2.6 COMMUNITY FACILITIES AND UTILITIES

Energy Element

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 nonrenewable fossil fuels, which will inevitably run out. Federal regulations are tightening emission rules for power plants, thus increasing the cost of using fossil fuels. By planning for energy conservation, Springfield will save money, have a more resilient economy, help the environment, and be better prepared for the future.

NEBRASKA ENERGY POLICY OVERVIEW

Nebraska Legislation LB997

In 2010, Nebraska Legislators passed LB 997 requiring comprehensive plans to include an energy element. The following energy element is included within the Springfield's Comprehensive Plan to fulfill the requirement of LB 997. Energy elements are required to address 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

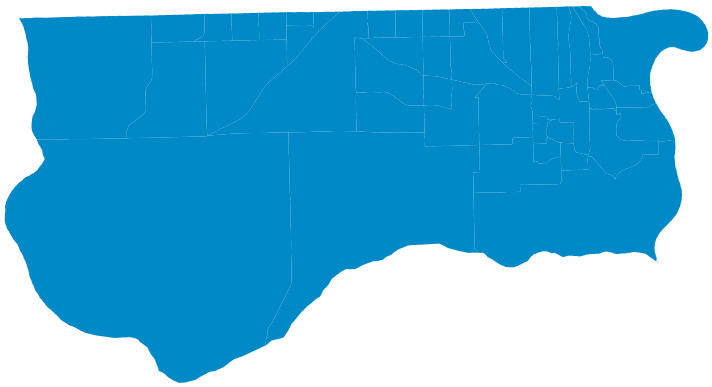
The Nebraska Energy Office's vision statement is to promote the efficient, economic, and environmentally responsible use of energy. The 2011 Nebraska Energy Plan outlines 14 strategies for the state to consider in meeting the following objectives:

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

Energy Element

Sarpy County Energy Element and Relationship to Springfield

Sarpy County's Energy Element was adopted in 2012 and provides the vision, goals and strategies for the County's energy future. Although the Springfield Energy Element was created in line with the Sarpy County Energy Element, and features similar goals, strategies, data, and graphics within that element, it is specific to the City of Springfield.



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 low-income 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.*

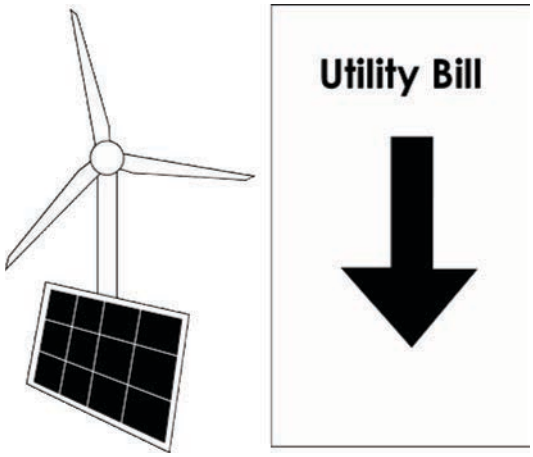
The Code applies to all new buildings, as well as renovations of or additions to any existing buildings. Only those renovations that will cost more than 50 percent of the replacement cost of the building must comply with the Code. The City of Springfield has adopted the 2003 International Energy Conservation Code; however they have a contract with Sarpy County to do their building inspections. As Sarpy is enforcing the 2009 code, Springfield, for all intents and purposes, is enforcing that as well. Updating to the latest energy code will result in energy savings for Springfield residents.

2.6 COMMUNITY FACILITIES AND UTILITIES

Nebraska Legislation LB436 - Net Metering

The Nebraska Legislature passed LB436 which allows for net metering. The legislation permits citizens to generate their own energy as the credits of generated energy are purchased back from the local utility company. This procedure is in the public interest because it encourages customer-owned renewable energy resources. On-site energy generation can stimulate economic growth, encourage diversification of the energy resources used, and maintain low-cost, reliable electric service for the State of Nebraska. By supplementing your electric bill through these "credits" from the utility company, the citizens of Springfield can save money while alleviating pressure on the Omaha Public Power District (OPPD) utility grid.

According to their website, OPPD has offered net metering since 2009. OPPD allows net metering for any consumer that has a qualified generator using methane, wind, solar, biomass, hydropower or geothermal energy with a total capacity of 25 kilowatts or less. As of December 31, 2013, OPPD had 44 qualified facilities with total generating capacity of 280 kilowatts. In 2013, the total estimated amount of energy produced by these customer generators was 368,883 kilowatt-hours, and the net received from them was 4,436 kilowatt-hours.



