Energy Element

Boone County, Nebraska

Comprehensive Plan

Adopted by Boone County, Nebraska

2014

RESOLUTION NO. 214-46



Boone County Energy Element

Introduction

Energy plays a crucial role in nearly every aspect of our lives. It is used to grow our food, to move us from place to place, to light our homes, and to make the products we buy. The vast majority of our energy is currently supplied by fossil fuels, which will inevitably run out. Federal regulations are tightening emission rules for power plants, thus increasing the cost of using fossil fuels. With its wind farms and ethanol production, Boone County has become a renewable energy leader in Nebraska. By planning for energy, Boone County will save money, have a more resilient economy, help the environment, and be better prepared for the future.

Acknowledgements

This energy element was created using data and graphics from the following:

The Nebraska Energy Office National Renewable Energy Laboratories (NREL) U.S. Department of Energy (DOE) Loup Power District (LPD) Cornhusker Public Power District (CPPD) U.S. Energy Information Administration (EIA) Eastern Interconnection States' Planning Council (EISPC) AWS Truepower American Wind Energy Association U.S. Environmental Protection Agency (EPA) American Community Survey Social Explorer

Nebraska Energy Policy Overview

Nebraska Legislation LB997

In 2010, Nebraska Legislators passed LB 997 requiring all municipalities and counties, with the exception of villages, to adopt an energy element into their comprehensive plan. The following energy element is included within Boone County's Comprehensive Plan in order to fulfill the requirement of LB 997. Energy elements are required to have three components:

- 1. Energy infrastructure and energy use by sector, including residential, commercial, and industrial sectors.
- 2. Utilization of renewable energy sources.
- 3. Energy conservation measures that benefit the community.

Nebraska Energy Plan

The 2011 Nebraska Energy Plan outlines 14 strategies for the state to consider in meeting the following objectives:

- 1. Ensure access to affordable and reliable energy for Nebraskans to use responsibly
- 2. Advance implementation and innovation of renewable energy in the state
- 3. Reduce petroleum consumption in Nebraska's transportation sector

These strategies include:

- Continue support of Nebraska's unique public power system
- Increase opportunities for demand-side energy management and energy efficiencies
- Maximize the investment in Nebraska's coal plants
- Expand Nebraska's nuclear power generation capacity
- Increase opportunities for industrial and municipal waste-to-energy projects
- Optimize the use of Nebraska's water resources for hydroelectric power generation
- Improve municipal water and wastewater management strategies and water quality
- Continue building Nebraska's wind energy through public-private partnerships
- Increase opportunities for methane recovery from agricultural and community biomass resources
- Increase opportunities for woody biomass in Nebraska
- Support distributed generation of renewable technologies
- Increase ethanol production, blended and delivered across Nebraska and to markets outside the state
- Increase development and use of other alternative fuels
- Diversify and expand opportunities for renewable diesel in Nebraska

Energy Codes

Under §§81-1608 to 81-1616, the State of Nebraska has adopted the International Energy Conservation Code as the Nebraska Energy Code. Any community or county may adopt and enforce the Nebraska Energy Code or an equivalent energy code. If a community or county does not adopt an energy code, the Nebraska Energy Office will enforce the Nebraska Energy Code in the jurisdiction. The purpose of the Code, under §81-1608, is to ensure that newly built houses or buildings meet uniform energy efficiency standards. The statute finds that:

there is a need to adopt the International Energy Conservation Code in order (1) to ensure that a minimum energy efficiency standard is maintained throughout the state, (2) to harmonize and clarify energy building code statutory references, (3) to ensure compliance with the National Energy Policy Act of 1992, (4) to increase energy savings for all Nebraska consumers, especially low-income Nebraskans, (5) to reduce the cost of state programs that provide assistance to lowincome Nebraskans, (6) to reduce the amount of money expended to import energy, (7) to reduce the growth of energy consumption, (8) to lessen the need for new power plants, and (9) to provide training for local code officials and residential and commercial builders who implement the International Energy Conservation Code.

The Code applies to all new buildings, as well as renovations of or additions to any existing buildings. Only those renovations that will cost more than 50 percent of the replacement cost of the building must comply with the Code. If the owner of the building submits a request, the State will inspect the site for compliance. The Nebraska Energy Office website has links that explain all of the rules, regulations and exceptions associated with the Nebraska Energy Code.

