PUBLIC REVIEW DRAFT

CHAPTER 5

Energy

Fargo will aggressively seek innovative strategies to support national energy independence. The community will find energy savings through efficiency measures and invest in renewable sources for the future.

ENERGY

Across the United States, many communities are developing energy management plans or climate action plans in the interest of fostering energy efficiency and environmental stewardship. Over the last decade, the City of Fargo has taken several steps toward an increase in public awareness of energy consumption and conservation. To-date, most of the efforts have been initiated through the City's Renewable Energy and Conservation Committee (RECC) which was founded in April, 2005 with a mission "to pursue, plan and implement policies and/or programs that will foster conservation, utilize and develop renewable resources, and protect the environment". The RECC is a recommending body that studies and implements ways the City can best use and conserve natural resources, as well as, improve energy efficiency in municipal buildings.

Coal is the primary source fuel for generating electricity supplied to Fargo. The production of electricity using coal as fuel results in various emissions and heavy metals such as lead and mercury. The concentration of these emissions in food supplies can have an adverse effect on human health, especially in children. While planning for growth, it is important to consider ways of reducing the waste of energy through energy efficiency and make wise choices of how to produce energy.

In 2007, Fargo's Mayor signed the US Conference of Mayors Climate Protection Agreement. Under the Agreement, participating cities have committed to dramatically reduce emissions and to work with other communities to advocate for CO2 emission reductions.

Since the City does not produce or provide electricity or natural gas services, it relies on two utility companies to meet the electricity and natural gas needs of the community. The two companies are Xcel Energy (electricity and natural gas) and Cass County Electric Cooperative (electricity). However, the City has initiated several of its own renewable energy/resource recovery projects that utilize available municipal resources to produce renewable energy and reuse wastewater to benefit the community. The initiatives in this comprehensive plan are an opportunity to improve the efficiency of both the public and private sector and pursue strategies to bolster renewable energy generation. Working together to make the very best use of energy as a precious resource will protect the air, water, and land we all use.

Initiatives:

01: CITY LED ENERGY EFFICIENCY AND REDUCED EMISSIONS

Develop policies and strategies that allow the city to lead the way with energy efficiency standards and reduced emissions related to city facilities and schools.

02: COMMUNITY-WIDE ENERGY EFFICIENCY AND RENEWABLE ENERGY PRODUCTION

Create strategies and programs to incentivize energy efficiency and renewable energy production by working with City, State, and Federal governments.

03: SMART GRID

Develop strategies to promote a smart grid and allow individuals to generate renewable energy and sell energy back to the grid.

INITIATIVE 01

CITY LED ENERGY EFFICIENCY AND REDUCED EMISSIONS

RECOMMENDATIONS

- Conduct energy and emissions inventory of city-wide operations.
- Renovate existing city buildings to improve energy efficiency.
- Create energy standards for new government buildings.
- Explore alternative fuels and electric vehicles for Municipal vehicles. Install electric recharging stations around the city for the municipal government's fleet that are also available for general use.
- Expand use of Hybrid MAT buses in Fargo.
- Explore renewable energy generation opportunities.
- Explore financing options including a revolving fund that is financed by energy savings.

DESCRIPTION

The City of Fargo will lead the way in increasing energy efficiency and reducing emissions related to its activities. The strategy to provide this leadership can be divided into four areas: efficiency of existing buildings, efficiency of new building, transportation, and renewable generation. The City should select specific actions based on return on investment and cost of savings. The City should also explore creating a revolving fund financed by energy efficiency savings.