Solar and Wind Easements and Local Option Rights Laws

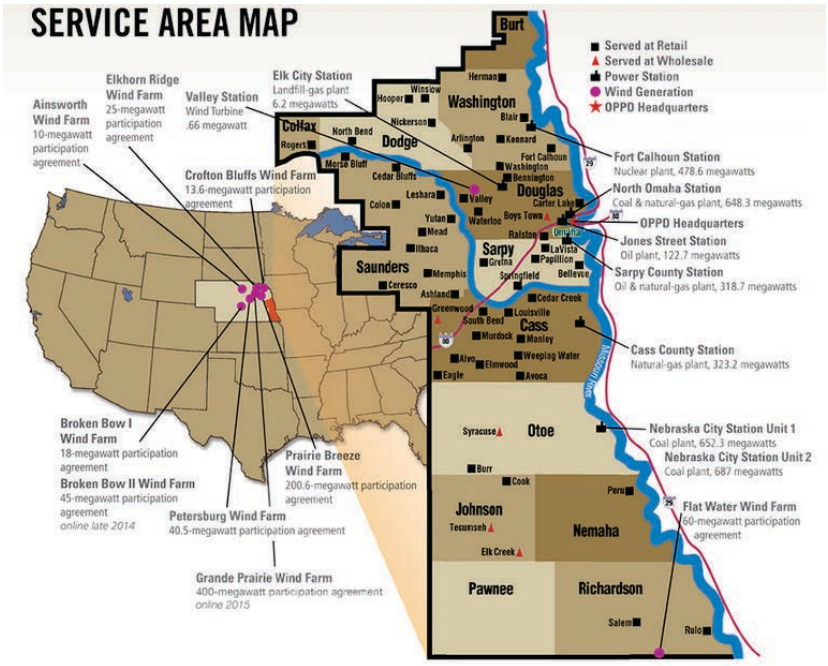
Nebraska's solar and wind easement provisions allow property owners to create binding solar and wind easements in order to protect and maintain proper access to sunlight and wind. Counties and municipalities are allowed to develop zoning regulations, ordinances, or development plans that protect access 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.

LOCAL SERVICE PROVIDERS

Black Hills Energy provides natural gas for the City of Springfield while the city, along with many other communities in southeastern Nebraska, is served by Omaha Public Power District (OPPD) for electricity. As Figure 23 indicates, OPPD is Springfield's electricity provider.

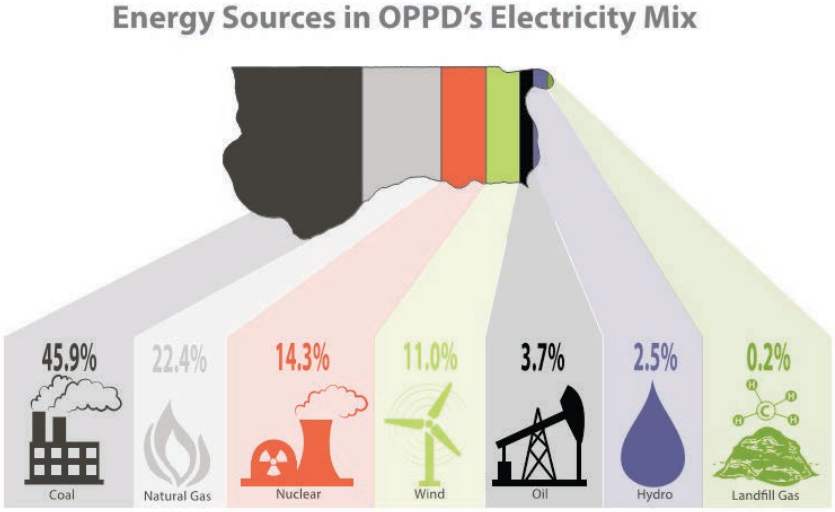
Figure 23 OPPD Service Area



OPPD

Fossil fuels (coal, natural gas, and oil) are the energy source for 72% of OPPD's electricity generation. Currently, 13.7% of OPPD's electricity is generated from renewable energy sources, most of which comes from wind. Figure 24 was created to represent OPPD's system-wide framework of energy resources used to generate their electricity.

Figure 24 OPPD Energy Sources



2.6 COMMUNITY FACILITIES AND UTILITIES

In 2014, OPPD created a plan to lower its carbon emissions in reaction to new proposed EPA regulations.

The OPPD board adopted a plan to:

- Retire units 1-3 of the North Omaha coal plant by 2016
- Retrofit units 4-5 of North Omaha in 2016
- Convert units 4-5 of North Omaha to natural gas by 2023
- Retrofit Nebraska City One by 2016
- Maintain at least 33% of their portfolio in renewable energy beginning in 2018
- Reduce demand by 300 MW through energy efficiency and demand side management program

This plan would reduce:

- Carbon dioxide emissions by 49%
- Mercury emissions by 85%
- NOx (nitric oxide and nitrogen dioxide) emissions by 74%
- SOx (sulfur oxide) emissions by 68%

If OPPD plans on maintaining at least 33% of their portfolio in renewable energy beginning in 2018, they will need to increase renewable energy generation considerably. Given the latest data, renewable energy was responsible for 13.7% of their electricity generation mix. In order to meet that goal of 33% by 2018, OPPD will need to start aggressively investing in renewable energy and purchasing renewable energy elsewhere.

LOCAL SERVICE PROVIDERS

Table 3 reports Springfield's overall electricity consumption. The commercial sector decreased between 2012 and 2013 despite increasing the number of commercial accounts. Residential electricity consumption increased by 3.8% from 2012 to 2013. The electricity used in the commercial and residential sectors is mainly for space heating and cooling, lighting, and appliances. Energy strategies should focus on reducing the consumption for those needs.

Table 3 Springfield Energy Consumption by Sector, 2012 and 2013

	2012			2013		
	KWH	% OF TOTAL	PREMISE COUNT	KWH	% OF TOTAL	PREMISE COUNT
Commercial	3,431,997	27%	158	3,332,732	26%	171
Residential	8,840,369	71%	613	9,192,649	72%	617
Street Lights	226,516	2%	N/A	232,724	2%	N/A
TOTAL	12,498,882	100%	771	12,758,105	100%	788