Nebraska Legislation LB436 - Net Metering

The Nebraska Legislature passed LB436 which allows for net metering. Citizens have the opportunity to generate their own energy and it is found to be in the public interest because it encourages customerowned renewable energy resources. It also can stimulate the economic growth, encourage diversification of the energy resources used, and maintain the low-cost, reliable electric service for the State of Nebraska. By supplementing your electric bill through "credits" for energy purchased back from the utility company, the citizens of Boone County can save money and alleviate pressure on the utility grid. Net metering in Boone County is allowed for renewable energy generation capacities less than 25 kilowatts. Monetary credits are determined by the type of generation and time of year.

Solar and Wind Easements and Local Option Rights Laws

Nebraska's solar and wind easement provisions allow property owners to create binding solar and wind easements in order to protect and maintain proper access to sunlight and wind. Counties and municipalities are allowed to develop zoning regulations, ordinances, or development plans that protect access to solar and wind energy resources. Local governing bodies may also grant zoning variances to solar and wind energy systems that would be restricted under existing regulations, so long as the variance is not substantially detrimental to the public good.

For summaries of additional programs, incentives and policies in Nebraska visit the Database of State Incentives for Renewables & Efficiency (DSIRE) website: http://www.dsireusa.org/incentives/index.cfm?re=0&ee=0&spv=0&st=0&srp=1&state=NE

Local Utility Providers –Boone County, NE

Boone County's electricity providers are Loup Power District (LPD) and Cornhusker Public Power District (CPPD). LPD serves the electric needs of the urban and surrounding areas of Boone County while CPPD serves the rural areas of Boone County. Since 1967, LPPD's service area has included Boone, Colfax, Nance and Platte counties, and a small portion of Madison County (figure 1). LPD is the retail provider for twenty-one communities with a current population of approximately 62,300 people. LPD's service area covers 2,219 square miles and consists of 794 miles of transmission and distribution lines. LPD also sells electric power at wholesale to the communities of Leigh and Schuyler. CPPD serves over 9,000 customers in the rural portions of Platte, Colfax, Boone, Nance, Greeley and Wheeler counties (figure 2).

Sourcegas provides natural gas for Boone County. Sourcegas operates more than 18,000 miles of natural gas distribution and transmission pipelines and serves nearly 420,000 customers in Arkansas, Colorado, Nebraska, and Wyoming.

Figure 1

Communities Served by Loup Power District



Figure 2





Nebraska Public Power District generates electricity for LPD and CPPD. As seen in figure 3, 56.6% of NPPD's electricity generation comes from coal. The emissions from coal and other fossil fuels have been linked with climate change; despite this, coal will likely be a large part of NPPD's electricity equation for many years to come because it is cheap, reliable, and abundant. At least 37.1% of NPPD's electricity generation comes from sources that produce little to no carbon dioxide emissions (nuclear, wind, hydro). As concerns for climate change and air quality increase, there will likely be a push to rely on these low carbon dioxide emitting technologies for energy.

Figure 3



Boone County Energy Consumption

As previously stated, LPD serves the urban areas of Boone County, while CPPD serves rural customers. Tables 1 and 2 show the energy consumption of Boone County from LPD and CPPD. These tables are left separate due to consumption data being in different units, and the difficulty of combining them. Irrigation energy use spiked in 2012 due to drought. Encouraging the use of renewable energy technologies such as the solar assisted center pivot in the Beller farm near Lindsay, Nebraska, may reduce electricity demand for irrigation and help control spikes in electricity use due to drought.

Municipal energy expenditures increased 19% from 2011 to 2013. The municipal sector was responsible for 8% of energy expenditures in 2013; Boone County should work with municipalities to reduce energy use within the public sector. Boone County can do that by following practices within this energy element and the materials provided.

Residential and Commercial sectors account for over 78% of the electricity expenditures in the urban areas of Boone County and is provided by LPD. Since most of the electricity used in the commercial and residential sectors is for heating, cooling and lighting, future strategies should focus on reducing the consumption for those needs.

The industrial sector is the largest user of electricity in the rural areas of Boone County and is provided by CPPD. Boone County should encourage the use of energy efficient practices within the industrial sector. The county could offer incentives for commercial or industrial uses that generate renewable energy or have energy efficient buildings or practices.

Expenditures for street lighting steadily increased from 2011 to 2013. Boone County may want to consider implementing a policy that all new street/road lights installed will be energy efficient.