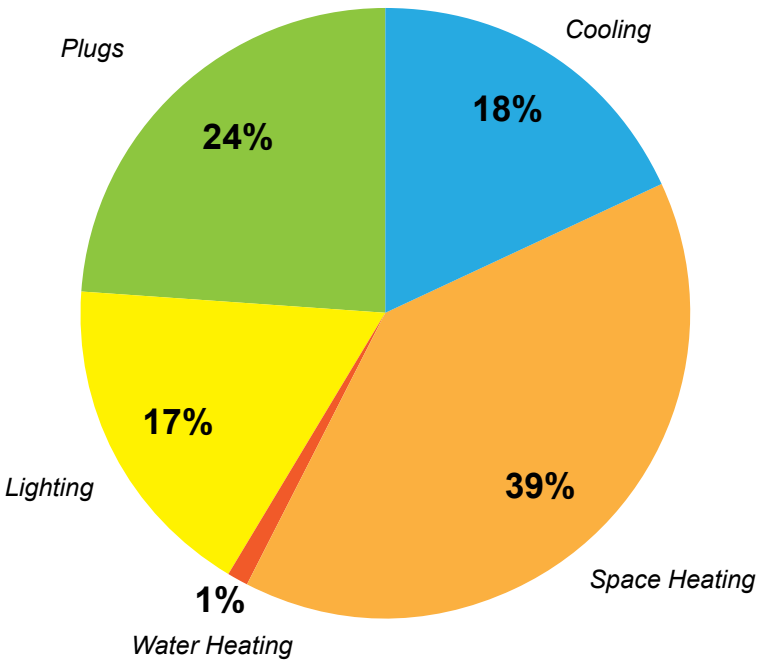
FROM MINDMIXER

Fargo has so many older buildings that are literally throwing money out the window due to the lack of efficiency. Efforts so far have focused too much on new regulation instead of retrofitting to solve the problem. –Sam N

Existing Buildings

The first element of Fargo's energy strategy is to increase energy efficiency of existing buildings. It is much less expensive to save energy than it is to generate energy. The planning team analyzed a public facility in Fargo to understand the best strategies to increase energy efficiency in Fargo's climate. The following graph shows the kBtu used by fuel source in one of Fargo's police departments. This is a good estimate of how all public buildings in Fargo use energy.

ENERGY CONSUMPTION IN A TYPICAL PUBLIC FACILITY



Based on this analysis, the City of Fargo should explore the following smart load reduction measures to save energy and demonstrate green technology for existing buildings:

- Improve the tightness and insulation of building envelopes.
- Improve heating and cooling equipment efficiency.
- Add efficient lighting and equipment.
- Set up monitoring and information displays.

The next step will be to take measurements of how the building uses energy by installing clamp on amp meters and equipment schedule.

USE	KBTU/SQFT/YEAR
Cooling	12.6
Space Heating	27.2
Water Heating	0.8
Lighting	12.0
Plugs	16.4
Total	69.0

FROM MINDMIXER

"Geothermal heat is far less expensive on new construction than as a retrofit and district- wide geothermal now out-competes the cost of fossil fuel generated heat. To green our grid, let's require geothermal heat for all new neighborhoods. This will also encourage development of local expertise related to geothermal construction in our city which would support a local green economy." –Cat

New Buildings
The City should take advantage of the latest in green building technology when constructing new building. One of the most effective strategies is to set energy standards for all new public buildings. For example, the City could consider requiring all new public buildings to increase efficiency by 30% over standard buildings, be LEED Platinum certifiable, or use some other green building rating system.

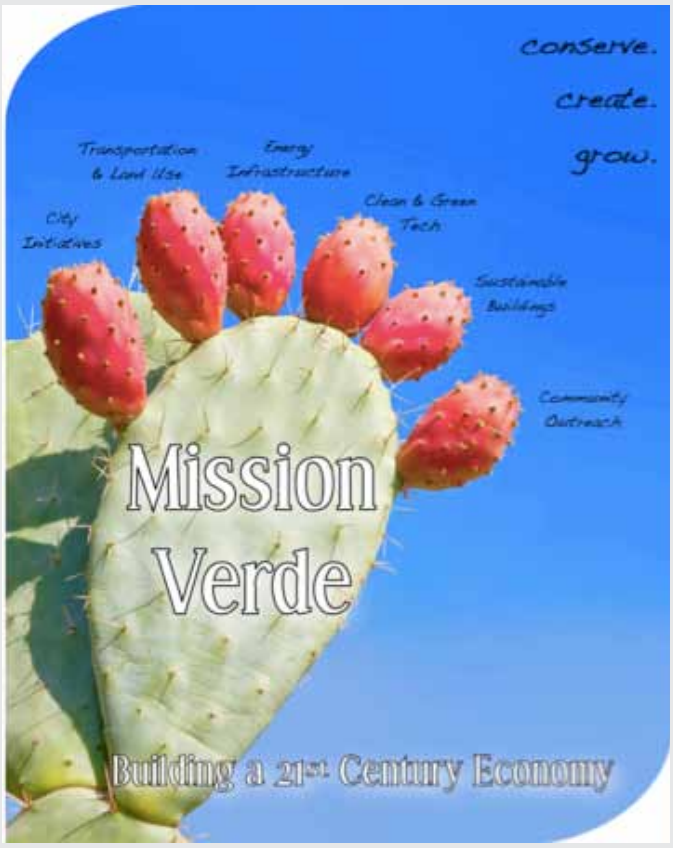
Transportation
The City of Fargo can transition to hybrid and electric vehicles. In addition to reducing Fargo's carbon footprint, these vehicles improve air quality, have lower costs of operations, and have lower maintenance. The City government can lead the transition to electric vehicles by installing recharging stations around the city that are also available for general use. The City can also make the bus system greener by expanding the use of Hybrid MAT buses.

