



Big Horn County, Montana

Energy Conservation Plan

A commitment to ensure that energy and resource efficiency are explicitly considered, examined and executed throughout all Big Horn County facilities, regarding energy conservation.

Contents

Executive Summary.....	3
Energy Conservation Profile.....	4
Governors Initiative	6
Energy Conservation Education and Support	10
Big Horn County Government Commitment	13
Interrelationship of Energy Conservation to Big Horn County	14
Big Horn County and Energy	15
Big Horn County Facilities	16
Introduction Summary on Energy Conservation Plan and Intent	17
Energy Conservation Action Plan Overview.....	19
Program Goals and Objectives.....	20
Key Objectives.....	20
ECP Conservation Measures	23
Immediate Conservation Measures.....	23
Short-term Conservation Measures	25
Long-term Conservation Measures.....	26
Conservation Plan Points of Consideration	27
Implementation	29
Energy Conservation Coordination, Management and Engagement	30
Funding	31
Closing Notes	34



EXECUTIVE SUMMARY

The availability of energy resources is important to residents, businesses, developers, institutions, industries and all levels of government. Energy heats and cools our indoor environments, fuels our vehicles and powers multitudes of computer equipment, appliances and other equipment. Energy is critical to all aspects of our lifestyles and, as continuing technology advancements are made, our reliance on energy resources increases.

Due to the increasing concern for the limits and environmental impacts of non-renewable resources, as well as interest in energy alternatives, an Energy Conservation Plan (ECP) was determined to be a necessary element to the Big Horn County long-term comprehensive plan.

The purpose of the Big Horn County ECP is to introduce cost-effective, energy-efficient technologies into Big Horn County facilities and promote an energy conscious culture that encourages prudent decisions with regard to energy consumption. In the bigger picture, the reduction in total energy demand will result across all Big Horn County government operations, positively addressing escalating utility usage and costs. This measure can help hedge against higher energy costs each budget year. Energy conservation is the key element of this plan because of its potential to reduce overall energy demand, costs and consumption.

Recommendations and guidelines from the Big Horn County ECP are intended to ensure that energy and resource efficiency are explicitly considered, examined and executed throughout all Big Horn County facilities, regarding energy conservation. This plan establishes and dictates guidelines for cost-efficient and sustainable resource consumption within all Big Horn County facilities, while allowing the Big Horn County Commissioners the opportunity to coordinate and manage the implementation and execution of the policy. The majority of this information and analysis is described under the short-term and long-term activities that could be implemented to reduce energy consumption and reduce costs.

Although it is not discussed in detail in this plan, there is a positive impact to the environment when energy saving activities occur. Using a variety of sources, this plan will provide general energy efficiency techniques and methodologies that could be reasonably implemented in day to day functions within Big Horn County facilities that will have an immediate effect on energy savings and costs. This plan is not a static document and may be modified in the future to reflect emerging "best management practices" in energy conservation and energy management strategies and initiatives.

Energy conservation can also play an important role in addressing climate change by lowering overall greenhouse gas emissions. It is often the most economical strategy to advance climate protection efforts and provides an environmentally safe alternative to increased energy production and consumption.


John Pretty On Top
Chair


Chad Fenner
Member


Sidney Fitzpatrick
Member

Energy Conservation Profile

A detailed profile of energy sources, uses and conservation practices was compiled prior to the development of the ECP. Key findings from this analysis include:

- Modern society is reliant on energy for commercial, industrial and residential uses and for travel and transportation among these uses. Energy is required for the construction and operation of most of the modern built facilities in both the public and private sectors. The vast majority of transportation modes used today are motorized and powered by gasoline or other fuels. As the technology in all aspects of our lifestyles increase, so too does our demand and reliance on energy resources.
- Sources of energy used in modern commercial, industrial and residential uses include:
 - Renewable sources (solar, geothermal, wind, wood, etc.)
 - Non-renewable sources (coal, propane, etc.)
 - Hybrid fuel sources (biodiesel, ethanol, etc.)
- Montana is home to more than a quarter of the country's estimated recoverable coal reserves, as well as large deposits of oil and natural gas. Montana provides about 4 percent of the nation's coal production and exports to more than 15 states.
- Montana has low electricity prices as compared to the national average (25 percent lower) and relies on coal for almost 60 percent of its electricity production. However, the price of electricity in Montana has grown steadily over the past 50 years with dramatic increases in the 1970s and early 1980s. Gasoline and diesel fuel prices have increased dramatically since 2000.
- The selection of an energy source for a particular use depends on what types of energy is needed and what sources are available.
- Energy use and rates of consumption for any individual site or operation are influenced by a number of factors: site design, building size and materials, operational costs of equipment and transportation needs.
- The cost of energy impacts both public and private sectors. Residents pay energy bills for home heating, electricity and fuel costs for travel. Businesses and industries, including farming and ranching operations, pay the equipment costs of processing and production and transportation costs to import supplies and export products and services. Business facilities and community institutions pay for facility heating, cooling and electricity.
- Consumption of gasoline has decreased over the last four years while the consumption of diesel fuel has increased. Montana ranks 18th in the nation for per capita consumption of gasoline (as of 2005). However, geography and location affects state energy consumption for transportation. Traditional wisdom indicates that larger and rural states consume more gasoline for transportation than smaller and urban states.
- Alternative fuels represent one of the best ways to reduce petroleum imports for transportation fuels. Alternative fuels include biodiesel, electricity, ethanol, hydrogen,

natural gas and propane. As of 2007, Montana had only 4 biodiesel stations located throughout the state and 36 alternative fuel stations of all types, ranking 11th among the nation.

- There are several programs available to residents and businesses in making smart energy and cost savings choices. By using programs such as Energy Star and associated guidelines, homeowners and business owners can become more energy efficient, thus reducing long term operating costs and making household and business energy costs more affordable.

Governors Initiative

In June 2009, Governor Brian Schweitzer announced and introduced statewide energy efficiency goals designed to save taxpayers money and reduce the carbon footprint within the State. The Governor's initiative targets energy consumption reductions by 15% statewide, by the year 2015. The primary goals of the Energy Efficiency Conservation Block Grant (EECBG) program are to reduce energy consumption in local government buildings, facilities and operations, increase the use of renewable energy resources when it is cost effective or particularly advantageous to do so, encourage local governments to provide innovative community-specific solutions that reduce energy in public transportation, residential or commercial energy sectors. These goals will help to create and retain jobs, prioritize conservation first and maximize EECBG benefits across all of Montana.

The primary energy concern of the Schweitzer-Bohlinger administration is to secure a long-term, sustainable, reliable and affordable energy future for Montana citizens and businesses, and to secure economic growth from energy development in targeted areas of the state. In addition, Montana has an obligation to the nation to help secure energy independence.