	<u>2011</u>	<u>2012</u>	<u>2013</u>
Residential	2,134,435.63	2,257,909.49	2,602,054.35
Irrigation	347,092.47	992,523.65	666,438.87
Commercial	1,316,789.80	1,481,367.92	1,692,080.72
Industrial	n/a	n/a	n/a
Street Lighting	64,517.91	72,816.11	80,014.63
Misc Municipal	373,752.92	399,336.11	446,084.85
Total	4,236,588.73	5,203,953.28	5,486,673.42

Table 1 Electricity Expenditures by Sector in Dollars (LPD)

This data represents the electrical revenues (including taxes) that Loup Power District received.

Table 2 (CPPE) Energy	/ Use in kWh b	y Year and Sector
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	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>
Residential &					
Seasonal	27,193,406	25,368,289	23,266,325	21,068,396	25,375,659
Commercial	16,594,612	16,216,434	17,507,434	16,792,841	17,526,440
Industrial	65,203,200	66,369,600	65,203,200	49,845,600	56,412,000
Irrigation	15,710,978	14,757,451	14,454,877	44,207,352	26,712,544
Miscellaneous	42,615	39,107	41,319	42,110	43,867

Nebraska Energy Statistics

Figure 4 shows the net energy consumption by fuel type in the residential, commercial, industrial, and transportation sectors. A majority of the energy spent in the residential and commercial sectors in the form of natural gas and electricity is for heating, cooling, and lighting buildings. The industrial sector relies on biofuels for 37.51% of its energy consumption.



Data for figure 4 is from the Nebraska Energy Office.

As shown in figure 5 below, Nebraskans rely on fossil fuels for an overwhelming majority of their energy needs. Energy consumption continues to increase from year to year with Nebraskan's consumed 871 trillion British thermal units (Btus) in 2011. Natural gas and renewable energy consumption are expected to increase in the future as concerns of climate change increase and as these sources become more economical.



Figure 5

Sources: State Energy Data Report. Energy Information Administration, Washington, DC. Nebraska Energy Office, Lincoln, NE.

Figures 6 and 7 show how much energy Nebraska consumed in 2012 and how much money Nebraska spent on energy in 2012. Total energy consumption decreased by 10 trillion Btu from 2011 to 2012, or 1%. Even though transportation consumption was just under 23% of the total in 2012, Nebraska spent more money on transportation than residential, commercial and industrial energy uses combined. Boone County should look into strategies that will lower the consumption and cost of transportation.







Source: Energy Information Administration

Agriculture

Prior to 1994, Nebraska and the U.S. were relatively parallel in per capita energy consumption, as seen below in figure 8. Between 1994 and 2011, Nebraska's per capita energy consumption continued to outpace that of the nation. One of the causes of this discrepancy was ethanol production. Ethanol facilities use considerable amounts of electricity and natural gas. In 1994, only 78.9 million gallons of ethanol were produced. In 2007, 1.282 billion gallons of ethanol were being produced in Nebraska.

Figure 8



The increase of ethanol production, along with other circumstances, led agricultural producers to change what was planted. From 2000-2010, Nebraska agricultural producers have routinely surpassed the billion bushel mark for corn harvested, reaching more than 1.469 billion bushels of corn for grain production in 2010. Irrigated corn is a more energy intensive crop than soybeans, wheat or grain sorghum. Another cause of this increase is that many agricultural producers have switched from diesel to electricity to power irrigation systems. Figure 9 shows the rapid increase in electricity expenditures in Nebraska's agricultural sector.



Figure 9

Sources: United States Department of Agriculture. Nebraska Energy Office, Lincoln, NE.

Boone County may want to encourage the use of conservation methods and renewable energy within agricultural production. One example of using renewable energy sources in agriculture is the solar assisted center pivot irrigation system at the Beller farm near Lindsay, Nebraska.

Renewable Energy Sources

Nebraska is the only state in the U.S. that is 100% public power. Since they are not seeking profits, public power districts have been able to maintain some of the lowest electricity prices in the nation. The low cost of energy is one of the reasons that Nebraska has not fully taken advantage of its renewable energy potential. Unlike places such as California, where electricity prices are high, renewable energy systems have historically not been economical for Nebraska.

