was investigated during the planning process this year. We had solar site assessments performed to determine feasibility. The main reason that the Justice Center was looked at for a solar hot water system is that it is a heavier user of domestic hot water due to the jail and the needs of showering, cooking, etc. The Justice Center is also our largest single user of energy and so it would make sense to target it when looking into renewable options. The assessment revealed approximately a 25-year payback period for a solar hot water system, which was true for virtually any size system that could be installed. Until the price of natural gas rises, the price of solar hot water drops, or some additional monetary incentives come to light, this project is not going to get off the ground.

Wood-fired Boilers at Justice Center and Golden Age Manor

Polk County is on the border of the northwoods of Wisconsin and thus gives us access to large tracts of woodlands that could be used as a fuel source. The example set forth in Barron, where a school, community center, and hospital share a wood-fired boiler and save significant amount of natural gas and money was something that the EIT was quite interested in.

4-Day Work Week

The county has considered going to a four, 10-hour day work week. This would allow for reduced energy usage for the county. The longer work hours during those 4 days would also provide more flexibility to customers of county services to conduct business with the county after their workday is over. This idea resurfaced in a large number of employee surveys that were sent out as part of this process.

Purchase of Wind Turbine(s)

There are a number of options out there for wind turbines, for example, there is a turbine that is 6 feet in diameter and can be mounted on a residential roof. This is contrasted by turbines that are 500 feet in total height and can generate enough electricity per turbine to power all of Polk County Government and then some. An idea that was generated from the Energy Independence Team was to consider installing a few of the 6-foot diameter turbines at various locations throughout the county, potentially on cell towers. These installations would have a number of benefits, but here are a couple major ones, obviously renewable electricity will be generated and we can gather wind speed data around the county to help with better future wind development in the most appropriate locations or it could be sold to wind developers.

Polk County has been approached by wind developers regarding potential wind farms that would be located within the county. These developers typically use large scale (>1MW) turbines. Discussions at EIT meetings found that there was consensus on looking at options for a demonstration project at the Recycling Center for a wind turbine. The thought was to have one placed at this highly visible location with a scoreboard that details how much energy has been generated by the wind turbine to showcase our commitment to renewable energy. We currently do not know what the feeling of the citizens of Polk County or the elected officials would be to this project, but just one large scale turbine would more than cover the entire electrical usage for all of Polk County Government.

Purchase of green electricity

While still a hard sell in current economic times due to budget constraints, the EIT felt that the County Board would be more agreeable to expending a little extra on a per kWh basis than buying a renewable system and operating and maintaining it ourselves.

Solar Light Tubes

Discussions at EIT meetings focused on considering the installation of solar light tubes when roof repairs or roof replacements are being done, not as a project to be installed on its own. Solar light tubes can replace most and in some cases all lighting needs for buildings. One example for Polk County owned facilities would be the Library/Head Start building. It is only one story and the vast majority of lighting could be supplied through these means. There is much more substantial energy savings by not having light fixtures versus have reduced wattage bulbs. They could be installed in any of our facilities and would provide light for the top floor of that building.

Additional Pathways

Polk County has a number of potential projects that could be implemented if certain things were to change:

- If energy prices for fossil fuels such as natural gas, coal, gasoline, diesel, etc. were to substantially increase in the next 25 years, it would make some renewable projects more financially feasible, which is the biggest hurdle to implementing renewable technologies
- If incentives are offered to local units of government were similar to what they are for residential and commercial incentives (30% rebate or higher) this would make many more projects financially feasible.

Narrative – Potential Renewable Feedstocks

Wood Based Fuels

Polk County is probably best suited for a mixed bag of renewable feedstocks. Of all the choices available to Polk County, wood-based biofuels would be the most likely. We have moderate-sized wood stands still remaining in Polk County and the County owns thousands of acres of forest lands. Calculating exactly how much fuel might be garnered from these lands, either in directly growing fuel trees or woodmass or using the slash from logging operations, is difficult at present. According to the Polk County Forester, the needs of the county for a boiler fuel would not be met by the county-owned forests alone. In addition, there are new regulations requiring that more slash or tree tops be left in the county-owned forest in the Town of Sterling due to the sandy nature of the soil there and the need for Polk County to remain a sustainably harvested certified forest. In Barron, where a school, community center, and hospital jointly heat with a wood-fired boiler, they contract for the wood they need and still save considerable money every year versus natural gas.