Data provided by OPPD

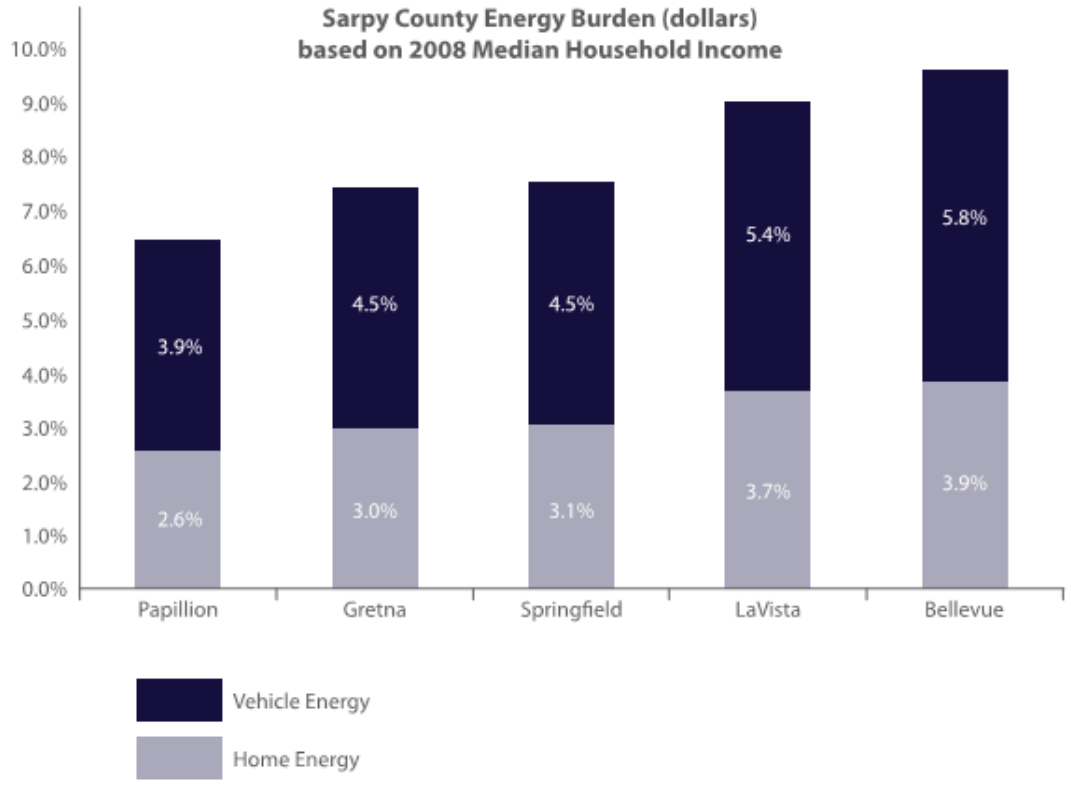
Energy Element

Except for street lighting, consumption data for municipal operations was not available for Springfield. However, the City of Springfield may want to set an example for its citizens by reducing its energy consumption. Springfield can reduce its energy consumption by following the goals and strategies described later in this energy element.

The Sarpy County Energy Element calculated that Springfield households use 7.6% of their income on energy. This is comparable to the other communities within Sarpy County. Conserving energy and possibly generating their own energy would result in Springfield residents spending less money on energy and more into the local economy.

Residents of Springfield can earn money and conserve energy by enrolling in OPPD's Air Conditioning Management Program. The air conditioning cycling program reduces the demand during high usage times. OPPD will attach a free outdoor device to your home by your AC unit or heat pump, and credit your bill each year you participate in the program.

Figure 25 Sarpy County Community Energy Burden

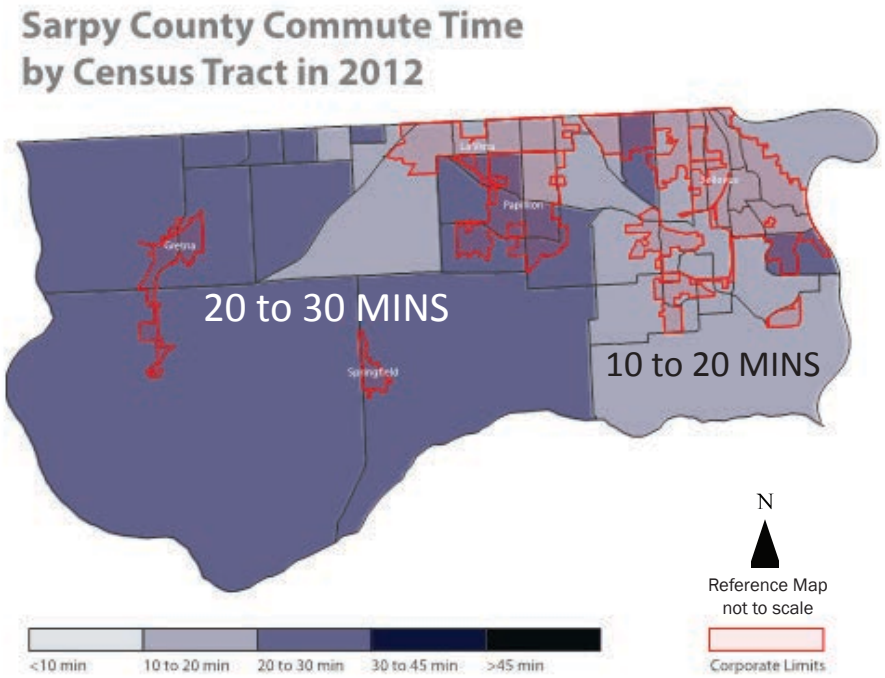


2.6 COMMUNITY FACILITIES AND UTILITIES

According to data from the American Community Survey and Social Explorer, the average commute time for the Springfield area is 26 minutes (shown in Figure 26). Springfield residents are spending a lot of time, money, and energy commuting to and from work every day. Creating strategies to reduce this average would result in significant energy savings.