With significant inventory of energy sources, Montana can play a leadership role in reducing the nation's reliance on foreign oil that often comes from unfriendly political regimes around the world. Proper development of Montana's existing and new diversified energy resources can also provide the electric power, gas and liquid fuels needed to drive economic growth in our state and nation.

The intent is not to "build a fence around Montana," nor accept the mentality of "rip and run" rapid developments of the past. Montanans know that we can have good quality jobs, a clean and healthful Montana, and fulfill our national obligations. Proper energy development, following the principals outlined in the Schweitzer Energy Policy, can provide solid economic development with quality job creation and energy security and affordability all while protecting and maintaining the Montana quality way of life.

The initiative is comprised of seven phases to meet the targeted 2015 goal. The following represents the Governors initiatives:

Phase 1: Develop grant application criteria and materials for grants to local governments and notify local governments of grant opportunities within 60 days of the award from the Department of Energy.

Phase 2: Review grant applications and select grantees within 60 days of grant applications received by DEQ.

Phase 3: Award grants and negotiate terms and expected grant outcomes within 60 days of grantee selection.

Phase 4: Monitor grants to ensure work products are being completed in a timely manner and to provide maximum benefit throughout grant period.

Phase 5: Provide grantees and all other local governments with access to an electronic data base to gather historic energy use and monitor energy use in buildings and facilities throughout grant period.

Phase 6: Provide technical assistance and training to local governments beginning 6 months after grant awards.

Phase 7: Complete EECBG implementation within 36 months.

The Schweitzer Energy policy is built upon these important premises:

- Montana has more potential for energy development from existing and untapped diversified sources than any state in the nation.
- Because of existing energy development and energy development potential, Montana can play a major role in reducing the nation's reliance on foreign oil.
- When done properly, energy development, including value adding, can create the high-quality, good-paying jobs essential for a strong economy.
- The locations of much of the energy development will stimulate economic growth in areas of Montana that have long suffered economic hardship.
- Montana citizens want energy development that primarily focuses on renewable energy sources and clean energy technologies that are compatible with the quality of life found in Montana.
- New market demands for clean energy and newly developed technologies make possible energy development compatible with Montana's quality of life and consistent with our Constitutional right to a "clean and healthful environment."
- While energy development must include development for export to external markets, Montana citizens want it done in a manner that provides for sustainable, affordable energy for Montana's businesses, industries and families.
- Through state and local tax revenues, proper energy development can help provide for education and other important governmental services, in addition to jobs and growth.
- While state government and its elected officials cannot dictate private market investment in Montana, they can play a central catalytic role in attracting needed energy development capital.

Energy Policy Themes

The following themes from the Schweitzer Energy policy constitute the framework of an energy policy that contributes to the nation's needs while helping all Montanans by promoting:

Diversified Energy Development

Montana is blessed with abundant energy resources. In addition to our great rivers and streams, we have the nation's largest reserves of coal and some of its best wind resources. Our farms, ranches and forests can support a strong bio-fuels industry. We have abundant oil, natural gas and coal bed methane opportunities. Montana needs to enhance existing and create new diversified energy development from these resources, compatible with our existing quality of life.

Renewable Energy Development

In addition to being renewable, wind generation, biomass, and biodiesel reduce or eliminate carbon dioxide and other pollutants common to conventional energy projects. Developing these resources will play a vital role in helping the nation meet the target of 25% renewable energy by the year 2025. Our agricultural and other resource strengths

mandate that the State of Montana aggressively promote the development of wind generation, ethanol, biodiesel, biomass and other renewable forms of energy.

Cleaner Energy Development

The move toward clean energy is both market-driven and socially responsible. California, as one of the largest energy markets, has already set standards requiring that electricity delivered to its borders minimizes greenhouse gas emissions and includes a green power mix. Concern over climate change continues to grow and Montanans demand the high quality of life we now enjoy including a "clean and healthful environment." Therefore, state government will focus substantial efforts and resources on promoting energy development projects that meet the rising national demand for cleaner energy.

Development with Clean Coal Technologies

Clean coal technologies such as gasification, oxyfuel combustion, and post combustion carbon capture allow more of the pollutants and greenhouse gases associated with conventional coal technologies to be captured and disposed. In particular, the carbon dioxide capturing that is inherent in these processes allows sequestration of the CO₂, including methods that give the double benefit of enhanced oil recovery. The state will focus energy development of coal, including state-owned coal, on CTL plants, IGCC electrical power plants, and other clean coal technologies.

Value-adding Energy Development

Historically Montana has been a commodity exporting state. In agriculture, forest products and mining, the economic benefits of value-adding, and many quality jobs, have gone mostly out-of-state as a low-level commodity. The state of Montana will commit itself to adopting policies and practices that emphasize more value-adding in the energy field, whether the initial source is bio-based or carbon-based.

Energy Efficiency and Conservation

Energy efficiency and conservation are the best homegrown defense against high-energy prices and produce the quickest results. Energy efficient houses keep us warmer while saving money, especially for those who are forced to choose between food and medicine or heat. Energy efficient cars make citizens less subject to the supply disruptions associated with hurricanes and international politics, and an energy efficient state has less need for costly environmental cleanups. State government will focus resources on energy efficiency and conservation, through both direct assistance to Montana's lower income families and support of industries, businesses, and practices that promote energy efficiency.

Energy Availability and Affordability

Montana has suffered from the effects of electricity deregulation in the past decade. If that market can't be policed adequately and provide affordable energy for Montanans, we will consider creative ways to re-integrate Montana's electrical energy generation, transmission and distribution and the possible re-regulating of prices. We need to seek ways to ensure that adequate amounts of the electric energy produced at the lowest cost in this state are reserved for Montana's businesses, industries and families.

Adherence to Environmental Laws and Community Acceptance

Energy development in Montana will be expected to follow our environmental laws and respect our communities. We support the expansion of existing activities that already meet environmental standards. Looking ahead, the use of public resources to promote new energy projects will follow a high standard, concentrating on the cleanest projects proposed by industry and those that find community acceptance.

Supportive Infrastructure Development

The transmission lines, pipelines, railroads and highways needed to move various energy products to market are vital if Montana is to compete in regional and global markets. We will commit state efforts to strengthening our energy delivery links internally and to the rest of the world.

Energy Conservation Education and Support

Energy Star

ENERGY STAR is a joint program of the U.S. Environmental Protection Agency (EPA) and the U.S. Department of Energy helping many save money and protect the environment through energy efficient products and practices. Americans, with the help of ENERGY STAR, saved enough energy in 2010 alone to avoid greenhouse gas emissions equivalent to those from 33 million cars — all while saving nearly \$18 billion on their utility bills.

EPA offers a proven strategy for superior energy management with tools and resources to help each step of the way. Based on the successful practices of ENERGY STAR partners, these guidelines for energy management can assist your organization in improving its energy and financial performance while distinguishing your organization as an environmental leader.