Renewable Generation
Fargo relies on two energy companies, Xcel Energy and Cass County Cooperative, for the bulk of energy used in the city. However, the city government has implemented a few innovative renewable energy production projects recently. These include using methane gas from the landfill and wastewater treatment plant, geothermal heating and cooling in a few public facilities, and the construction of a 1.5-2.0 megawatt wind turbine near Oriska, ND. The City should continue to take advantage of innovate energy production opportunities and

BENEFITS

Most of the energy for electricity, heating, and transportation in North Dakota comes from coal, natural gas, and gasoline. Burning fossil fuels releases emissions into the air, which increases health problems, such as asthma. The nation's reliance on gasoline for transportation is particularly unsustainable because it weakens our national security. In the next 20 years, renewable sources of energy are likely to become the preferred alternative fossil fuels due to improving technology and decreasing supply of these nonrenewable sources. Fortunately, North Dakota is blessed with excellent solar and wind resources. The City of Fargo's support for reducing energy use through efficiency measures and renewable generation improves the environment, health, and national security now while positioning Fargo's economy to excel in the future.

CASE STUDY



Mission Verde Sustainability Plan

San Antonio, TX

The Mission Verde Sustainability plan is based on the principle that meeting today's needs cannot compromise the ability of future generations to meet their needs. The plan includes sections on energy infrastructure, clean and green technology development, sustainable buildings, transportation and land use, community outreach, and a chapter about San Antonio leading by example by improving city internal operations.

The San Antonio City Council formally adopted the Mission Verde Sustainability Plan on February 4, 2010.

INITIATIVE 02

PROMOTE COMMUNITY-WIDE ENERGY EFFICIENCY AND RENEWABLE ENERGY PRODUCTION

RECOMMENDATIONS

- Create incentives and innovative financing for energy efficiency and renewable energy production.
- Ensure building codes and other regulations are consistent with energy efficiency goals.
- Raise awareness of energy efficiency and renewable energy generation opportunities and benefits.

DESCRIPTION

This initiative aims at increasing energy efficiency and renewable energy production for the city as a whole. The following strategies are examples of programs and policies that could be used to accomplish community goals through incentives, education, and competition.

- Create a utility coalition and establish a green retrofit program for homes and other private buildings.
- Establish a rebate system for efficient lighting, refrigerators, and HVAC systems.
- Require all buildings receiving public funding to meet LEED Platinum rating standards, or some other green building rating system.
- Set up monitoring and displays at commercial and industrial buildings to encourage competition for energy efficiency.
- Work with developers to orient new buildings and houses with optimum solar orientation and southern roof exposures for solar panels.

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FROM MINDMIXER

Fargo should strive to power itself completely with sustainable energy (wind, solar, etc.). It is the responsible thing to do. Not only would we be making a positive impact on the future, but we could also serve as a national example to other communities in the nation. – Todd H

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- Provide incentives for solar panels and other renewable energy generation technologies.
- Provide fast track permitting for green buildings.
- Provide a one stop, green resource center free to developers, builders, and homeowners.
- Encourage electric vehicles use by installing recharging stations around the city.

The City of Fargo will explore these strategies to incentivize energy efficiency and renewable energy production by working with City, State, and Federal governments and local utilities. Through these partnerships, the City can reduce the amount of energy being wasted in the community and increase the use of renewable energy.

BENEFITS

Energy efficiency and renewable energy production benefits the environment, the health of residents by reducing pollution, and businesses by reducing costs of energy. As the city government leads efforts to reduce energy use, successful strategies can be expanded to the private sector. This city-wide initiative has the potential to have significant impact on these issues, far exceeding the potential of the city acting alone.

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FROM MINDMIXER

It’ll reduce the strain on our local grid and also allow the owners to sell back the energy they don’t use to the utilities.” – fmmetroplex

FROM MINDMIXER

We have the Red River Valley Research Corridor here. Why can’t WE design and build affordable solar panels/shingles for residents in our state and the surrounding states? – Kay S

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CASE STUDY

The Rural Energy Savings Program

Allows rural electric coops to finance energy efficiency retrofits and for the user to pay off the loan automatically from the energy savings realized from the energy retrofit.