With new proposed federal regulations, power plants will have to lower their carbon emissions by 30% by 2030. This means that heavy carbon emitters such as coal power plants will require retrofits or improvements in order to meet that goal. A combination of economics, federal regulations, public opinion and environmental concerns will lead power providers to seek out more renewable sources of energy in the near future. Renewable energy production is a booming industry and it would be in Boone

County's best economic interest to increase the amount of renewable energy produced in Boone County.

Boone County is currently a state leader in renewable energy with its wind and ethanol production. The county has an opportunity to continue to reap economic benefits from the renewable resources within the county. Below is a summary of some potential renewable energy options for Boone County.

Wind

According to the American Wind Energy Association, Nebraska has one of the best wind resources in the United States, 92% of Nebraska has the adequate wind speeds for a utility scale wind farm. Nebraska ranks 3rd in the U.S. in gigawatt hour (GWh) wind generation potential, but has been slow in utilizing this resource compared to other states. Nebraska currently ranks 23rd in total MW installed with 534 MW. According to the National Renewable Energy Laboratory, Nebraska's wind potential at 80 meters hub height is 917,999 MW. Wind Power is capable of meeting more than 118 times the state's current electricity needs.

Nebraska is continuing to add wind capacity:

Capacity added in 2013: 74.8 MW 2012: 122 MW 2011: 124.5 MW

As figure 10 indicates, Boone County has some of the best wind energy resources in the state. This is evident as Boone County is home to three wind farms: Laredo Ridge, Third Planet, and Prairie Breeze. Laredo Ridge, located approximately three miles east of Petersburg, became fully operational January of 2011 and has the ability to generate 80 MW of wind energy. The Third Planet wind farm is located near Laredo Ridge and provides 40 MW of electricity. The largest of the wind farms is Prairie Breeze with a capacity of 200.6 MW. Prairie Breeze stretches across Antelope, Boone and Madison counties and consists of 118 wind turbines.



Figure 10 represents the gross estimated annual average wind power density for Nebraska and Boone County. This data indicates how much energy is available for conversion by a wind turbine at a particular location. This map was created by the EISPC with data from AWS Truepower.

Electricity produced through wind power is currently most cost effective on the utility/commercial scale in terms of dollars per kilowatt. Small scale wind systems for homes and businesses may not be as cost effective, but they should not be discouraged. Small scale wind systems can be utilized to lower the owner's monthly utility bill in areas with net metering.

Hydro Power

The electricity from hydropower consumed in Nebraska comes from the 11 dams in or on the border of the state and purchases from Western Area Power Administration. The amount of electricity produced from hydropower is relatively the same every year, unless affected by drought or an offline facility. According to the Nebraska Energy Office, studies conducted in 1981 and 1997 concluded that nearly all of the potential hydro resources had been developed, and that even under the most optimistic scenarios, less than 150 MW of additional power could be produced from existing or new hydro resources. Despite this, there are indications that micro-hydroelectric dams would be feasible in a number of settings across the state. Boone County may want to explore water resources within the county for the feasibility of a small hydroelectric power operation.

Biomass

Biomass is organic material that comes from plants and animals. Biomass (in the form of biodiesel, ethanol, landfill gas, methane, wood, and wood waste) accounted for 81.7% of all renewable energy generated in Nebraska in 2011. The use of biomass can reduce the dependence on foreign oil because biofuels are the only renewable liquid transportation fuels available. Boone County should continue to consider the feasibility of renewable energy generation from biomass because of the agriculture located in the County.

<u>Direct-fired system</u>- Most biomass plants that generate electricity use direct-fired systems. Simply, these plants burn biomass feedstock directly to produce steam. This steam turns a turbine, which turns a generator that converts the power into electricity. The feedstock for direct systems can be a number of things: wood and wood waste, agricultural residues, municipal solid waste, industrial waste and many others.

<u>Biodiesel</u>- The two Nebraska commercial scale plants in Arlington and Scribner have the estimated production capacity of 5.4 million gallons per year, but both have closed due to the price of soybeans used for feedstock.

<u>Ethanol</u>- Ethanol produced from corn and grain sorghum is a growing energy resource in Nebraska. According to the Renewable Fuels Association, Nebraska has the second largest ethanol production capacity in the nation and the second largest current operating production in the nation. Approximately 14% of the nation's ethanol capacity is in Nebraska's 27 ethanol plants.

91% of Nebraska's ethanol production goes to U.S. domestic markets, 5% is exported to other countries, and 4% is used by Nebraskans. Nebraska's Ethanol Board estimates that 40% of Nebraska's corn crop and 75% of the state's grain sorghum crop are used in the production of ethanol.

