

BAYFIELD COUNTY

ENERGY CONSERVATION EFFORTS, 2017

Courthouse and Jail/Annex

Numerous conservation efforts to control energy usage and cost were implemented over the past decade. This was driven by the Board's directive in 2008 to follow the States 25 x 25 goal; to achieve a 25% reduction of energy usage by the year 2025. The county has implemented multiple projects to accomplish this.

Projects in 2017 include:

- LED lighting installation. First phase in hallways and jail is complete. LED lighting is ballast free and half the wattage. Will save future maintenance and energy costs.
- Exploring energy opportunities for the county. Planning in 2017 is proposed to examine three options:
 - Solar Garden: Xcel Energy is selling shares in their LaCrosse and Eau Claire Gardens for \$1.78 per watt or \$1780 per Killowatt. Xcel allows for an 80% purchase or 400kw for Bayfield County. This would equal \$712,000. Downsides of this are that the investment is not in Bayfield County, it is not on our side of the meter so we still get transmission and demand charges and Xcel determines the production rate which is less than what Xcel bills at.
 - UW Madison Mechanical Engineering Students will look at Bayfield County Courthouse properties over the next school year to see if and where energy generators (solar panels) could be placed on courthouse or annex property on the county's side of the meter and at what cost.
 - A third option is a Power Purchase Agreement where a third party finances and builds solar generating equipment on county property in exchange for a long term agreement from the county to purchase power at a certain price.

Baseline and comparison data since 2008 regarding energy usage is shown below:

Energy Accomplishments:

- Jail Gas Usage
 - 2009: 26,737 therms
 - 2010: 25,140 therms, drop of 1597 therms from 2009: 6% decline from 2009.
 - 2011: 24,841 therms, drop of 299 therms from 2010: 7.1% decline from 2009
 - 2012: 22,192 therms, drop of 2,649 therms from 2011: 17% decline from 2009
 - 2013: 25,708 therms, increase of 2,036 therms from 2012: 9% decline from 2009
 - 2014: 30,815 therms, increase of 5,107 therms from 2013
 - **2015: 23,051 therms, decrease of 7,764 therms from 2014: 25% decline from 2014**
- Jail Electricity Usage:
 - 2009: 662,160 KWh
 - 2010: 657,520 KWh, a drop of 4640 KWh: .8% decline from 09
 - 2011: 659,280 KWh, an increase of 1760KWh: a net decline of .4% from 09
 - 2012: 621,520KWh, a drop of 37,760KWh: a net decline of 6% from 09
 - 2013: 547,920 KWh
 - 2014: 545,920KWh, a drop of 760,00KWH from 2012. 12% below 2009

- **2015: 605,760 KWh, still 9% below utilization in 2009.**
- Courthouse Gas Usage:
 - 2009: 17,082 therms,
 - 2010: 14,331 therms, drop of 2,751 therms from 2009: 16.2% decline from 09
 - 2011: 14,669 therms, increase of 338 therms from 2010: 14.2% decline from 09
 - 2012: 14,573 therms, drop of 96 therms from 2011. 14.7% decrease from 09
 - 2013: 21,364 therms, increase of 6,791 therms from 2012 due in part to implementation of Natural Gas vehicles and extreme cold.
 - 2014: 22,528 therms, increase of 1164 therms from 2013
 - **2015: 17,785 therms, decrease of 4,743 from 2014**
- Courthouse Electric Usage:
 - 2009: 381,880 KWh
 - 2010: 366,960 KWh, a drop of 14,920 KWh: 4% decline from 09
 - 2011: 335,480 KWh, a drop of 11,600 KWh: 12.2% decline from 09
 - 2012: 343,600KWh, an increase of 8,120KWh from the previous year and 10% decrease from 2009.
 - 2013: 341,600KWH usage is down 2,000KWh from the previous year.
 - 2014: 336,000KWH, usage is down 2%, 5,600KWH from the previous year
 - **2015: 322,080KWH, usage is down 16% or 59,800KWH from 2009**

IN SUMMARY:

Electric Total: Courthouse and Jail Electrical: 2015, 927,750 KWh in comparison with 1,044,040 KWh in 2009. 12% Reduction.

Gas Total: Courthouse and Jail: 2015, 40,836 Therms in comparison with 43,819 Therms in 2009. 7% Reduction.

- Production of 3.42 Megawatt hours of solar electricity were generated in 2015.
- Estimated utilization of 3000 gallons of Compressed Natural Gas per year at a savings of \$1.50 per gallon, cost savings \$4,500 per year.
- Solar thermal savings for domestic hot water in the jail, approximately \$5000 per year.

Bayfield County Energy Conservation Efforts over the past five years:

- Hybrid vehicles were introduced to the fleet in 2010. Mpg is approximately double that of standard gas vehicles. A new hybrid Fusion was added in 2015.
- Seven compressed natural gas (CNG) vehicles and fueling station. A second compressor was added in 2016.
- Motion sensors installed on courthouse lights in common areas, restrooms, and conference rooms.
- Removed lights from vending machines.
- Copy machines are programmed for energy saver modes after 15 minutes of non-use.
- Installing energy efficient controls on HVAC systems completed in 2016.
- Installed mini-split A/C units in offices rather than multiple window models.
- Upgraded to more efficient exterior lighting fixtures using induction lights (2010).
- Upgraded boiler control system and variable speed drive pumps.

- Installed solar hot water system in the jail and installed one solar hot water systems at the Ag Station.
- 12 Panel Solar PV system on jail roof.
- Upgraded high-bay lighting in all highway garages.
- Insulated multiple highway garages and installed insulated garage doors.
- Upgraded restroom fixtures to reduce water consumption.
- Utilize rain barrels for community gardens rather than metered city water.
- Installed rain gardens to reduce run-off into city storm sewers/savings off storm water bill
- Reduced the number of fax/print/copy devices being used throughout all county facilities.
- Encourage employee wellness initiatives that reduce carbon footprint.

Courthouse Annex Energy Cost Graph over the last five years. 2015 reflects expenses through August. Extreme cold weather in 2013 and courthouse construction in 2011 may have impacted bills.

**COURTHOUSE &
ANNEX UTILITY COSTS
2012-2016 YTD**

(2016 as of end of August.)

100-14-51601-50220 (General-Court House-Court House-Utilities)
Classification Contractual Services