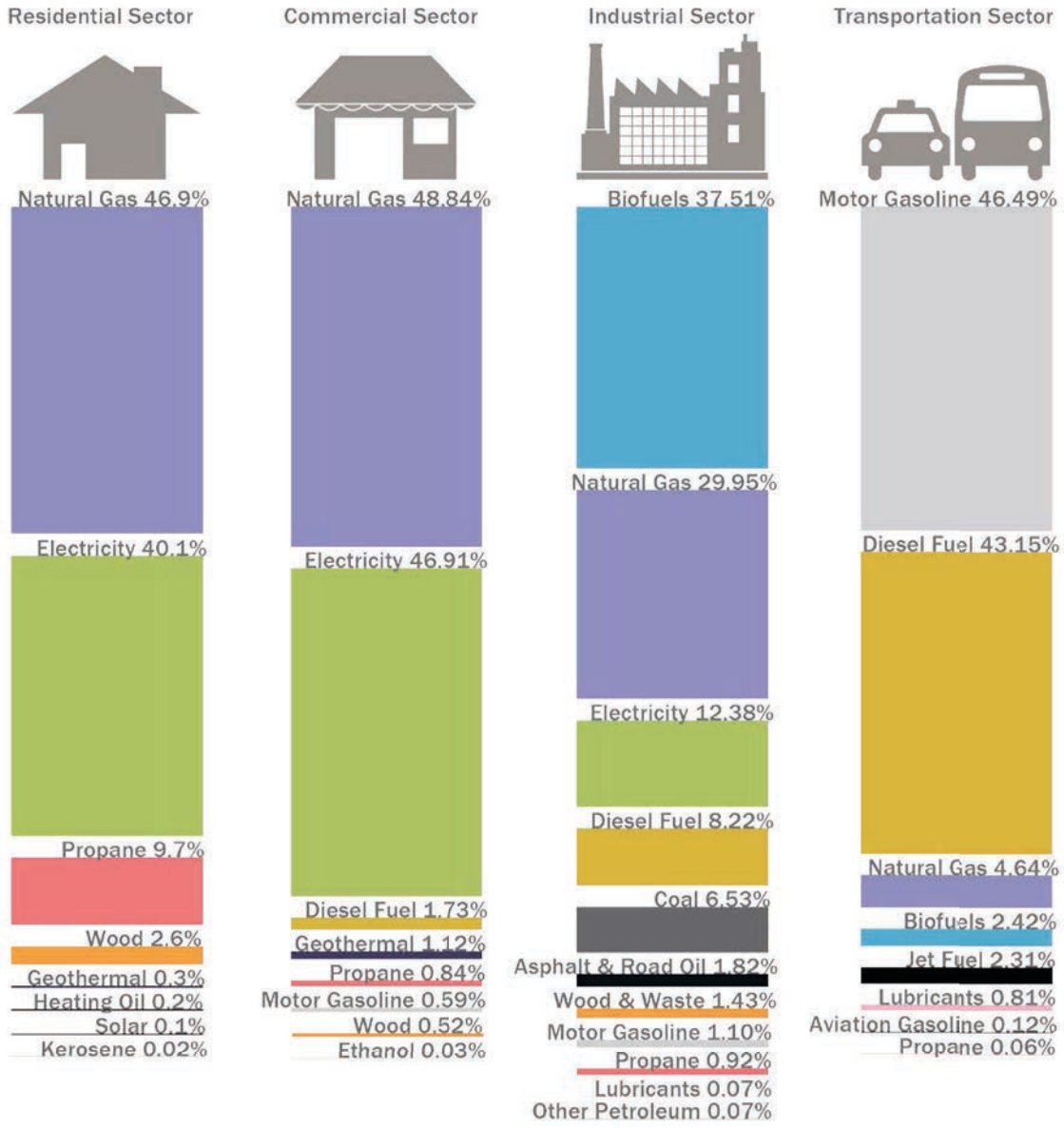
The Corporate Average Fuel Economy standards will nearly double vehicle fuel economy by 2025 to 54.5 miles per gallon. Without any action this will lower fuel consumption per capita in Springfield. Finding strategies to lower the commute time will result in further energy conservation.

Figure 26 Sarpy County Commute Time per Census Tract, 2012



Nebraska's Net Energy Consumption by Fuel Type (Figure 27) 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.

Figure 27 Nebraska's Net Energy Consumption by Fuel Type per Sector, 2011



Both the energy consumption and costs (Table 4) is combined to show how much energy Nebraska consumed and money by Nebraska 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. Springfield may want to investigate strategies that will lower the consumption and cost of transportation because of the large expenditures of the state and the long average commute time for the city.

2.6 COMMUNITY FACILITIES AND UTILITIES

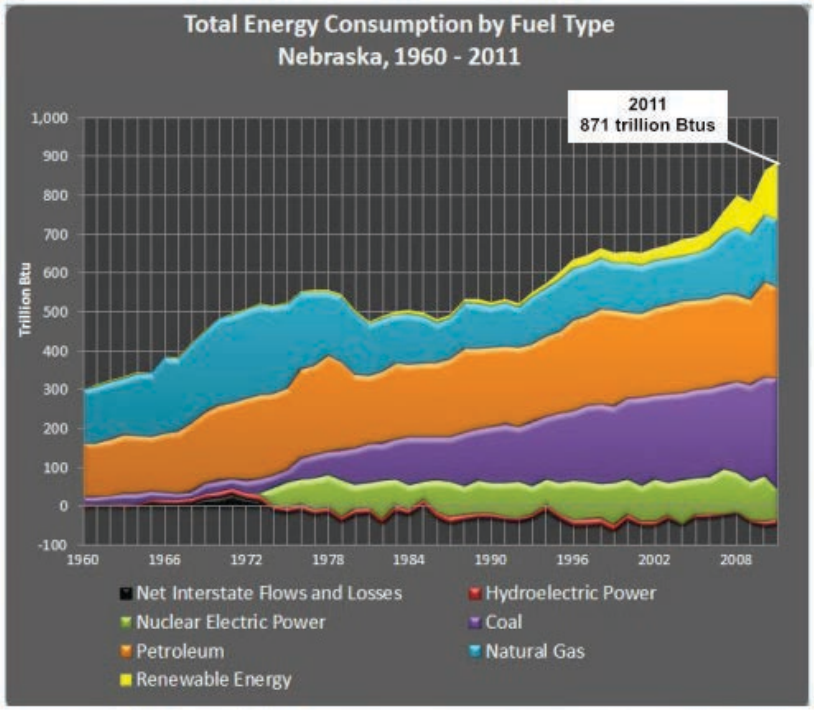
Table 4 Nebraska Energy Consumption and Costs by Sector, 2012