Ethanol consumption is mainly in the form of blended gasoline. Ethanol production and consumption is expected to continue to increase as national legislation continues to affect state policies. The Renewable Fuel Standard, established in 2005 as a part of the Energy Policy Act, requires a minimum of 36 billion gallons of renewable fuel to be used in the nation's gasoline supply by 2022. In 2013, 87 octane fuel without ethanol began to be phased out and replaced with an ethanol-blended 87 octane gas.

Valero Renewables in Albion is an ethanol production plant in Boone County. The Valero plant processes nearly 43 million bushels of corn into 120 million gallons of ethanol and 400,000 tons of distillers grains co-products. The bio-refinery employs approximately 60 full-time personnel.



Figure 11 Valero Renewables in Albion

(Image from: http://www.valero.com/ourbusiness/ourlocations/plants/pages/albion.aspx)

<u>Biogas-</u> Biogas is a product of the decomposition of manure, via anaerobic digestion, and is typically made of about 60% methane, and 40% carbon dioxide. Biogas can be used to generate electricity, as a boiler fuel for space or water heating, upgraded to natural gas pipeline quality, or other uses. After the production of biogas, the remaining effluent is low in odor and rich in nutrients. The byproducts of biogas production can be used as fertilizer, livestock bedding, soil amendments or biodegradable

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planting pots. Given the livestock in Boone County, the feasibility of a biogas operation should be explored.

For additional information about biogas visit: <u>http://www.epa.gov/agstar/anaerobic/</u>

Solar Power

According to the National Renewable Energy Laboratory, Nebraska is ranked 13th in solar energy potential. As figure 12 shows, Boone County has solar resources of about 4.5 to 5.5 kilowatt-hours per square meter per day. Currently, solar technologies are marginally used in Nebraska because it has historically been difficult for solar technologies to compete with the state's low electric rates. According to the Department of Energy, the average hardware cost of solar panels has recently dropped more than 60%. Many utility companies have incentives to help with the cost of solar, but additional steps should be taken to increase the amount of solar energy generated in Boone County.

Figure 12



Global Solar Radiation at Latitude Tilt - Annual

As the cost of solar panels continues to decrease, solar can be utilized at an individual home or business scale to help supplement electrical needs. Solar can be useful in remote locations such as farms or ranches where solar systems can be less expensive than installing new transmission lines. Two possible uses for solar on a farm or ranch are feedlot lighting or irrigation.

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<u>Passive solar</u>- Passive solar design takes advantage of a building's site, climate, and materials to minimize energy use. A well-designed passive solar home first reduces energy use for heating and cooling through energy-efficiency strategies and then meets the reduced need in whole or part with solar energy. In simple terms, a passive solar home collects heat as the sun shines through south-facing windows and retains it in materials that store heat, known as thermal mass.

Geothermal

The type of geothermal application that is most practical and economical for the residents of Boone County is the use of geothermal heat pumps. Geothermal heat pumps are slowly becoming a popular method of heating and cooling buildings. Heat pumps use much less energy than traditional heating and cooling systems. This translates into energy and money savings while also reducing air pollution. There are many state and utility company incentives to help with the initial cost of geothermal energy.

There are two different types of heat pumps: closed loop systems and open loop systems also known as "pump and dump". Closed loop systems move fluids through continuous pipeline loops that are buried underground at depths where the temperature does not fluctuate much. Heat picked up by the circulating fluid is delivered to a building through a traditional duct system. Geothermal heat pumps discharge waste heat into the ground in the summer months and extract heat from the ground in the winter months.

Open loop systems require an ample source of ground water. An open loop system pumps water directly from a ground water source into a building where it is used for heating and cooling. The used water is either deposited on the surface in a pond, stream, or river, or back into the water source. Open loop systems may have environmental impacts due to introducing higher temperatures and minerals into the water sources. Open loop systems may also have some effect on the local aquifer or a neighbor's well source if there is not enough groundwater.

Education

Boone County will not be able to achieve their energy goals without the help of its citizens. The county should educate the public on the benefits of energy efficiency and the most feasible renewable energy systems. Resources that Boone County can use to raise awareness regarding energy efficiency and renewable energy systems are described in the following subsections.

Energy Saving Tips

Boone County and residents and businesses in the County are encouraged to take advantage of the following energy saving information provided:

The Nebraska Energy Office has listed ways to save money on energy bills for the home, farm, business, or vehicle. Options for energy savings are listed on the Office's web site at http://www.neo.ne.gov/tips/tips.htm.