International Energy Agency (IEA)

Energy efficiency offers a powerful and cost-effective tool for achieving a sustainable energy future. Improvements in energy efficiency can reduce the need for investment in energy infrastructure, cut fuel costs, increase competitiveness and improve consumer welfare. Environmental benefits can also be achieved by the reduction of greenhouse gases emissions and local air pollution. Energy security can also profit from improved energy efficiency by decreasing the reliance on imported fossil fuels. For these reasons, energy efficiency is one of six broad focus areas of IEA's G8 Gleneagles Program. The IEA has submitted 25 policy recommendations to the G8 for promoting energy efficiency that could reduce global CO2 emissions by 8.2 gigatons by 2030.

The IEA promotes energy efficiency policy and technology in buildings, appliances, transport and industry, as well as end-use applications such as lighting. Their analysis identifies best-practice, highlighting the possibilities for energy efficiency improvements and policy approaches to realize the full potential of energy efficiency for Member countries.

Montana Department of Environmental Quality (DEQ)

DEQ provides information for citizens, businesses and government on a variety of energy topics. This includes conservation, renewable energy, production of energy in Montana, publications, events and contacts at DEQ. The website also contains statistics on historical energy usage, energy production and consumption. Another important feature are links to other websites and information.

Montana Energy Corps

The Montana Energy Corps AmeriCorps project is an initiative of the National Center for Appropriate Technology (NCAT) in cooperation with The Corporation for National and Community Service that was created to address unmet community energy needs by promoting sustainable energy consumption and education, fostering community sustainability and helping to mitigate the effects of global climate change.

Montana Environmental Information Center (MEIC)

MEIC works to educate citizens about reducing their own energy usage, lobbies the legislature to make conservation part of Montana's energy policy, supports energy efficiency in new building construction (such as the LEED green building rating program), and encourages increased investment in appropriate energy saving measures and technologies.

Montana's Energy Future

Montana's vibrant energy industry has helped the state avoid much of the economic downturn; however, there remains a lack of consensus about what it means to have an economically stable and sustainable energy future. Montana's Energy Future Summit brings together diverse national, regional and local perspectives on the challenges and opportunities facing Montana.

Montana's Restoration Program

The mission of Montana's Restoration Program is to work cooperatively to restore the natural environment, provide restoration education and employment opportunities, and create economic growth without environmental degradation.

The Montana Restoration Program envisions a future where Montanans are employed to restore degraded land and water to healthy ecosystems with self-sustaining ecological structure and function. Success will be measured by the acreage of lands and waterways restored; by the number of Montanans employed in restoration occupations; by the availability of restoration education and training opportunities for Montana's students, professionals, and work force; by the increased awareness of the benefits of a restoration economy; and by the sustained growth of available restoration funding.

National Center for Appropriate Technology (NCAT)

NCAT is a 501 (c)(3) nonprofit organization that aims to improve the lives of economically disadvantaged people by helping individuals and communities adopt technologies that save energy+ and resources. Since 1976 NCAT has been serving economically disadvantaged people by providing information and access to appropriate technologies that can help improve their lives. During the organization's rich and varied history, NCAT projects have ranged from low-tech to high-tech, addressing complex issues of housing, economics, and environmental quality. Weatherizing houses, training farmers, monitoring energy use, demonstrating renewable energy technology, testing new products and providing information on building construction are just a few of the many ways that NCAT has contributed to fostering healthy quality of life for everyone.

NorthWestern Energy

NorthWestern Energy is a small-cap company serving approximately 665,000 customers in Montana, Nebraska and South Dakota. Compared nationally, NorthWestern is a relatively small, entirely regulated utility. NorthWestern provides electric services to over 335,000

customers in 187 communities and gas services to over 180,000 customers in 105 communities. They also serve 15 rural electric cooperatives and serve smaller distribution companies that provide gas service to approximately 31,000 customers. NorthWestern offers energy efficiency programs, rebates and incentives for energy efficiency, commercial energy appraisals and renewable activities through participation in the Universal System Benefits and E+ programs.

PPL Montana

PPL Montana, headquartered in Billings, generates electricity at its coal-fired and hydroelectric power plants around the state.

In Montana's electricity market, deregulated since 1997, PPL Montana is solely a generator of electricity. The electricity produced is sold by a marketing operation in Butte — PPL EnergyPlus — to wholesale customers such as NorthWestern Energy, to large industrial customers and to electricity cooperatives.

Energy is PPL's "core competency." Today, with all the energy choices and options facing us, it is more important than ever that students and teachers are accurately informed about energy needs, energy realities, energy alternatives, energy conservation and energy-producing industries. Of critical importance to PPL is reaching educators to provide them with the knowledge, resources and confidence to address critical energy issues.

Big Horn County Government Commitment

The ECP for Big Horn County draws upon leadership provided by local government officials and staff and agency officials with Montana Department of Environmental Quality. The Big Horn County Commissioners will work collaboratively with Big Horn County facility managers, directors and administrators in developing and instituting energy guidelines and goals, and will work to disseminate information pertaining to energy conservation and the environment through implementation and management of the Big Horn County ECP. Preferences expressed by local residents will also be considered.

The Big Horn County Commission will host annual meetings specific to all County staff to support this mission through educational awareness, as well as, the management of the ECP. Reducing energy consumption shall be a continuing priority with all County staff, and this message will be conveyed regularly to all employees through educational awareness programs and email updates provided by the Big Horn County Commission. The intent is to focus on balancing energy usage, to help reduce the carbon footprint, while managing Big Horn County budgetary concerns and costs. This mission shall be reviewed continuously so that all Big Horn County facilities goals can be attained.

Big Horn County facilities directors will be invited to attend annual meetings for the purpose of reviews and refinement of the Big Horn County ECP. Managers and directors will include:

- Ed Auker, Director, Big Horn County Disaster Emergency Services
- William Doyle, Undersheriff, Big Horn County Sheriff's Office
- Eric Halverson, Director, Big Horn County Public Library
- Bill Hodges, Foundation Director, Big Horn Hospital Association
- Joe Lovato, Public Works Director, Town of Lodge Grass
- Daniele O'Banion, Director, Big Horn County Ambulance
- Kathy Real Bird, Director, Little Bighorn Center
- Matt Redden, Superintendent, Big Horn County Roads Department
- Kasey Roan, Asst. Fire Chief, Big Horn County Rural Fire Department
- Diana Scheidt, Executive Director, Big Horn County Historical Museum
- Henry Speelman, Mayor, Town of Lodge Grass
- Craig Taft, Sanitarian, Big Horn County
- Sandy Watts, Superintendent, Big Horn County Schools

Working together as one, while increasing staff awareness on energy policies and plans, overall usage and costs, will positively assist in reducing energy consumption and assist in improving the environment, while reducing utility costs.