Property Assessed Clean Energy (PACE) financing

PACE financing allows municipalities to offer bonds to investors then loan the money to consumers for energy retrofits. The loans are paid back via an assessment on the loan recipient's property tax bill. Usually the property owners have a net gain with the energy savings even with the increased property tax. North Dakota does not currently have PACE legislation.

INITIATIVE 03

SMART GRID

RECOMMENDATIONS

- Collaborate with federal and state governments to invest in smart grid technology.
- Explore new business models with utilities to make smart grid technology economically feasible.

DESCRIPTION

The third element of Fargo's energy strategy, beyond increasing efficiency and renewable generation of the municipal government's operations and the activities of individual households and businesses in Fargo is upgrading Fargo's energy infrastructure. Fargo will develop strategies to promote a smart grid (a computerized network of energy lines that more efficiently transports and delivers energy based on its understanding of supply and demand). Smart grid technology can facilitate other advances beyond energy efficiency including enhancing reliability, dynamic pricing, shifting of large energy uses to off-peak hours, actively managing solar, wind, and other renewable sources, and actively managing a network of electric vehicle charging stations. This infrastructure system should allow individuals to generate renewable energy and sell energy back to the grid.

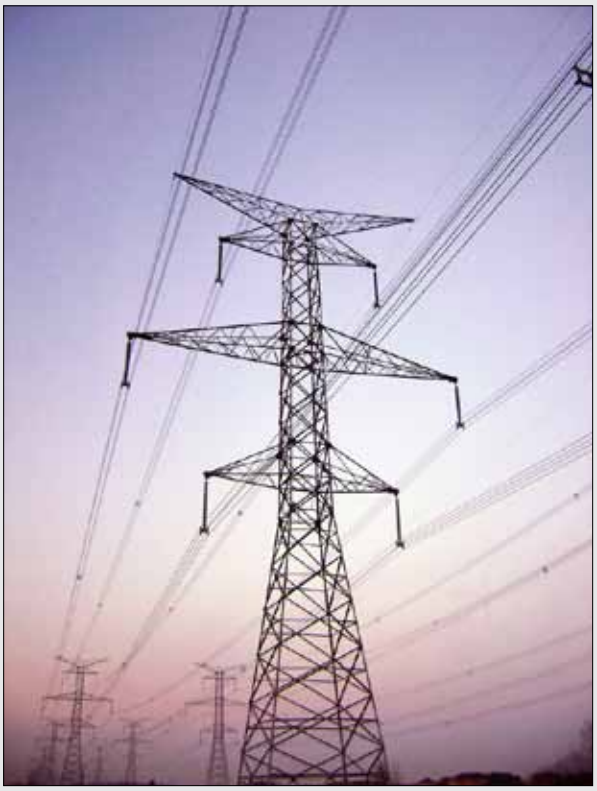
BENEFITS

Smart Grid technology increases energy efficiency and reliability, results in savings for energy consumers and provides better support for renewable energy sources and electric vehicles. A smart grid would improve the environment by reducing wasted energy and associated pollution and make Fargo more attractive for industry.

FROM MINDMIXER

A smart grid would provide Fargoans with incentive to create local, clean, renewable power, and keep the money here. Microsoft has already piloted the program, but all we need is the city to step it up. Win-win-win." – Drew FM

CASE STUDY



Austin, TX

Austin began implementing smart grid technology in 2003. In 2009 the local utility managed 500,000 smart meters, smart thermostats and other sensors serving 1 million consumers and 43,000 businesses. Pecan street project in Austin's Mueller neighborhood received 10.4 million in stimulus funding.

FortZED (Zero Energy District), Fort Collins, CO

The goal is to turn the downtown into a net zero energy district that generates as much thermal and electric power as it uses.

Sacramento, CA

The Municipal Utility District has smart Grid technology and 600,000 homes and businesses use smart meters. The work is projected to serve all homes and businesses by smart grid by mid-2011.

PowerCentsDC, Washington, D.C.

This smart meter pilot project served 900 customers. It became so popular that more than $45 million will go toward building it out.

Worcester, MA

$57 million Smart Grid pilot project involves 15,000 customers around New England using smart meters, programmable thermostats, and E-billion for power bills.