On their homepage, <u>www.nppd.com</u> Nebraska Public Power District has a Save Energy Section which has more informational energy tips and incentives for your home and business.

Cornhusker Power has links to many energy saving videos: <u>http://www.cornhusker-power.com/index.asp</u>

The U.S. Department of Energy created a document that explains tips on saving money and energy at home: <u>http://energy.gov/sites/prod/files/2014/05/f16/Energy_Saver_Guide_Phasel_Final.pdf</u>

Energy Assistance Programs

Residents wanting help paying their utility bills can visit this website with links to many programs in Nebraska: <u>http://nebraskaenergyassistance.com/assistance/</u>

The Weatherization Assistance Program helps lower income families save on their utility bills by making their homes more energy efficient. The Nebraska Energy Office administers the federally-funded program. This website describes the program and how to apply: http://www.neo.ne.gov/wx/wxindex.htm

Financial Incentives

Nebraska has a number of financial incentives for renewable energy production and energy efficiency:

- Renewable Energy Tax Credit (Corporate)
- Renewable Energy Tax Credit (Personal)
- Property Tax Exemption for Wind Energy Generation Facilities
- Sales and Use Tax Exemption for Community Wind Projects
- Sales and Use Tax Exemption for Renewable Energy Property
- Dollar and Energy Savings Loans (State Loan Program)

Many utility companies have rebate programs for energy efficiency or renewable energy systems. For summaries of additional programs, incentives and policies in Nebraska visit the Database of State Incentives for Renewables & Efficiency (DSIRE) website:

http://www.dsireusa.org/incentives/index.cfm?re=0&ee=0&spv=0&st=0&srp=1&state=NE

Jobs and Economic Development Impact Models (JEDI)

Developed for the National Renewable Energy Laboratory, the JEDI models were created to demonstrate the economic benefits associated with renewable energy systems in the United States. This model can be used by anyone: government officials, decision makers, citizens. The model is simple, the

user enters in information about the project and it will generate economic impact data such as jobs, local sales tax revenue etc.

Recycling and Composting

Recycling and composting preserves energy by reducing the energy needed to extract raw materials. These practices also reduce the amount of solid waste sent to a landfill. Recycling differs within the communities in Boone County. Most communities have drop-off sites for trees, yard waste and paper. Communities have drop-off days for hazardous waste approximately once every year. Boone County should encourage recycling and composting where feasible.

Goals and Strategies

The following is a summary of the goals and strategies suggested for Boone County.

Goal 1: Reduce per capita energy consumption within Boone County

Conservation strategies include:

- As county vehicles are decommissioned, consider replacing them with alternative fuel or fuel efficient vehicles
- Continue to make energy efficiency upgrades to county buildings and operations
 - Consider energy audits for county buildings
 - Make a policy that as light fixtures and appliances need replacing, they are replaced with ENERGY STAR certified products or equivalent when feasible
 - Consider creating green funds from energy savings that pay for continuous energy efficiency and renewable upgrades within county operations
- Consider creating incentives such as zoning bonuses or waiving fees for new buildings with energy efficiency or renewable energy systems
- Encourage recycling and composting throughout the county
- Encourage infill development
- Encourage residential and commercial energy upgrades
- Encourage energy conservation through effective siting of buildings and landscaping

Goal 2: Increase the amount of renewable energy produced within Boone County

Renewable energy strategies include:

- Encourage renewable energy systems in all sectors
 - Provide information regarding available renewable energy generation
 - Research incentives for best practices
- Determine the feasibility of a biomass or biogas operation within Boone County
- Continue to foster the expanding wind industry within Boone County
- Ensure zoning requirements do not unnecessarily restrict renewable energy systems

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- Streamline permit process to reduce the soft costs of installing renewable energy systems
- Encourage passive solar in new subdivisions
- Consider installing renewable energy system to a county building as a pilot project

Goal 3: Educate Boone County residents on the benefits of energy efficiency and renewable energy and programs that help with the costs

Education strategies include:

- Provide links to energy efficiency and renewable energy resources on the Boone County website
- Encourage the use of energy tracking tools such as EPA's Energy Star
- Recognize projects that advance the goals and strategies of the energy element
- Report results of energy savings to the public
- Educate county employees on energy conscious behavior