Interrelationship of Energy Conservation to Big Horn County

Land Use and Transportation – The amount and type of energy used to move people and goods in a community is determined in part by patterns of development and the transportation system. The spatial relationships of individual buildings, neighborhoods, communities and regions determine how far and by what means people find it convenient to travel to work, recreational facilities, schools, religious centers, stores and entertainment venues and will send and receive their supplies and products. Zoning practices from the mid- to late 20th century increasingly separated residential neighborhoods from other destinations, resulting in increased vehicular travel and more expansive public infrastructure. Land use policies that promote a mix of compatible uses and transportation policies that promote multi-modal travel options, can reduce the energy demands of residents, businesses, industries and community facilities and services.

Community Facilities and Services – The location and design of various community facilities and services has an impact on energy use. Promoting the location of schools and recreational facilities, religious centers and other community facilities near residential neighborhoods encourages people to walk or bike to these destinations. Compact forms of development also limit the distance that public safety and emergency personnel have to travel to reach someone in need. Additionally, the condition of water and sewer infrastructure also influences energy demand for these utilities. Inefficiencies in treatment equipment and transmission lines can lead to higher operational costs for authorities, companies and, ultimately, consumers.

Housing – The location and design of housing can contribute to the amount of energy that is required for home heating and general operation. Homes sited or screened for winter winds and shaded from summer sun tend to reduce energy costs for seasonal heating and cooling. Detached and single story homes tend to use more energy than attached and multi-story homes. Building design and construction materials also contribute to energy efficiency. Buildings that are oriented to the south will absorb more thermal energy and be warmer in the winter because of the angle of the sun.

Big Horn County and Energy

Big Horn County is bounded by the Big Horn and Pryor Mountains to the south and the Wolf and Rosebud Mountains to the east. Located in south eastern Montana, the County has a year-round population estimated by the U.S. Census Bureau in 2009 at 13,015. The population density is estimated at 2 persons per square mile, compared to 6.2 persons per square mile for the State of Montana and an average density of 86.2 for the entire United States.

A rural area, Big Horn County encompasses 3,198,200 acres and includes most of the area of the Crow Indian Reservation and less than half of the area of the Northern Cheyenne Indian Reservation. Municipalities located in Big Horn County include the City of Hardin, the Town of Lodge Grass and the communities of Aberdeen, Busby, Crow Agency, Decker, Fort Smith, Garryowen, Pryor, St. Xavier and Wyola.

Mineral resources in Big Horn County include coal, natural gas (including coalbed methane gas), oil and sand, gravel and bentonite deposits. Reserves of high quality, accessible coal are estimated to exceed 11 billion tons. The County has nine oil and gas fields and the largest identified reserves of coalbed methane gas in the State of Montana.

Big Horn County's primary use of energy is electricity provided by two suppliers: NorthWestern Energy (NWE) in much of the County and Montana Dakota Utilities (MDU) in the southern portions of the County. Other electric cooperatives serving Big Horn County include Big Horn County Electric Cooperative, Tongue River Electric Cooperative and Yellowstone Valley Electric Cooperative.

NWE and MDU provide natural gas services throughout Big Horn County; and, multiple Billings and Hardin area suppliers provide propane to residents and businesses, reflecting another highly used resource for heating.

The Montana Climate Change Advisory Committee developed an inventory and forecast of greenhouse gas emissions in Montana and presented Governor Schweitzer with the Montana Climate Change Action Plan. This plan establishes a goal of reducing greenhouse gas emissions in 2020 by 20 percent relative to emissions in 2005. Local government actions taken to assist meeting this goal can provide multiple local benefits, including decreasing air pollution, creating jobs, extending landfill life, and reducing energy expenditures for the county, its businesses and its citizens.

Big Horn County Facilities

Big Horn County owns multiple community buildings and facilities, with managers, directors, superintendents and/or supervisors providing oversight to each facility.

Decker, Montana:

- Road Department Facilities – Matt Redden, Superintendent

Hardin, Montana:

- Ambulance Facility – Daniele O'Banion, Director
- Courthouse – County Commissioners
- Fairgrounds
- Library – Eric Halverson, Director
- Little Bighorn Center – Kathy Real Bird, Director
- Museum – Diana Scheidt, Executive Director
- Roads Department Facilities – Matt Redden, Supervisor

Lodge Grass, Montana

- Road Department Facilities – Matt Redden, Supervisor
- Senior Center

Introduction Summary on Energy Conservation Plan and Intent

Big Horn County Commissioners and Big Horn County facility managers, directors and administrators have developed a history of proactively addressing the energy efficiency of all Big Horn County facilities. Prior to the Governors development of a statewide Energy Policy, with directive being focused on reduction of energy consumption, the County Commissioners have provided funding within each budget year to help promote, and assist Big Horn County facilities with concerted efforts of improving and retrofitting existing buildings with energy efficient products. Within Big Horn County, facilities built and or renovated within the last five years have incorporated energy efficient and sustainable building techniques in their construction.

In conjunction with this plan, Big Horn County, with advisory representation from the majority of Big Horn County agencies, will implement goals, promote strategies and convey the importance and significance of energy conservation within their individual facilities, to their peers.

To determine what types of energy efficient measures will be implemented, Big Horn County must first assess the current energy consumption of all Big Horn County owned and leased facilities. This will be accomplished through physical facility and equipment audits, energy consumption reports, benchmarking and on-going evaluations which will be performed by Big Horn County staff. Additionally future plans are to incorporate opportunities that will further promote energy conservation within Big Horn County facilities, including a website “Energy” component, educational awareness to Big Horn County staff and community members and educational brochures and pamphlets for visitors to Big Horn County facilities. To date, the Big Horn County Courthouse received energy efficiency retrofits through funding from a Montana DEQ EECBG grant. In addition to the Courthouse, the Big Horn County Hospital and Heritage Acres Nursing Home received retrofits. Total grant funding for these projects totaled \$225,000 with an expected energy savings payback at less than six years.

Implementation of energy efficiency and conservation measures in Big Horn County’s daily operations is essential for reducing energy consumption, as well as costs, which can conceivably redirect savings to potentially fund energy programs, future energy upgrades or funding to meet other Big Horn County needs. This plan demonstrates examples of energy efficient measures that can be applied against areas such as lighting upgrades and retrofits, temperature control, infrastructure purchasing and/or procurement, renewable energy and alternative fuels.

Big Horn County employee awareness is the most fundamental part of the ECP. Educating employees about the need for energy conservation, while additionally promoting behavioral modifications of staff, both coupled with energy measures within facilities, can all systematically make a difference regarding Big Horn County facilities becoming more energy efficient, with reduction in costs.

The efforts put forth in preparing this plan are uniform with many other county agencies, from local, state and national perspectives, regarding energy conservation programs. The

ECP and its content is not intended to reduce basic necessities, such as lighting, heat, air conditioning, safety or overall day to day operational characteristics required as necessities by Big Horn County employees in meeting performance standards of their daily activities within Big Horn County facilities. It is intended to promote and/or provide solutions to perform Big Horn County required services, in the most cost effective and energy efficient manner regarding energy conservation.