The potential is there for woody and agricultural biomass to be turned into a liquid transportation fuel in the future. Polk County should keep abreast of developments on this front and look to seize opportunities that may come from this technology.

Existing Unknowns – Necessary Information for the Future

- § Utility or energy costs.
- § The political climate of Polk County in the next 15 years to know if any projects are feasible.
- § Financial incentives available from the State and Federal Government, etc. in the next 15 years for energy efficiency and renewables for local governmental entities.
- § Technological improvements and developments in renewable energy options.
- § Many more options for renewable projects could be available to Polk County in the next 15 years if breakthroughs such as cellulosic ethanol becomes a reality.
- § The future Polk County Government budget(s)
- § Currently for Northwestern Wisconsin Electric Company, any renewable generation under 20kW per system will payback at retail rate (net metering) anything over that will be closer to the wholesale rate of reimbursement.
- § Possibility of cashing in on the renewable energy credits market by having an installation of renewable energy owned by Polk County and being able to sell those credits on top of offsetting electrical usage at the county. This could generate cash flow for the county.

Action Steps – Immediate & Long - Term

- § A recommended action step for Polk County would be to centralize our energy data collection. The issue of decentralized tracking is that all those who are tracking energy usage do not do it the same way, using the same parameters. This is especially true for our vehicle fuel usage, where vehicles are part of individual departments and not subject to a fleet manager or similar position.
- § Polk County should continue down the path that is has been heading for some time now. The performance contracts signed with Johnson Controls should be continued to continually monitor energy usage and look at ways to save money and energy for the county. These contracts should continue whether it is through Johnson Controls or another entity.
- § Polk County should maintain the Renewable Energy Committee to assist in researching and evaluating renewable options for Polk County. One of the bigger decisions we have as a county in the next 15 years is how to replace our highway shop facilities. There should be lots of opportunities to make the buildings more efficient and to incorporate renewable technologies into a new facility.
- § Get the equivalent of a blower door test for the county-owned facilities. This will help identify areas that are the biggest problems and therefore our biggest targets. Measuring insulation is something that should be done and added if needed in certain areas, ensuring, to the greatest degree possible, that the heating and cooling efforts of our HVAC systems are evenly distributed throughout the office space areas. This will hopefully improve working conditions and result in less usage of fans and space heaters due to uncomfortable working conditions.
- § Develop an employee awareness program to promote energy awareness and conservation to help change employee habits that reduce energy usage.
- § Update Polk County purchasing policies to allow for life-cycle cost considerations in purchasing. Also look into establishing a green purchasing policy for most county items.
- § Implement all efficiency projects identified as high priority by Focus On Energy. Continue working with Focus On Energy to implement energy efficiency and renewable energy projects, as well as obtaining financial incentives for those activities.
- § Implement all efficiency projects that are in the works.
- § Purchase the most fuel efficient vehicle available for the job needed when those vehicles come up for replacing.

Energy Independence Team Members

- Bob Kazmierski – Former UWEX CNRED Agent
- Debbie Peterson – Dept Head for Buildings Dept
- Jeff Peterson – Chair of Renewable Energy Committee
- Tom Engel – Vice-Chair of REC
- Marlin Baillargeon – REC member
- Gregg Westigard - REC member
- Linda Leef - REC member
- Kathleen Melin - REC member
- Kathryn Kienholz - REC member and County Supervisor
- Jay Luke - REC member and County Supervisor
- Kim O'Connell - REC member and County Supervisor
- Gary Dado – EIT member
- Ryan Sterry – Former Polk County UWEX Ag Agent
- Tim Anderson – County Planner

*Special thanks to Debbie Peterson and Kathy Bohn for their vital work on this project, especially obtaining the energy usage data that was essential to this process!

Appendix: Baseline Energy Consumption Data – Spreadsheets

Your energy usage baseline is **67,697** million (MM) Btus.*

That baseline is comprised of 3,672,374 kWh,
280,953 therms,
88,930 gallons of unleaded,
and 111,370 gallons of diesel.

By assuming an annual growth
rate of **-1.00%** ,
in 2025 your energy use baseline
will be **57,641** MMBtu.

