

## Heat Pumps 101: Law of Thermodynamics

Think of the name, "heat pump." It likely conjures all sorts of images to mind, none of which reflect the fact that these systems operate using the Second Law of Thermodynamics.

There are two basic types of heat pump technology—air source and ground source. In an air source heat pump, the equipment uses the outside air to provide the means for heating and cooling your home. A ground source heat pump uses good old Mother Earth's dirt.

Since ground source heat pump operation is a little easier to describe, let's start there. Once you get a short distance below the surface, around a depth of four feet, the temperature of the ground stays a reasonably constant 50 to 55 degrees Fahrenheit year-round. Have you ever gone into a cave or tour a cavern? In the summer, it is nice and cool. In the winter, it seems cozy and warm. What you sense is the difference between the outside temperature and that of the cavern below ground.

Ground source heat pumps use this temperature difference to heat and cool. These systems need some sort of heat exchanger installed underground, either vertically or horizontally, and filled with a fluid. The equipment at the house itself resembles a typical HVAC system. It uses pumps and compressors to move the fluid through pipes inside the house and in the ground where it picks up or gives off heat, depending upon the

need. The process is rather simple, using a fluid to move (or pump) heat from one place to another.

Air source heat pumps may seem harder to grasp. How can such a system cool my home when the outside air is so hot? Or, heat it when it is so cold? Again, the mechanics of the system take advantage of very small differences in temperature using the proper compressor and refrigerant mix. Just like its ground source cousin, the air source heat pump moves heat from one spot to another. The difference is that the medium to exchange heat is the outside air, rather than the ground. Both air source and ground source heat pumps use refrigerant to capture the heat and carry it to where it is exchanged—either in the ground or using the outside air.

Heat pumps are very efficient, much more so than traditional heating and cooling systems. Let's use a heat pump with a COP (coefficient of performance) of 3.0 as an example: For every unit of energy used, the system produces three units of heating /cooling. It's not a bunch of hocus pocus but rather the law of thermodynamics.

Efficient as they may be, it should be noted that heat pumps can have drawbacks. In extremely cold climates, air source models lose their ability to heat effectively at around 17 degrees Fahrenheit. Below that temperature, they have to use resistance electric heat to keep up and can quickly become expensive to operate. In temperate climates, they are likely your best choice for heating and cooling, especially for forced air applications. While some companies have worked to build a cold climate model, it is still a work in progress.

Ground source systems can operate in nearly any climate and work well with both baseboard hot water and forced air systems. However, they can be expensive to install because of their need for a ground loop of some sort.

Recently, a number of companies have introduced heat pump water heaters in response to EPA rulings to bring this efficient technology to domestic water heating. While the jury is still out, many of the same air source benefits and drawbacks apply, including a steep price tag at present.

Heat pumps, properly applied, can make a world of difference to your monthly bill as well as to your comfort. Talk to the energy experts at Victory Electric, and find out if a heat pump is the ticket for your heating and cooling needs.

## Cómo Inquilinos Pueden Combatir el Frío del Invierno

Según la Oficina del Censo de Estados Unidos, el 33 por ciento de los estadounidenses arrendar sus hogares. Por desgracia, muchos contratos de arrendamiento prohíben las transformaciones más importantes a propiedades de alquiler. Pero no te preocupes, los inquilinos! Considere el uso de estos consejos de eficiencia energética de bajo costo, de Victory Electric para mejorar la eficiencia de su casa este invierno.

### Ahorro calientes

El calentamiento de la casa típicamente constituye alrededor del 48 por ciento de su factura de servicios públicos. Ponga el termostato tan bajo como sea cómodo en el invierno - Energy.gov recomienda 68 grados Fahrenheit para impulsar la eficiencia energética.

Durante los meses de invierno, aprovechar el calor de la luz solar. Cortinas y las persianas abiertas durante el día para permitir que la luz natural caliente su hogar. Recuerde cerrar en las noches, ya que baja la temperatura y se convierten en cristales fríos.