The energy efficient measures described in this Plan are potential and proven methods and measures that could reduce energy consumption and costs. Energy efficiency measures that are not included in this Plan are encouraged to be presented for review and potential future implementation in ECP updates.

Energy Conservation Action Plan Overview

This ECP was developed in an effort to reduce and manage energy costs within Big Horn County facility buildings. The Big Horn County Commission will be responsible for monitoring utility usage and implementing and instituting the improvements and procedures necessary to produce energy savings, cost avoidance and reduction of unnecessary utility resources usage. The acknowledgment and personal acceptance of this program regarding each Big Horn County employee and their individual ability to adhere to the ECP recommendations, policies and procedures, and most important - adapting to the ECP through “behavioral modification” aspects - could be the most important factor contributing to the success of the program.

Within the ECP, five major utility cost contributors have been identified that must continuously be monitored and conserved: electric, fuel oil, natural gas, propane and water/wastewater. Over the course of the last five years, the budget for these utilities has continued to escalate due to rate increases, and uncontrolled, increased usage. With increases in rates and the development of new technologies that better support energy conservation, the Big Horn County Commission will continue to research and explore all options to control our utilities budget.

The effective management of energy is based on three basic principles:

- 1) Changing the philosophy about energy usage;
- 2) Initiating changes within the Big Horn County facilities environment; and,
- 3) Promoting educational awareness for energy conservation success.

With planning, implementation, education, and targeted spending, Big Horn County energy conservation goals can be reached.

Program Goals and Objectives

The ECP identifies a variety of actions for Big Horn County and its partners to undertake of to support in order to encourage energy conservation throughout community development and community life. They promote awareness for energy alternatives, encourage the use of conservation practices and recommend model provisions for the siting and operation of energy production facilities.

Big Horn County has been recognized for its recent implementation of modern energy procedures and policies. The County strives to reduce energy demand and achieve energy efficiency in the design, maintenance and operation of public facilities. In the private sector, it promotes alternatives to conventional subdivision and land development that reduce energy demands for heating and cooling.

The vast majority of money spent on energy related bills immediately leaves the local economy. Finding ways for each household, business and government entity to spend less on energy means a significant amount of funds can be used on other priorities, generating economic benefits. Clean energy also represents one of the few opportunities for new growth in a stagnant economy and can be a significant source of local jobs.

Energy conservation, energy efficiency and renewable energy strategies generally produce the same kinds of economic benefits, and while the return on investment varies, all ECP strategies can produce long-term economic benefits for Big Horn County.

Key Objectives

- Facility lighting accounts for approximately 1/3 of facilities electrical energy use, or, 25-40% of overall electricity costs. It is estimated that 8-20% of these lighting costs can be reduced by turning off lights when not in use or retrofitting existing light fixtures with occupancy sensors. Within the past eighteen months, lighting retrofits have been made to the Big Horn County Courthouse, the Big Horn County Hospital and the Big Horn County Heritage Acres Nursing Home.

Big Horn County savings with this recommended method could result in estimated savings between \$20-\$40 thousand dollars annually. Big Horn County savings are relative to utility costs only as these dollar estimates do not factor in actual cost of replacement bulbs based on extended life cycles, or facilities maintenance man hours.

- De-lamping offers Big Horn County and its facilities the opportunity to conserve energy by simply removing one or more lamps from multiple lamp fixtures. Based on National industry lighting calculations, each 36 watt fluorescent tube removed could achieve savings of approximately \$8.00 dollars per year, based on typical usage of 40 hours per week. Big Horn County energy savings through de-lamping processes could result in energy reductions and major cost savings.

De-lamping is effectively free with major reduction in energy costs, and actually provides spare lamps that can be returned to Big Horn County inventory for future

usage, further reducing operational impact of purchasing lamp replacement costs. If 250 fixtures were de-lamped throughout the Big Horn County, an estimated \$2,000 dollars could be saved annually.

- Electrical loads for employee plug in convenience items commonly referred to as “Vampire or Phantom Loads” account for 20 to 25% of a facility’s total energy use within office spaces, or valued per employee at approximately \$100 dollars per employee annually. The referenced devices include cell phone chargers, VCRs, radios with LED readouts, televisions, coffee pots and microwaves with LED readouts, IPODs, room air fresheners, etc.

Reduction of Phantom Loads by 10% within Big Horn County office spaces could result in approximated savings to the Big Horn County between \$1,000 - \$2,000 dollars per year. This could then be multiplied by the number of larger employee based Big Horn County facilities, creating even greater savings county-wide.

- Big Horn County personal computers account for the majority of Big Horn County facilities electrical plug loads within office spaces. Approximately \$200 per PC per year can be saved with computers being turned off completely, to include hours when not in use.

Implementation by turning off computers and monitors by all Big Horn County personal computer users could result in savings back to the Big Horn County of approximately \$2,500 to \$3,500 per year. This estimate is based on approximately 75 computers within Big Horn County multiplied by typical savings of \$40 dollars per personal computer per year.

- Within Big Horn County facilities, heating and cooling represents 30% to 50% of total energy costs. All buildings, including facilities when in heating mode that utilize natural gas, propane or fuel oil, still require supplemental electricity resources. Industry recommendations through analysis indicate that raising or lowering thermostats “one degree” can result in energy savings of 6% for facilities that use electricity as the primary energy source, and up to 4% for facilities that utilize fuel or heating oil.

Estimated savings to Big Horn County could result in \$5,000 to \$7,500 annually, based on number of overall facilities.

- Facility refrigerated vending drink and snack machines operating annually, based on 24 hours per day, seven days a week, 365 days per year, are reported to consume approximately between 2500-4500 kilowatt hours(kwh) of energy per year. These machines additionally assist in adding supplemental heat loads to facility within the spaces they occupy. The calculated annual operating costs can range between \$200 - \$400 dollars annually, based on the present Big Horn County vending contract, which represents a total of 24 machines. The recommended method in achieving total energy savings relative to vending machines is to jointly work with the vendor during contract renewal to mandate installation of “Vending Misers”. This method is recognized nationally by major vendors such as Pepsi and Lance vending, and would achieve energy percentage savings at 31%.

Each of these recommendations could assist in Big Horn County vending machine energy savings with net savings of the following:

Vending Misers energy percentage of savings @ 31 percent of \$400.00 dollars=
\$124.00 x 24 machines= \$2,976.00 dollars annually

- Focus and emphasis on continued reduction of energy costs. During the FY-11 budget cycle, energy conservation retrofits and measures that were implemented prior to ECP development contributed to a 20% utility reduction.
- Continued development of energy efficiency strategies to provide stewardship of each participant's facility, in promoting energy conservation and reducing utility costs.
- Ongoing education of employees about the Big Horn County ECP. Involvement of staff is essential to develop and promote energy conservation techniques for all Big Horn County facilities.
- Installation of Energy Star Products for electrical and HVAC upgrades to reduce energy consumption.
- Application for grants to support and promote energy conservation in all facilities.
- Develop full and comprehensive procedures for purchasing Energy Star rated equipment.