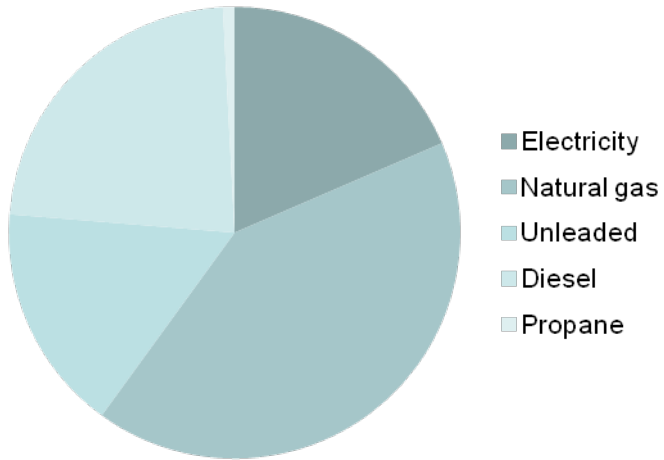
Your 25% renewable energy goal

for 2025 is therefore **14,410** MMBtu,
or 21% of your baseline
consumption.
kWh

This translates into 4,223,420 or
144,103 therms or
116,212 gallons gas
or
103,671 gallons diesel, or
some combination
of those
fuels.