	Residential	Commercial	Industrial	Transportation	TOTAL
ENERGY IN TRILLION BTU					
	147.0	131.9	384.8	196.9	860.6
	17.1%	15.3%	44.7%	22.9%	100%
COSTS IN MILLIONS OF $					
	1,390.3	990.5	2,289.5	5,423.0	10,093.3
	13.8%	9.8%	22.7%	53.7%	100%

Source Energy Information Administration (EIA), 2012

As shown in Total Energy Consumption by Fuel Type (Figure 28), Nebraskans have a long standing trend of relying on fossil fuels for an overwhelming majority of their energy needs. Energy consumption continues to increase annually as Nebraska consumed 871 trillion 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 28 Nebraska's Trend for Energy Consumption by Fuel Type, 1960-2011



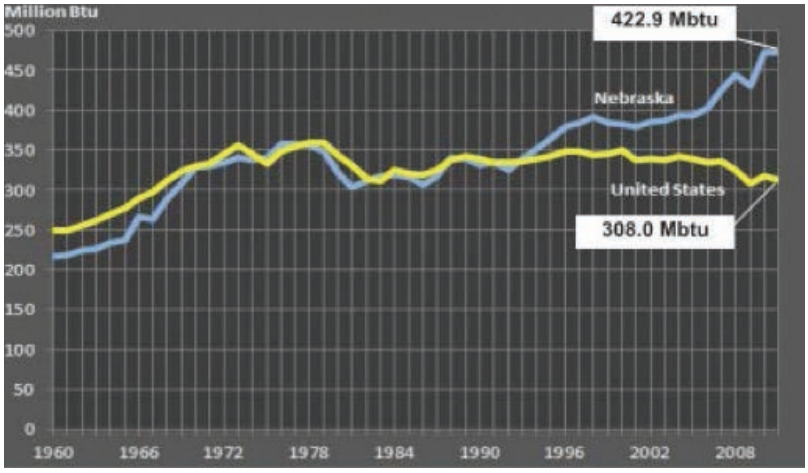
Sources: State Energy Data Report. Energy Information Administration, Washington, DC.
Nebraska Energy Office, Lincoln, NE.

Energy Element

Prior to 1994, Nebraska and the U.S. were relatively parallel in per capita energy consumption, as seen in Figure 29. Between 1994 and 2011, Nebraska's per capita energy consumption continued to rise quicker than 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.

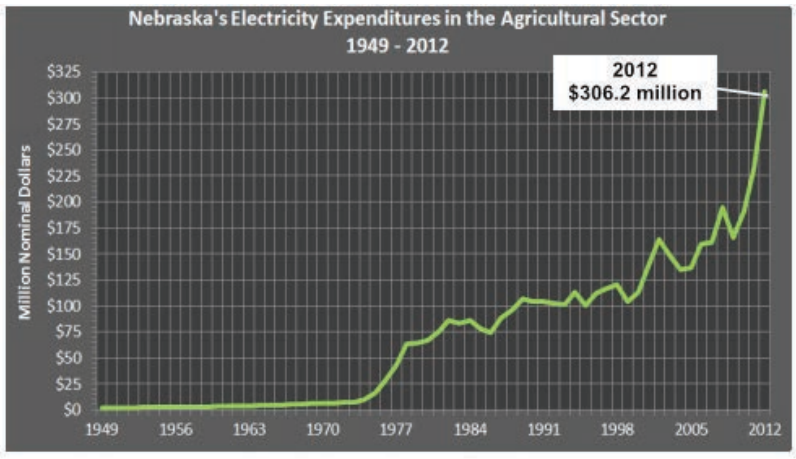
The increase of ethanol production, along with other circumstances, led agricultural producers to change what was planted. From 2000-2010, Nebraska agricultural producers have routinely surpassed the billion bushel mark for corn harvested, reaching more than 1.469 billion bushels of corn for grain production 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. Springfield may want to encourage the use of renewable energy and conservation methods in the surrounding agricultural production. An example of the use of renewable energy in agriculture is the solar assisted center pivot irrigation system at the Beller farm near Lindsay, Nebraska.

Figure 29 Nebraska / US Total Energy Consumption Per Capita Trend, 1960 -2011



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

Figure 30 Nebraska Electricity Expenditures in Agricultural Sector, 1949 -2012



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

2.6 COMMUNITY FACILITIES AND UTILITIES

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. Since a large amount of the electrical energy consumed in Springfield comes from coal, this will most likely affect the price of electricity coming from these power plants. Therefore, it would be in Springfield's best economic interest to decrease per capita energy consumption and increase the amount of renewable energy produced in Springfield. Below is a summary of potential renewable energy options for Springfield. Although the focus of this section is on wind, hydro, solar, geothermal and biomass, all sources of renewable energy could be considered by Springfield in the future for their feasibility.