ECP Conservation Measures

Immediate Measures which can be implemented through consistent procedural changes and daily behavioral habit modification;

Short Term Measures which can be implemented by all Big Horn County departments to reduce or limit energy usage and plan for energy conservation without on-going approvals and within existing budget constraints; and,

Long Term Measures which will extend beyond the current year and which may require funding sources.

Immediate Conservation Measures

- *Measures that will have the greatest effect on usage in most work environments*
 - Use the automatic setting on thermostats so the fan turns on only when heating or cooling is required. On the manual setting, the fan operates continuously and can increase energy usage.
 - Set the heating controls in between 65 to 68 degrees for winter settings, with a set back at night or when unoccupied to 60 to 65 degrees.
 - Cooling controls should be set between 72-74 degrees for summer settings.
 - Consider raising cooling settings and lowering heating settings on programmable thermostats for both occupied and unoccupied hours.
 - Heating and cooling should start no sooner than ½ hour before the work day begins.
 - Heating and cooling may be set back ½ hour before the work day ends.
 - Clean or replace filters regularly. Keep outside units free from leaves or debris that may clog vent.
 - Do not use personal space heaters as they are prohibited. These heaters use an inordinate amount of energy, can be a fire hazard and also work against the pre-settings of the thermostat.
 - In the winter, close window coverings at the end of the day to cut down on heat loss. In the summer, close window coverings during the day to avoid the heat gain of direct sunlight.
 - Turn off your computer monitor when you are away from your desk for more than 15 minutes and at the end of the day. Most monitors now come with power management features that should be activated. Note that screen savers don't save energy; complex screen savers actually increase energy use.
 - Eliminate unnecessary hot plates, coffeepots and other small appliances and turn off all tools, office machines and portable appliances when not in use. Make sure last one leaving at the end of the day turns off the photocopiers and other office equipment. Instead of having many coffee pots in various cubicles, select one to cover the whole office.
 - Turn off all lights at night, including task and office lights.
 - Use natural light whenever possible. Turn off lights near windows when daylight is adequate.
 - Turn off lights when they are not in use.

- *Measures that will be effective for some work environments:*
 - Watering landscape wastes electricity along with water. Make sure local watering guidelines are followed for proper landscape care especially during periods of sustained hot and dry weather.
 - Verify that the outside air dampers are closed during unoccupied hours, including during morning warm-up periods. Fresh air is critical while the building is occupied, but heating outside air when it is not needed increases energy costs.
 - Be sure motor-operated dampers are operating properly. Less frequently used equipment with remote controls such as televisions and VCRs should be unplugged when not in use because they still use some power even when turned off. Make sure photocells (light sensors that turn on electric lights after dark) are clean.
 - If occupancy sensors are not installed in certain rooms, turn off lights in unused common areas such as copy rooms, break rooms, conference rooms and rest rooms. The effect on lamp life and energy use when turning the lamp back on is negligible.
 - Don't set a higher temperature to "warm up faster," or a lower temperature to cool quickly.
 - Check to make sure that exhaust fans operate only during occupied periods unless required to operate continuously.
 - Check that dampers on exhaust fans close when the fan is not operating. Adjust fan belt tension.
 - Inspect control schedules and zones so that you heat only the occupied sections of the building.
 - If you only have electric space heating, stagger the start times to help reduce demand, especially during peak demand times.
 - Close off unoccupied areas and shut their heat or air conditioning vents; or turn off room air conditioners.
 - Sitting close to a window during the winter can make you feel cold. Close window coverings or move further from the window.
 - Try to schedule group activities in the area with the least energy use, and schedule evening meetings in areas that can be heated and cooled individually. This may include offering a work station for staff working after hours so they do not need to heat or cool half a floor or cubicles for one person on a weekend.
 - Make sure that air vent grills are not blocked by plants, books or furnishings.
 - Keep drafts away from thermostat to prevent an inaccurate reading.
 - Dust or vacuum radiator surfaces frequently to insure a free flow of heat.
 - Dressing wisely can help you maintain natural heat. Wear closely woven fabrics. They add at least a half-degree in warmth. For women, slacks are at least a degree warmer than skirts. For men and women a light long-sleeved sweater equals 2 degrees in added warmth. A heavy long sleeved sweater adds about 4 degrees and two light weight sweaters add about 5 degrees of warmth because the air between them serves as insulation to keep in more body heat. In cold weather, dress warmly and in layers that can be adjusted

for optimal comfort. Loosen clothing and dress casually during the warmest hours.

Short-term Conservation Measures

- Have vending machine owners turn off the advertising lighting in the machine. This will conserve energy and could save between \$50 and \$110 per year.
- Use photocells to automatically switch lights on at night or use motion sensors to increase safety. Photocells are controls that make lights “smart”. They sense whether available surrounding light is present to determine whether a light should be lit or not. The light turns on and off automatically.
- Use lower wattage bulbs in non-critical areas.
- A 50-watt reflector floodlight provides the same amount of light as a standard 100-watt bulb.
- Use one large bulb instead of several small bulbs that add up to higher wattage.
- Many areas have more lighting than is required for current tasks. Measure current lighting levels and reduce excess lighting by using power reducers, multi-level switching, or simple removal of lamps and ballasts. Note that some ballasts continue to use some energy even when lamps are not operating.
- Ask janitorial services to only light one area of the building at a time rather than having the entire building brightly lit until midnight.
- Ask janitorial services to take advantage of partial switching (such as turning on only one lamp of a three-lamp fixture that is wired to allow this) to further reduce energy use during building cleaning.
- Avoid using incandescent task light (desk lamps). Use compact fluorescent lamps to replace the incandescent lamps for task lighting.
- Stagger shifts or using flexible work schedules to empty offices during energy peaks.
- Teleconferencing, webinars and Skype can reduce energy use and save travel costs.
- Assess air drafts around electrical outlets. Inexpensive pads are available, as are plugs for unused sockets.
- Verify that the building control system is going into the night setback mode during unoccupied hours. Time clocks may require adjustments after daylight savings switchovers or after power outages. Even computer control systems may need updating after equipment modifications.
- Confirm that economizers are functioning properly to take advantage of free cooling.
- Most office buildings are in cooling mode when the outside air temperature is above 55 degrees F. The core of buildings over 20,000 square feet are almost always in cooling, even during the winter months.
- Keep systems well tuned with periodic maintenance. At least once a year, measure the carbon dioxide in your gas burner.
- Make sure simultaneous heating and cooling does not occur. Verify proper operation of valves, dampers and controls.
- For commercial and industrial applications, monitor stack temperatures on fossil fuel boilers. If the stack temperature is more than 400 degrees above the boiler room temperature, schedule the boiler for a tune-up.
- Turn off circulation pumps during unoccupied times if no freeze conditions exist.

