

Extension Connection

May 8, 2020

Gilpin County CSU Extension's
Virtual Education

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GILPIN COUNTY UPDATES

BY CLAIRE SKEEN

As of April 23, 2020, there is still only one confirmed case of COVID-19 in Gilpin County. Please continue to monitor the Gilpin County Sheriff's Facebook page and website for any new information.

The Gilpin County Stay-At-Home order expires on May 8th. The County will start transitioning to Safer-At-Home. [More information can be found on the County website as it is released.](#)

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Energy to Sustain
You and the Earth



HOME ENERGY USE

BY JENNIFER COOK

According to the U.S. Energy Information Administration, the average home in Colorado uses energy as follows:

- 54% space heating
- 26% appliances, electronics, lighting
- 19% water heating
- 1% cooling

Over half of the energy used in an average Colorado home is for space heating, especially here in Gilpin County!

Reducing our energy consumption can certainly help us save money, but it is also a way to contribute to a healthier world. The most notable is by reducing power plant emissions. Burning fossil fuels to generate electricity releases byproducts such as carbon dioxide (a greenhouse gas), sulfur dioxide, and nitrogen oxides. These gasses contribute to air pollution and climate change. When we cut back on energy use, we are also improving our air quality, reducing climate change, and conserving our earth's limited natural resources.

A DIY, walk-through, or professional home energy audit is a great way to understand your options for significantly reducing energy use in the home. Often, air sealing and insulating the home's envelope is the first place to start, followed by equipment upgrades. Well-sealed and insulated homes can use 30% less energy than poorly sealed & insulated homes. It is important to air seal a space thoroughly before adding insulation.

TIPS TO REDUCE HEATING AND LIGHTING COSTS

To Lower Heating Costs:

- When you're home, set the thermostat as low as comfortable (i.e. 68 degrees F).
- At night or when no one is home, set the thermostat to 60 degrees F.
- When the house is empty for more than 24 hours, turn the thermostat to 50-55 degrees Fahrenheit.
- Install a programmable thermostat to automatically provide these varying temperatures.
- When you are not using your fireplace, close the damper or consider use of a chimney balloon.
- Reduce heat in unused rooms if possible, and close the doors.
- Replace furnace filters once a month during the heating season.
- Make sure heating registers are not blocked.
- Have your furnace checked annually by a trained professional.
- For forced air furnaces, seal all joints in sheet metal ducts with duct mastic.
- Insulate ducts and pipes passing through unheated spaces.
- Use kitchen, bath, and other ventilating fans only when needed.
- Install insulating gaskets behind electrical outlets and switch plates on exterior walls.
- Caulk and weather strip your doors and windows as needed.
- Caulk and seal leaks where plumbing, ducting, or electrical wiring penetrates through exterior walls, floors, and ceilings.



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- Use an inexpensive door sweep to reduce air leakage under exterior doors.
- Upgrade attic insulation to R-49 or higher.
- Insulate exterior heated basement walls to at least R-13.
- Insulate floors over unheated areas to R-25.
- Open south-facing blinds and shades on sunny winter days, and close them at night.
- Install storm windows over single pane windows or use plastic film window kits.
- Replace single pane windows with energy efficient double or triple pane windows mounted in non-conducting window frames.
- Replace an aging furnace or water heater with an efficient model, such as one with an Energy Star or Most Efficient label.



Tips for Reducing Lighting Costs

Light emitting diodes (LEDs) can use 20% of the energy of halogens and 70% of the energy of compact fluorescents (CFLs).

Lighting costs can be reduced in a number of ways:

- Turning lights off when not needed
- Using task lighting instead of space lighting
- Opening window treatments to allow for daylighting
- Installing solar tubes to bring in sunlight
- Using dimmer switches
- Replacing less efficient incandescent or halogen lights with LED light

CSU Energy Institute - <https://energy.colostate.edu/>

Your Energy Colorado - <https://yourenergy.extension.colostate.edu/>



GILPIN GOES GREEN

BY JENNIFER COOK

Gilpin County is committed to lowering our carbon footprint as a county. Gilpin County is a Green Power Partner. All county buildings are powered by wind starting in 2020! Residents can also become Green Power Partners through United Power.

Gilpin County's maintenance facility gets 75-80% of the fuel used to heat water for the radiant floor heating system and warm the fresh air exchange, from biomass! Gilpin's Biomass System uses our local biomass - dead trees, from fire mitigation, beetle kill, and local vendors, as a fuel source. In addition, Gilpin County is committed to lowering emissions, four Toyota Hybrid cars were added to their fleet in 2019.

Learn more here - <https://www.weeklyregistercall.com/2019/10/31/gilpin-countys-bioenergy-day/>



KID'S CORNER: ENERGY TO SUSTAIN YOU AND THE EARTH

BY KIRSTEN SPRINGER
ADAPTED FROM COLORADO READER, AG IN THE CLASSROOM

“Helping the Next Generation Understand their Connection to Agriculture”

The question is: Since every year we use more energy than we did the year before, in fact it doubles about every 20 years, how do we keep producing enough energy to meet the need?