Tiene en su casa unidad de aire acondicionado en la ventana? Este invierno, recuerde que debe aislar las unidades desde el exterior con una tapa bien ajustada, disponible en su centro de mejoras para el hogar o ferretería local. Esto evita que el aire caliente se escape fuera. Si lo desea, puede quitar la unidad de ventana durante los meses de invierno para evitar la pérdida de energía.

Otra forma de ahorrar en calefacción es asegurarse de que el calentador de agua se fija en su ajuste más bajo. ¿Ha experimentado agua hirviendo al tomar una ducha? Si es así, lo más probable es que el calentador de agua es demasiado alto - que es un desperdicio de energía. Los modelos más antiguos de los tanques de agua a menudo no son aislados, que pueden ser fácilmente remediados cubriéndolos con una camisa aislante

### Ideas brillantes

Iluminación es uno de los lugares más fáciles para comenzar a ahorrar energía, y el ahorro no se limita estrictamente a los meses de invierno. Trate

de reemplazar algunos de sus bombillas usadas con más frecuencia con las luces con calificación ENERGY STAR, y ahorrar más de \$ 65 al año en costos de energía. Bombillas ENERGY-STAR calificado compactas fluorescentes (CFLs) utilizan 75 por ciento menos de energía y duran varias veces más que las bombillas incandescentes, ahorrando dinero en las facturas de energía y los costos de reemplazo. Practicar hábitos de eficiencia energética es otra gran manera de reducir el uso de energía. Apague siempre las luces al salir de una habitación.

### Otras formas de ahorrar

Arrendamiento de una casa vieja o apartamento? Las probabilidades son que usted tiene ventanas de cristal sencillo y masilla vieja o desaparecida. No dejes que el frío invierno se filtre en el interior! Aplicar masilla alrededor de los marcos de las ventanas, marcos y paneles de las puertas para combatir las fugas de aire. Además, ser conscientes cuando se utiliza los electrónicos en el hogar. Desenchufe los aparatos cuando no estén en uso, y el uso de regletas de enchufes inteligentes para ahorrar en el consumo de energía. Para aprender más maneras de ahorrar energía en el hogar, visite [www.victoryelectric.net](http://www.victoryelectric.net).

## Working on the LINE

Victory Electric's tree trimmers have been working at Youthville clearing dead trees close to power lines to prevent outages for members. Steve Jimmerson cuts dead limbs on September 30 while working at Youthville of Dodge City.



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FROM THE CEO

## How the EPA climate change plan would change the nation's economy

The energy industry has been analyzing the effects of the several-thousand-page Clean Power Plan that the Environmental Protection Agency (EPA) finalized on August 3, 2015. With a goal of reducing greenhouse gas emissions, it places a strong emphasis on more renewable energy like solar and wind and aims to drastically reduce coal generation.

The effects of such a significant change will demand major new investments in the nation's electricity transmission system because of the requirements of connecting renewable energy sources to the grid. However, the plan fails to account for the time required for permitting, siting and constructing this new infrastructure.

The plan could also disrupt jobs as coal plants close and raise utility bills since renewable energy often is more expensive. A study by the National Rural Electric Cooperative Association found that a 10 percent increase in electricity rates would result in the loss of 1.2 million jobs in 2021, with nearly half of those in rural areas. The EPA's Clean Power Plan will undoubtedly affect electric co-ops, along with other utilities, and big financial

decisions will have to be made.

One of the biggest challenges for not-for-profit electric cooperatives is keeping electric electricity prices as low as possible for our cooperative members. Every day the employees and trustees of Victory Electric work to ensure you have safe, reliable power when you need it most. When issues arise that have the potential to affect your cost of power, we diligently work to resolve the problem or find a solution that works for everyone. While we are committed to protecting the environment, we feel new regulations should not make power cost-prohibitive for our members.

The Clean Power Plan is just one of many environmental regulations Victory Electric is monitoring. We also spend time lobbying on your behalf, ensuring our state and federal legislators realize the importance of affordable power for our members. Although the Clean Power Plan will bring changes to the electric industry and, consequently, to Victory Electric's member-owners, rest assured that Victory Electric's staff and our partners will do everything possible to mitigate the impacts of the rule.