- Make sure that air handling unit filters are changed every 2 - 3 months, and that coils on the outdoor condensing unit and indoor heating and cooling units are kept clean.
- Check control sequencing for multiple chillers and boilers. For light load operation, use the smallest and most efficient chiller or boiler available and avoid frequent equipment cycling.
- Check the duct work for air leaks about once a year if you have a forced-air heating system. To do this, feel around the duct joints for escaping air when the fan is on. Small leaks can be repaired with duct tape. Larger leaks may require caulking.

Long-term Conservation Measures

- Perform energy audits on all buildings.
- Incorporate energy efficiency guidelines for all new construction.
- Incorporate energy efficiency guidelines for all building retrofits.
- Purchase only “Energy Star” equipment and appliances.
- Utilize performance contracting to limit economic impact on building retrofits.
- Retrofit most energy inefficient buildings first.
- Replace T-12 bulbs with T-8 bulbs.
- Replace all magnetic ballasts in fluorescent light fixtures with electronic ballasts.
- Where possible, replace all manual switches with automatic occupancy sensors.
- Replace inefficient windows, install window films and insulate buildings.
- Water conservation including low flow faucets, low flow toilets and an evaluation of hand drying methods should be evaluated in the same contexts as electricity.
- Develop landscaping plans that do not require the large amounts of water consumption.
- Install variable speed drives on air handlers.
- A central heating and cooling system will use less energy than individual heat-cool units for most work environments.
- Utilize high efficiency motors on electrical equipment.
- Evaluate state processes to eliminate or reduce energy resources needed for the process such as eliminating or reducing the forms needed to get permission for an activity, simplify approval chains or modify reporting requirements, etc.

Conservation Plan Points of Consideration

- Optimizing energy conservation and energy management supports enhanced environmental stewardship by Big Horn County Commissioners and staff in promoting energy efficiency, reduction thereof in utility costs, and most importantly, cost avoidance regarding budgetary requests in management and operations of Big Horn County facilities and buildings.
- The efficient and conscientious use of energy by Big Horn County employees is essential to modeling good citizenship, accountability and service.
- Big Horn County government has a responsibility to be a leader in workplace resource efficiency.
- The combustion of fossil fuels - through electricity generation and heating plants - results in carbon dioxide emissions. Increased concentrations of carbon dioxide in the atmosphere contribute to the greenhouse effect and global climate change, both locally and nationally. A reduction in energy consumption by Big Horn County employees will assist in promoting the reduction of greenhouse gas emissions attributable to Big Horn County facility operations.
- As energy costs continue to increase, energy conservation measures provide cost avoidance and cost savings back to Big Horn County budgets.
- To effectively address energy conservation by a county government entity, both operational efficiency aspects and employee usage patterns must be evaluated and considered.
- An energy plan is the single most important part of an effective energy program.
- Without a plan, County staff can only react to a given situation. An energy plan allows County individuals to be proactive in management of County facilities and resources.
- Recognize the energy demand and environmental impact associated with the County's operation and management of facilities necessary to provide services to Big Horn County staff and county residents.
- Establish efficient energy management within County government operations as a fundamental operational objective, with special emphasis on assuring all County staff are educated in conservation measures, as well in adherence of plan.
- Implement, where practicable, energy efficiency measures through a variety of mechanisms such as life cycle analysis and energy performance contracting.
- Support and promote verification and commissioning of fundamental building systems to ensure they are designed, constructed, installed, calibrated, and operating as intended, in order to achieve exemplary energy performance goals;
- Directionally advocate for adherence of voluntary green construction and remodeling standards for buildings where appropriate, such as ENERGY STAR, and encourage various nationally supported and resource efficient standards, such as the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED), for building excellence when appropriate and/or life cycle cost effective.
- Encourage the tracking, promotion, of sustainable and energy efficient practices;

- Encourage the adoption of environmentally preferable purchasing policies for products, and service, and suggest that contractors and suppliers commit to similar energy efficiency and sustainability standards.
- Encourage the expansion of renewable energy use and other distributed generation technologies throughout the County's facilities and activities.
- Provide County personnel with proper training and education in implementing this policy, as well serve as an educational and informational resource in energy efficient practices within the workplace and foster a sense of personal responsibility.
- Recognize and award individual and collective efforts that contribute to the County's energy resource conservation policy goals achieved at the employee level and or by Departments.
- Support continuous energy performance improvements by funding new efficiency measures with funds derived from utility savings.

Implementation

This ECP is supported by guidelines and procedures that institute and promote measurable energy reduction goals. These guidelines and procedures through policy are a structured approach to realize and achieve these goals through a combination of energy conservation upgrades, enhanced operational efficiencies and employee behavioral modification changes and/or actions. It allows for a considerable reduction in overall energy consumption without the use of capital funding. The ECP and its content is not a static document and may be modified in the future to reflect emerging “best management practices” in energy conservation and energy management strategies and initiatives.

The policy and guidelines initiative also supports objectives that result in healthier buildings and enhanced worker comfort, both of which can contribute to greater workplace productivity.

Reducing energy consumption in Big Horn County buildings shall include, but is not limited to, guidelines set forth in the Big Horn County ECP. Energy control devices that incorporate artificial intelligence shall become an extensive part of this program ensuring that manual adjustments to control settings are not required on a regular basis.

All facilities shall be evaluated periodically and energy use will be reviewed to determine which buildings may become candidates for future energy projects. Implementation of projects shall be determined according to costs, availability of funds and estimated return on investment. This goal is to reduce our energy consumption by 15% by the year 2015. Emphasis on energy conservation must continue to assure initiatives and goals will be achieved. Present and future rate increases have made it essential to be creative and resourceful to reduce energy consumption.

Energy Conservation Coordination, Management and Engagement

Big Horn County will develop use the ECP to help educate and encourage Big Horn County staff, directors and administrators to reduce energy consumption and promote “ownership” of energy costs by individual departments and/or facilities. Electricity used by common office equipment (including computers, monitors, copy machines, computer network equipment, telephone network equipment, printers and fax machines) makes up a significant share of the electricity used in commercial buildings. Power monitoring is a common technique that decreases the amount of power consumed when the equipment is not in use. Other efficiency features such as double-sided printing can save money and reduce the environmental costs of producing the paper.

Big Horn County will implement communication initiatives to raise awareness of possible energy efficiencies in the workplace, upon adoption of ECP. These communication efforts could include:

- Issuing e-mails highlighting the need for staff, directors and administrators to play a role in reducing energy usage at work through simple housekeeping measures such as turning off computer monitors and lights at the end of the day.
- Staff participation campaigns to encourage the implementation of energy-saving practices.
- Placement of environmental and energy reduction strategies, plans and commitments on the Big Horn County website.