What do you do to meet our energy needs and keep the earth and ourselves healthy? In the last years many utility companies have been utilizing solar and wind technology. You see solar arrays along the side of main highways, buildings and workplaces are built with solar panels as part of the design, you see wind farms along the highway, and you are notified of the percentage of wind energy used by your local utility company. In fact, the only US National Energy Lab that is devoted to wind alone and no nuclear research, is just down the hill from Gilpin, in Jefferson County. You can see the turbines as you drive North to Boulder on Hwy 93. We are moving in the direction of using more and more renewable (sometimes called alternative) energy.

You can always help conserve energy by turning off the water faucet (this also conserves water), turning off the light switch, closing the refrigerator door – but what more can we do to actually sustain life as we know it? Renewable energy is the best answer.

There are seven well developed technologies that are included as renewable energy generators for five different sources. The sources are the sun, wind, water, earth and biomass. One of the advantages of these energies is that most do not pollute directly. There are effects that could be harmful, just as in many other processes that humans do to alter forms of materials.



7 RENEWABLE ENERGY GENERATORS

Technology: Passive Solar

Resource:

Sun, Gathered from the rays that reach the earth

Benefits:

Uses radiant heat collected by building form and materials.

No special structures for energy collection that aren't integrated into the building

Costs:

Not many, not different than a traditionally built structure

Technology: Thermal Solar

Resource:

Sun, Concentrate solar energy to heat a fluid and produce steam to power a generator

Benefits:

Stores energy collected and is a closed circulating system

Costs:

If not maintained it is costly to repair. Glycol can be toxic

Technology: Photovoltaic Solar (PVC)

Resource:

Sun, Solar cells change sunlight directly into electricity, grouped in panels and arrays.

Benefits:

Is becoming less costly to install and use than traditional heating systems. Uses a renewable energy source.

Costs:

Disposal of old panels & parts. Doesn't work at night.

Technology: Biomass

Resource:

Living Organisms, Wood, paper, plants and garbage are burned causing chemical energy, the gas produced can also be converted into fuel like ethanol and biodiesel.

Benefits:

Uses natural materials

Costs:

If a catalytic converter is not used or properly installed it can release pollution into the atmosphere.

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You can research how these energies are currently used in our region by going to www.powerworksforyou.coop

Technology: Wind Turbine

Resource:

Wind, Daily wind cycle as warm air rises and heavier cool air rushes in to replace it. This energy is kinetic (energy of motion), wind flows over the turbine blades causing them to lift and turn, the drive shaft turns an electric generator.

Benefits:

Uses wind to create electricity.

An old but well understood technology

Costs:

Only works efficiently in specific geographical locations and wind conditions.

Aesthetically changes the landscape. Thought to be harmful to bird species that are harmed by the blades of the turbine. May disrupt migratory paths.

Technology: Hydropower

Resource:

Water, Moving water carries mechanical energy, (stored energy + kinetic). Water passes over the turbine blade that spins a generator.

Benefits:

An older, developed technology. Paddle wheels started in Egypt. First hydro power plant in US was built in 1882. Advances with “micro Hydro” for more individualized sites, does not impact large rivers.

Costs:

Damming of rivers for large plants, mega structures. Causes water downstream to be too warm for some fish habitat. Giant turbines create uninhabitable areas, or animals can't migrate because they are blocked by dams.

Technology: Geothermal

Resource:

Earth, Uses the earth's internal heat to heat and cool buildings as well as make electricity. The stored heat drives a generator.

Benefits:

No extraction. No aesthetic impact once installed. Can be tailored to large or small energy needs, such as using a large field to heat an industrial complex, or using a small heat well to heat a horse waterer.

Costs:

Still being developed to be efficient in areas where frostline is deeper, like in Gilpin. A lot of excavation is needed. Glycol can be toxic.

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Now that you are familiar with the different technologies and sources that are considered “renewable energy” visit www.myamericanfarm.com, click on “in the classroom” and then go to “games” and choose the Power UP game.

ENERGY HIKE

Take a hike throughout your house and identify all the ways you use energy. Talk with your parents, and/or siblings and in 3 minutes – each should individually list all the ways energy is used in a day. Compare your results.

Once you know the ways you use energy, choose some appliances in the http://energyusecalculator.com/calculate_electrical_usage.htm website and write down how much each costs.

MAKE YOUR OWN WINDPOWER

Materials:

- Egg carton, cut apart the cups
- Lid from egg carton, cut into 3-inch wide strips
- Scissors
- Marker
- Stapler
- Push pin
- Sharpened wood pencil with an eraser at the end
- Modeling clay

1. Color one cup with marker.
2. Cross the strips to make a plus sign and staple together
3. Mark the center of the strips
4. Staple the cups to the outside ends of the strips (4) making sure they all face the same direction
5. Push the pin through the center of the cardboard and into the eraser end of the pencil. Blow on the cups to spin and make sure they move freely.
6. Stick the pencil in the clay, or dirt outdoors on a day with wind.