Wind

The Wind Power Density (Figure 31) represents the gross estimated annual average wind power density for Nebraska and Sarpy 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.

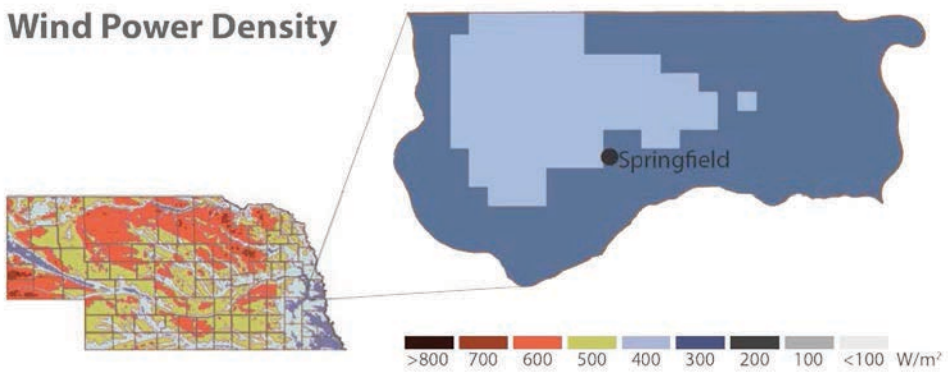
According to the American Wind Energy Association, Nebraska has one of the best wind resources in the United States, 92% of Nebraska has the adequate wind speeds for a utility scale wind farm. Nebraska ranks 3rd in the U.S. in gigawatt hour (GWh) wind generation potential, but has been slow in utilizing 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.

OPPD is continuing to add wind capacity as shown in the following data:

2011	124.5	MW
2012	122	MW
2013	74.8	MW
TOTAL	321.3	MW

As Figure 31 indicates, Springfield and the rest of Sarpy County has some of the lower wind energy resources in the state. Despite this, areas around Springfield may be suitable for a wind energy operation. Electricity produced through wind power will be most cost effective on the utility/ commercial scale. 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.

Figure 31 Wind Power Density for Nebraska and Sarpy County



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, however not likely in Springfield.

2.6 COMMUNITY FACILITIES AND UTILITIES

Biomass

Springfield may want to consider the feasibility of renewable energy generation from biomass because of the agriculture and existing landfill located in proximity of the city. Biomass (biodiesel, ethanol, landfill gas, methane, wood and wood waste) accounted for 81.7% of all renewable energy generated in Nebraska in 2011.

Biodiesel

The two Nebraska commercial scale biodiesel plants located in Arlington and Scribner have an estimated production capacity of 5.4 million gallons per year, but both have recently closed due to the price of soybeans used for feedstock.

Ethanol

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. The Nebraska ethanol plant operating closest to Springfield is located in Blair.

91% of Nebraska's ethanol production goes to U.S. domestic markets, 5% is exported to other countries, and 4% is used by Nebraskans. The state'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.

Biogas

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 planting pots. For additional information about biogas visit: http://www.epa.gov/agstar/anaerobic/

Landfill Gas

Landfill gas is extracted methane from landfill waste. Current EPA regulations under the Clean Air Act require many landfill owner/operators to collect and burn off landfill gas, or install a landfill gas energy system. Installing this system allows communities and landfill owners/operators the opportunity to turn compliance into a resource. OPPD's Elk City Station facility uses landfill gas as a fuel source. Landfill gas is an option that could be explored for Springfield given the proximity of the Sarpy County Transfer Station.

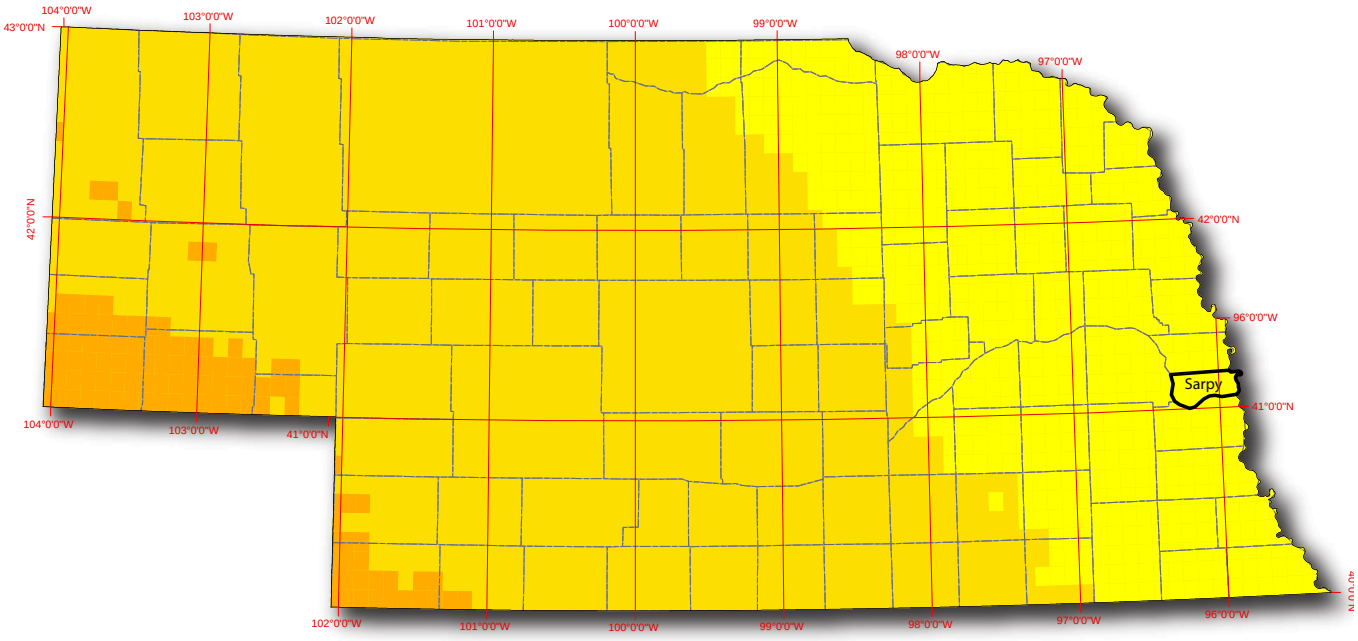
Methane gas can also be extracted from a wastewater treatment plant using a similar process. As the city's population continues to grow, Springfield may want to consider the feasibility of extracting methane from current or expanded waste water treatment facilities.