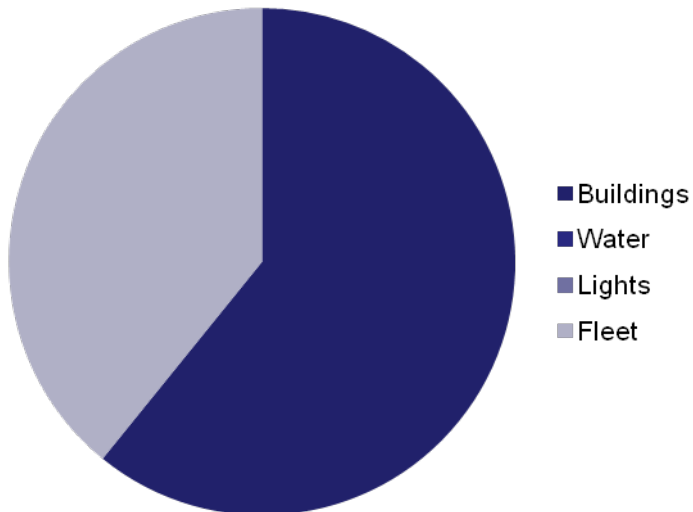
Total Consumption by Energy Type

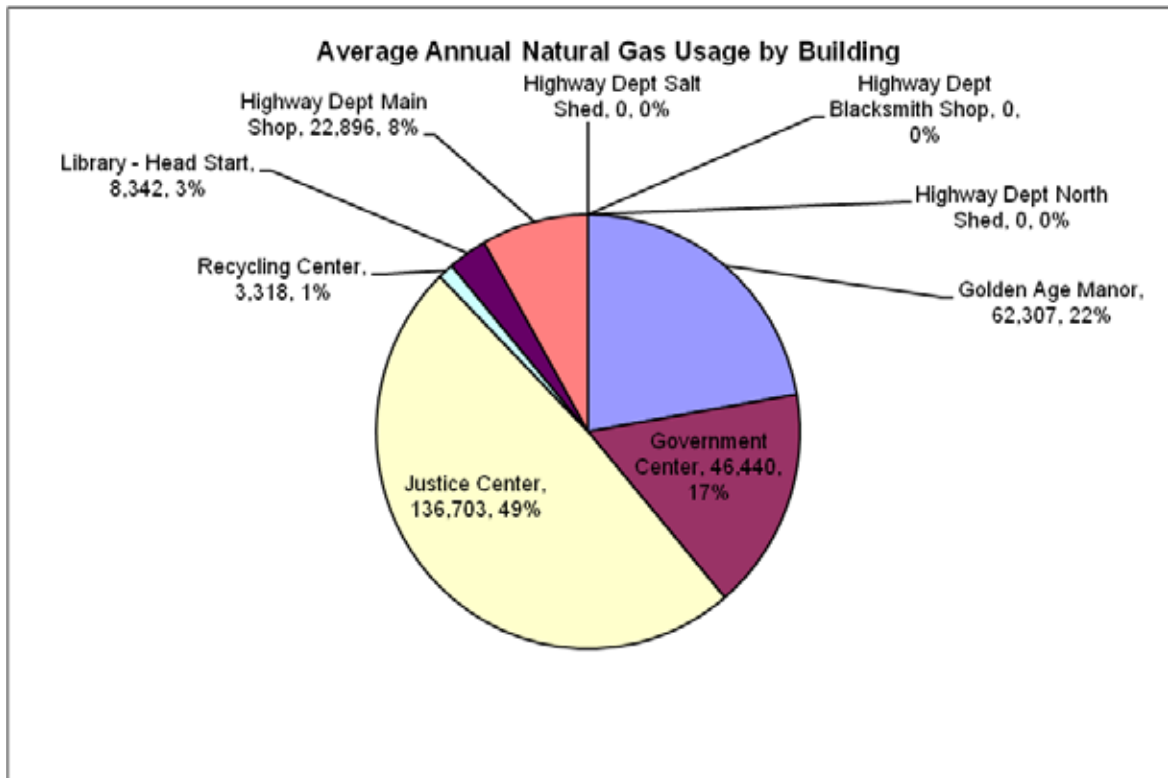
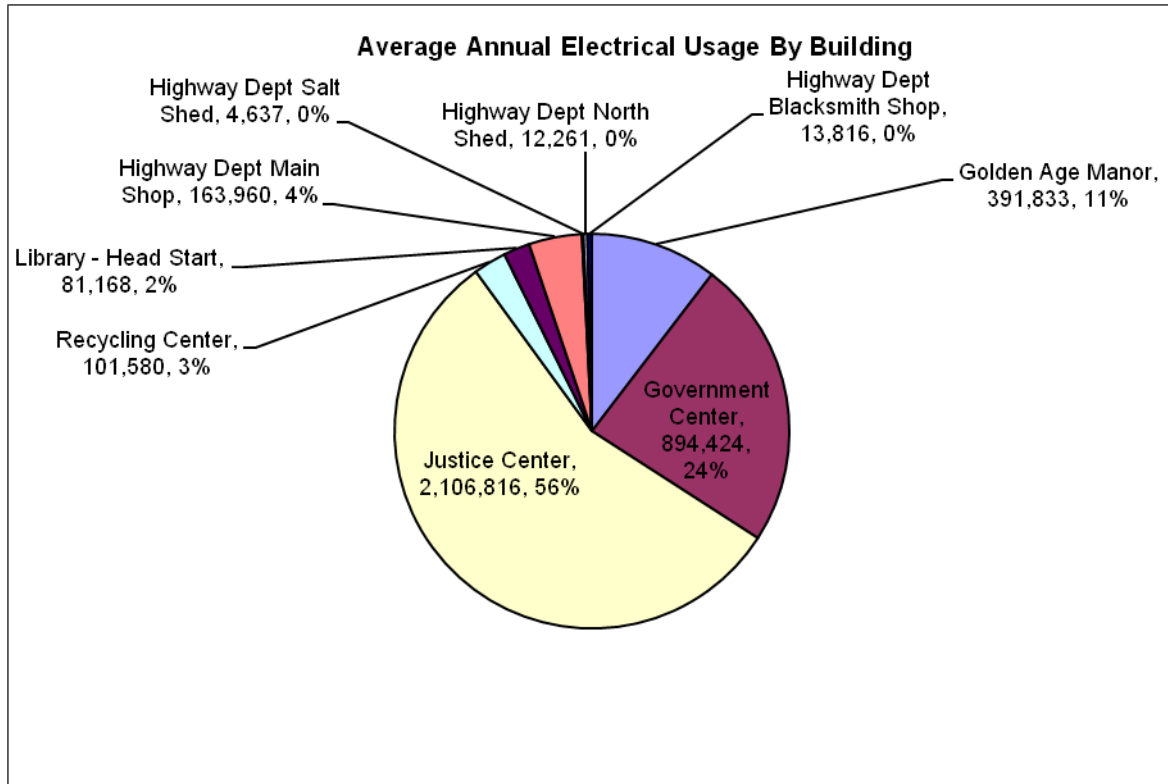
<i>Energy type</i>	<i>Percent of total Btus</i>
Electricity	19%
Natural gas	42%
Unleaded	16%
Diesel	23%
Propane	1%



Total Consumption by End Use

<i>Energy end use</i>	<i>Percent of total Btus</i>
Buildings	61%
Water	0%
Lights	0%
Fleet	39%





Please direct any questions electronically to:

Brian Driscoll
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State of Wisconsin
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