Thanks, Shane



Shane Laws

The EPA's plan will affect electric co-ops, along with other utilities.



## Victory Electric Health Fair a Success, Hundreds Attend for Free Services



More than 70 doctors, health care professionals and vendors from the area graciously donated their time and expertise to offer free services to hundreds of attendees.

The Victory Electric Community Health Fair may help save members when screenings found a few cases of cancer among the many free exams performed on September 9.

Victory Electric and our partners hosted the 8th Annual Victory Electric Community Health Fair. More than 70 doctors, health care professionals and vendors from the area graciously donated their time and expertise to offer free services to hundreds of attendees.

Services offered at this year's fair included free eye auto-refraction screenings, hearing tests, blood pressure checks, skin cancer screenings, pap smears and breast exams, dental exams and oral cancer screenings, spinal screenings, car seat safety inspections, massages, hearing tests, \$20 flu shots, and \$10 complete blood screens.

To put everything in perspective, 260 flu shots were completed; 218 complete blood screens, 98



A nurse from the medical center draws blood from Cindy Ruiz.

skin cancer screenings, 110 blood pressure checks, 75 fluoride treatments, 345 dental exams/oral cancer screenings, 67 bone density scans, 88 visual acuity screenings, 100 pap smears, 49 breast exams, and 47 hearing tests.

We would like to thank all those who assisted in the planning and organization of the event; you were an invaluable resource. Also,



Medical professionals gave 47 hearing tests.

thank you to the 69 volunteers from the community who came out to help us keep everything running smoothly. We could not have hosted the health fair without you.

We thank all of our partners and sponsors: Dodge City Medical Center, Western Plains Medical Complex, Phillips Chiropractic and Physical Therapy, Dodge City Public

Schools, Western State Bank Expo, Peterson Labs, Landmark Bank, Western Beverage, Service Master, The Inn Pancake House, Tacos Jalisco's, Tianguis Carniseria, JAG and many more. We would also like to give a special thanks to Melissa McCoy, Kelly Stecklein, Deb Goodwin,



Maps were available to help attendees find providers throughout the building.

Kelly Slattery, Erica Soltero, and Dodge City High School FCCLA for all their hard work and dedication. Victory Electric and those who make it possible are already looking forward to the 9th Annual Community Health Fair, and we hope to see everyone there.



Nurses from several local offices and nursing students from DCCC helped draw blood.



Free dental exams were administered by local dentists.



Victory employees volunteered their time to help at the health fair.



Chair massages were available from several providers.

## Happy Thanksgiving

Our office will close at 3 p.m. on November 25 and all day November 26-27 for Thanksgiving. We hope you have a safe and happy holiday.



## Lesser Prairie Chicken Update

In October, the United States District Court of Western Texas won its case against Department of the Interior U.S. Fish and Wildlife Service in listing the Lesser Prairie Chicken as a threatened species, for now.

While the Lesser Prairie Chicken continues to be an issue for electric cooperatives, for now, the bird is not listed as a threatened species saving members and cooperatives millions.

## CFL Charlie Says "Come Get Your Free CFL!"

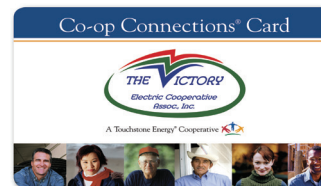


**This month's lucky winners are...** Travis Isaac, Wayne Kendall, Julie Looney, Joe Martinez, Gregory Scheve, Erika Toledo, and Lisa Veeder. Come by Victory Electric Cooperative to get your free compact fluorescent light bulb (CFL). Every month Victory Electric gives members free CFL light bulbs. Congratulations to this month's winners!

## Co-op Connections Card

The Co-op Connections Card connects you with discounts on everything from hotel stays to prescription drugs. The card also gives you access to online savings at more than 95 national retailers. You can check out these great national discounts at [www.connections.coop](http://www.connections.coop).

You can use your card anywhere that Co-op Connections cards are taken. More businesses are being added every day. Look for window and/or register stickers to identify local participating businesses.