Solar Power

According to the National Renewable Energy Laboratory, Nebraska is ranked 13th in solar energy potential. 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. As of 2013, Nebraska has solar panel facilities at three sites: NPPD Norfolk Operations Center, OPPD Elkhorn Service Center, and LES Hyde Observatory (Nebraska Energy Office).

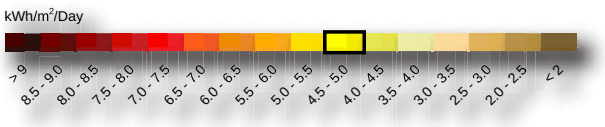
According to the Department of Energy, the average hardware cost of solar panels has dropped more than 60%. As the cost of solar panels continues to decrease, solar can be utilized at an individual home or business scale to help supplement electrical needs. Many utilities have incentives to help with the cost of solar, but additional steps could be taken to increase the amount of solar energy generated in Springfield.

Figure 32 Global Solar Radiation at Latitude Tilt, 2007



Model estimates of monthly average daily total radiation, averaged from hourly estimates of direct normal irradiance over 8 years (1998-2005). The model inputs are hourly visible irradiance from the GOES geostationary satellites, and monthly average aerosol optical depth, precipitable water vapor, and ozone sampled at a 10km resolution.

This map was produced by the National Renewable Energy Laboratory for the U.S. Department of Energy. September 25, 2007



Passive Solar

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.

2.6 COMMUNITY FACILITIES AND UTILITIES

Geothermal

There are three geothermal resource applications: electricity production, direct use, and heat pumps. Although the utilization of some geothermal energy applications has the potential of environmental impacts due to differing temperatures and the release of minerals from the earth, the impacts are minimal compared to the impacts of traditional forms of energy. Potential impacts from geothermal energy can be easily mitigated using existing strategies and technologies.

Electricity Production

Generating electricity from geothermal resources requires drilling a well into an underground reservoir of water that can be as hot as 700 degrees Fahrenheit. The trapped steam is brought to the surface to turn a turbine that produces electricity. This resource can also be utilized on the surface at hot springs or geysers.

Direct Use

In direct use systems, a well is drilled into a geothermal reservoir to provide a steady stream of hot water. Water is brought up through the well and a system of piping, a heat exchanger, and controls delivers the heat directly for its intended use. A disposal system then either injects the cooled water underground or disposes of it on the surface.

Geothermal hot water can be used for many applications that require heat. Its current uses include heating buildings, raising plants in greenhouses, drying crops, heating water at fish farms, and several industrial processes.

Geothermal Systems

The type of geothermal application that is most practical and economical for the residents of Springfield 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 level 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 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 deplete the surrounding water supply.

EDUCATION

Springfield will not be able to achieve its energy goals without the help of its citizens. Springfield may want to educate the public on the benefits of energy efficiency and the most feasible renewable energy systems. In the following subsections there are resources provided that Springfield can use to raise awareness regarding energy efficiency and renewable energy systems.

Energy Saving Tips

Springfield and its residents and businesses are encouraged to take advantage of the following energy saving information:

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 the Nebraska Public Power District homepage, www.nppd.com, there is 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:
http://www.cornhusker-power.com/index.asp

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

Energy Assistance Programs

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

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

2.6 COMMUNITY FACILITIES AND UTILITIES

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 Utilities 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, which reduces what is dumped in the landfill. Currently, recycling in Springfield is provided by private sanitation companies. These companies offer recycling as a part of their regular trash service. This is usually in the form of single stream recycling; the customer puts all acceptable recycling materials into a container much like their trash container, it is picked up by the company and is sorted later.

Composting in Springfield is also provided by the private sector. Customers can purchase an additional service or they can bring their materials to a composting site themselves. Residents also have the option of composting themselves in their backyard if they have the right materials.

Local Food

Food takes energy to grow, harvest, process and transport. Conditions such as the distance from where the food is grown to our table affect how much energy is used to produce our food. Supporting locally grown food reduces the energy needed for food production and supports the local economy.

DEFINITIONS AND ACKNOWLEDGMENTS

LEED: Leadership in Energy & Environmental Design (LEED) is a green building certification program that recognizes best practices in building and construction. In order to receive LEED certification, building projects satisfy prerequisites and earn points to achieve different levels of certification. Building to LEED standards does not require the expensive LEED certification. http://www.usgbc.org/leed

ENERGY STAR: The ENERGY STAR is a U.S. Environmental Protection Agency voluntary program that helps businesses and individuals save money and protect our climate through energy efficiency. The ENERGY STAR program has influenced the adoption of energy efficient products, practices, and services through partnerships, objective measurement tools, and consumer education.
http://www.energystar.gov/

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2.6 COMMUNITY FACILITIES AND UTILITIES

GOALS AND STRATEGIES

The following goals and strategies are suggested for Springfield. These goals and strategies were chosen so that Springfield's Energy Element would be cohesive with the Sarpy County Energy Element.