Big Horn County will ensure that all appropriate personnel involved in resource conservation and operations within Big Horn County facilities will receive training for implementation of the ECP. Additionally, the aforementioned energy committee participants will work towards the common goal of achieving the following energy resource needs for Big Horn County staff:

- Relevant training or training materials for those programs that they deem appropriate in relating to the energy management and application strategies contained in the policy and energy plan.
- Every new employee that works in County facilities or with energy equipment is encouraged to be given basic instruction on the introduction to energy management, the whole building approach, lighting, HVAC, energy management systems and controls, efficient water use, and efficiency standards for other natural energy resources.
- Encourage incorporation into existing procurement courses, or develop for new courses, information on energy management tools, including energy savings performance contracts, utility energy efficiency service contracts, ENERGY STAR and other energy efficient products, water and other natural resources, and life cycle cost analysis.

Funding

Funding mechanisms for energy efficiency, conservation and renewable energy improvements vary widely and creative new funding opportunities are continually being developed.

Funding opportunities run the gamut from government grants and loan guarantees to property-assessed financing and power purchase agreements. Given the wide range of funding options, choosing the best funding mechanism for any given project is important.

Performance Contracting Program

Performance contracting provides a mechanism for making energy conscious upgrades to buildings with no initial cost to the owner. Improvements are financed and then paid for with the resulting energy savings. Businesses that develop, install and arrange financing for these types of projects are known as energy service companies. Energy service companies act as project developers for a wide range of tasks and assume the risks associated with the project. Their services fees are bundled into the project cost and are repaid through the savings generated by the project.

Power Purchase Agreements

A power purchase agreement is a contract between an electricity generator and a power purchaser. The power purchaser agrees to pay a set rate for electricity for the life of the contract, which then enables the power generator to secure financing for construction of power generating capacity.

Through power purchase agreements, businesses, schools and governments can finance non-utility-owned electricity generating facilities that tap renewable resources and reduce greenhouse gas emissions.

Government Tax Incentives

American Recovery and Reinvestment Act of 2009 ("Recovery Act") amended or added numerous energy tax incentives available to government. Many of these incentives were previously modified by Emergency Economic Stabilization Act in 2008. The majority of the incentives were originally passed into law under the Energy Policy Act of 2005 (EPACT).

The Recovery Act amends several provisions of the U.S. Tax Code, expanding or providing new renewable energy incentives for businesses, utilities, and governments who produce or utilize renewable energy. These incentives generally take the form of tax credits for the production of electricity from, and facilities that utilize wind, refined coal, geothermal, biomass, solar, and combined heat and power systems.

Clean Renewable Energy Bonds (CREBs)

CREBs may be used by primarily public sector entities to finance renewable energy projects. CREBs are issued, theoretically, with a 0% interest rate. The borrower only pays back the principal of the bond, and the bondholder receives federal tax credits in lieu of the traditional bond interest. CREBs differ from traditional tax-exempt bonds because CREB tax credits are treated as taxable income for the bondholder.

CREB tax credits may be taken each year the bondholder has a tax liability, as long as the credit amount does not exceed the limits established by the EPACT. The U.S. Department of the Treasury lists the treasury rates for prior CREB allocations, or "old" CREBs, as well as rates for new CREBs and other qualified tax credit bonds.

The list of qualifying technologies is generally the same as that used for the federal renewable energy Production Tax Credit. Electric cooperatives, government entities (states, cities, counties, territories, Indian tribal governments or any political subdivision thereof), and by certain lenders are eligible to issue CREBs.

The Recovery Act authorized an additional \$1.6 billion of Clean Renewable Energy Bonds (CREBs), which help facilitate the finance of renewable facilities. This sum raises the previously capped \$800 million ceiling on CREB issuances, and raises the maximum allowable issuance to \$2.4 Billion.

Qualified Energy Conservation Bonds (QECBs)

QECBs may be used by state, local, and tribal governments to finance certain types of energy projects. QECBs are qualified tax credit bonds, and in this respect are similar to new CREBs. The Recovery Act increases the amount of funds available to issue qualified energy conservation bonds from the one-time national limit of \$800 million to \$3.2 billion.

The definition of "qualified energy conservation projects" is fairly broad and contains elements relating to energy efficiency capital expenditures in public buildings; renewable energy production; various research and development applications; mass commuting facilities that reduce energy consumption; several types of energy related demonstration projects; and public energy efficiency education campaigns. Renewable energy facilities that are eligible for CREBs are also eligible for QECBs.

The advantage of QECBs is that they are theoretically issued with a 0% interest rate. The borrower pays back only the principal of the bond, and the bondholder receives federal tax credits in lieu of the traditional bond interest. The tax credit may be taken quarterly to offset the tax liability of the bondholder.

In contrast to CREBs, QECBs are not subject to a U.S. Department of Treasury application and approval process. Bond volume is instead allocated to each state based on the state's percentage of the U.S. population as of July 1, 2008. Each state is then required to allocate a portion of its allocation to "large local governments" within the state based on the local government's percentage of the state's population. Large local governments are defined as municipalities and counties with populations of 100,000 or more. Large local governments may reallocate their designated portion back to the state if they choose to do so.

Loans

The State of Montana provides loans to individuals, small businesses, local government agencies, units of the university system, and nonprofit organizations to install alternative energy systems that generate energy for their own use.

Personal Tax Credits

Commercial and net metering alternative energy investments of \$5,000 or more are eligible for a tax credit of up to 35% against individual tax on income generated by the investment. Residential taxpayers who install an energy system using a recognized non-fossil form of energy on their home are eligible for a tax credit equal to the amount of the cost and installation of the system. A resident taxpayer of Montana who installs a geothermal heating or cooling system can claim a tax credit based on the installation costs of the system, up to \$1,500.

Public Benefit Funds

The Montana Universal System Benefits Program supports cost effective energy conservation, and weatherization and energy assistance to low-income customers. The Montana Universal System Benefits Program supports renewable-energy projects and applications and research and development programs related to energy conservation and renewable.

Renewable Portfolio Standards

Public utilities and competitive electricity suppliers are required to obtain a percentage of their retail electricity sales from eligible renewable resources according to the following schedule: 5% in 2008; 10% in 2010; 15% in 2015.

Closing Notes

Major issues and challenges could potentially affect ECP strategies; however, implementing action items now will help better prepare for the future. Challenges and issues may include:

- Increasing utility costs
- Reduced dollars available for facility projects and programs
- As facility systems age, operational costs increase
- Rapid changes in technology and growth in Big Horn County population will create greater demands on Big Horn County facilities, leading to increased energy usage and costs, increased maintenance costs and increased need for equipment upgrades

Presented within the Big Horn County ECT are methods and practices that can greatly assist Big Horn County in planning for its future in energy efficiency practices. It is important that all Big Horn County staff, directors, managers and administrators actively support and prepare themselves for changes in conditions within facilities, as well as prepare for behavioral modifications required for program success.