## Efficiency Tip of the Month

Reduce energy for water heating. Take simple steps like lowering your heater's temperature and installing low-flow showerheads to reduce your water heating bills.

## Manna House of Dodge City Named Grant Recipient

Victory Electric Cooperative, Assn., Inc., is pleased to announce the Manna House in Dodge City as the recipient of this year's Victory/CoBank "Sharing Success" Grant.

The Manna House has been awarded two checks totaling \$10,000— \$5,000 from Victory Electric and \$5,000 from CoBank— to help fund house improvements.

"The grant is great help," Manna House Director Steve Tabor said. "We have bills to pay relating to a broken air conditioning unit and two separate plumbing issues caused unforeseen costs. We would also like to replace the fence in the back yard. This will help us be able to do so."

The Manna House was started in 1993 with the help of Margaret Witsken. She saw a need for both a shelter and a food pantry in one location. Prior to 1993, the Manna House food pantry was located at Sacred Heart school/church. The current house was bought nearly 22 years ago and has been helping families since that time.

The Manna House is a short-term shelter for community members in need. Capable of housing four women and six men, the Manna House is open year-around from 5:30 to 9 p.m. "The house is meant to serve those who need it on a short-term basis, typically three-night stays; however, there is some flexibility," Tabor said. The Manna House also provides boxes of food for those in need from 2 to 4 p.m. during the week. "Manna House helped serve more than 1,211 families last year," Tabor said.

The help of four staff members and nine board members make Manna House possible for Dodge City. Recent upgrades to the house have made it better able to serve the community. New carpet, interior paint, bathrooms and kitchen were completed in 2014 and the exterior was painted in 2015. "The grant will help us complete what we want to do in 2016, the new fence being a priority," Tabor said.

"Manna House is an integral part of the community and it feels good to be helping an organization that is making a difference in people's lives," Victory Electric CEO Shane Laws said. "I'm pleased, on behalf of Victory Electric, to award this grant to the Manna House."

The annual "Sharing Success" grant opportunity, capped at \$10,000, is made possible by Victory's governing board of trustees, in partnership with CoBank — a national nonprofit cooperative bank owned by the rural American cooperatives it services, including Victory. This year, CoBank established a \$3 million fund to match charitable contributions made by its cooperative members. The matching grant program is

designed to celebrate the vital role that cooperatives play in individual communities across the country. CoBank states that partnering with their customers to support worthy causes they care about is a great way for them to make a positive difference and fulfill its mission of service to rural America.

"Thanks to our board of trustees and CoBank, the 'Sharing Success' Grant has enabled Victory to give back to the communities we serve," Laws said.

This is the fourth year Victory has awarded "Sharing Success" grants to local non-profits. Applicants must be federally recognized as 501(c)(3) nonprofit organizations. The Bucklin Library received a \$10,000 grant in 2012 to help fund the construction of their new library building. And in 2013, the Mission of Mercy dental clinic in Dodge City was awarded \$10,000. The project funded in 2014 was the Stauth Memorial Museum in Montezuma for their "Suits in Space" exhibit.

The Victory Electric Cooperative Assn., Inc., a member-owned electric distribution cooperative, is headquartered in Dodge City and serves all or parts of nine counties in southwest Kansas. Victory was organized in 1947 to serve primarily farm residential services. Through the years, Victory has expanded to a broad consumer base of diversified loads ranging from industrial, commercial and irrigation loads with 2,700 miles of transmission and distribution line. For more information visit Victory's website at [victoryelectric.net](http://victoryelectric.net).



Pictured (R1) Steve Tabor, Manna House Director; Nancy Freeland, Manna House Board Member; Amy Grasser, Victory Electric Manager of Corporate Services; Maria Musick, Manna House Board Member; Enid Gumm, Manna House Secretary; Shane Laws, Victory Electric CEO. (R2) Jose Vargas, Manna House Board Member; Greg Underwood, Victory Electric Manager of Engineering; Kathy Redman, Manna House Board Member; John Askew, Manna House Board President. (R3) Jolene Brauer, Manna House Board Member; Gary Musick, Manna House supporter; Tom Lowery, Victory Electric Manager of Operations.