1. Reduce energy use per capita in Springfield

a. Encourage Multi-Modal Transportation
   i. Increase use of multi-use trails, walking, and bicycling as alternative modes of transportation
      - Plan trails to connect neighborhoods and provide access to commercial areas and community facilities
      - Connect neighborhoods
      - Continue to make improvements to the existing trail system
   ii. Encourage infill development
   iii. Develop and support policies that align with Springfield's Energy Element

b. Ensure efficient utilization of land resources
   i. Encourage new development adjacent to existing development
   ii. Interconnect new development for active and vehicular transportation options
   iii. Establish development guidelines or codes so that sites and site designs are friendly to active transportation modes
   iv. Increase density
   v. Promote mixed use development
   vi. Develop employment opportunities within Springfield
      - Reduce travel time outside of community for basic services through community-based land use plans
      - Utilize all available tools and programs (tax incentives, utility rebate programs) and balance jobs/housing to promote economic development
      - Encourage and plan for diverse housing options
   vii. Encourage development of charging stations and other infrastructure for alternative fuels

2. Increase the amount of energy generated by renewable energy systems

a. Inform citizens about the most practical renewable energy applications for Springfield
b. Examine and possibly remove unintended barriers for appropriate small-scale distributed energy generation
c. Review, update, and improve the city's existing regulations and policies regarding private pursuits of renewable energy generation
d. Evaluate the feasibility of producing energy from future or expanded publicly owned and operated wastewater treatment facilities
e. Work with the county on researching the potential of using energy from Sarpy County Landfill

3. Increase the amount of locally produced food that is consumed in Springfield

a. Support best practices for "backyard" agriculture
    i. Review existing codes regarding composting
    ii. Support local food production
        - Support markets for local food (e.g., farmers' markets)
        - Leave open space in new developments for urban agriculture where appropriate.
    iii. Education
        - Encourage community education and dialog regarding locally produced food

4. Increase the amount of buildings built to LEED or equivalent standards within Springfield

a. Educate homeowners regarding practical energy efficiency measures, such as the ENERGY STAR system
b. Educate city staff on latest and progressive energy codes and systems
c. Encourage meeting current LEED standards for all new buildings and renovations in Springfield
d. Partner with utility companies to enhance Springfield's efforts to understand:
    i. Energy use patterns
    ii. Time of use rates
    iii. Incentive based rates
    iv. Energy efficiency incentives
    v. Benefits of participation in utilities demand response programs
e. Promote best practices in energy efficient building programs
    i. Encourage residential and commercial energy upgrades
f. Encourage energy conservation through effective siting of buildings and landscaping
g. Encourage use of green roofing systems
h. Promote integration of renewable energy sources into buildings
    i. Provide information regarding available renewable energy generation
    ii. Research incentives for best practices

5. Reduce energy consumption within the City of Springfield's operations

a. Incorporate energy efficiency improvements to buildings and building systems
    i. Conduct energy efficiency upgrades to building HVAC systems
    ii. Automate building systems for highest efficiency and comfort settings
    iii. Purchase or implement a system for automating building system maintenance
    iv. Manage peak demand, such as with the air conditioner cycling program
    v. Ensure building temperature set points are within an established range that supports comfort and efficiency
    vi. Replace indoor lighting in city buildings with energy efficient lighting
    vii. De-lamp buildings where appropriate by removing one or more lamps from multiple-lamp fixtures

2.6 COMMUNITY FACILITIES AND UTILITIES

viii. Consider installing solar water heaters in city facilities
ix. Educate employees regarding convenience items that draw "vampire" or "phantom" loads while plugged in and not in use (e.g., space heaters, phone chargers, VCRs, TVs, coffee pots, microwaves and microfridges)
x. Sleep or shut down computers every night and on the weekends
xi. Use EPA's ENERGY STAR program to benchmark and track building energy performance

b. Provide feedback to city employees on energy consumption
    i. Conduct building energy audits on priority city buildings to identify energy retrofit and improvement opportunities
c. Demonstrate a commitment to energy efficiency buildings by implementing progressively more efficient building pilot projects
d. Improve Springfield's renewable energy portfolio through an increase of on-site renewable energy application in appropriate city facilities and projects
e. Research revolving loan fund opportunities to finance energy efficiency improvements
f. Improve efficiency and reduce use of vehicle fleet
    i. Provide training to Springfield employees on efficient driving techniques.
    ii. Implement a no-idling policy and other policies to save fuel
    iii. Create a purchasing policy to infuse more efficient vehicles into the fleet over time
    iv. Develop a fleet maintenance/management education program.
    v. Pilot a program using biofuels in existing fleet vehicles
    vi. Encourage more telecommunication, trip-chaining, and trip aggregation
        • Develop and encourage the use of video and tele-conferencing infrastructure to reduce vehicle miles traveled for meetings
g. Educate citizens regarding energy element
    i. Implement education, outreach and citizen engagement strategies to prepare staff, developers, and community for city actions
        • Establish a webpage where Springfield can inform citizens of its energy saving and energy efficiency efforts both prior to and in accordance with the energy element
    ii. Raise Springfield's residents' awareness of the wise use of energy
    iii. Recognize innovative projects that support and advance the goals and strategies of the energy element
    iv. Leverage recycling education to increase the amount of recycling in Springfield and consequently reduce energy used to process raw materials and land used for landfill