

## Feeling chilled? Heat Your Space Safely



If you can't remember when you purchased your space heater, it might be time to replace it. Most of today's models have built-in safety features, such as non-exposed coils and sensors that detect overheating or touch, as well as an automatic shut-off feature in case it gets tipped over.

### Space Heater Safety Tips:

1. Do not leave a space heater unattended.
2. Plug directly into an outlet; power strips & extension cords are not equipped to handle energy spikes.
3. Place on flat, level surfaces and never place on furniture, counters or carpet, which can overheat.
4. Do not use a heater in disrepair or with a frayed cord or damaged plug.
5. Keep children and pets away from space heaters.
6. Turn off before you leave the room or go to sleep.
7. Keep clothing, papers, rugs, & other flammable items at least 3 feet away.

## Cut Your Energy Costs Day

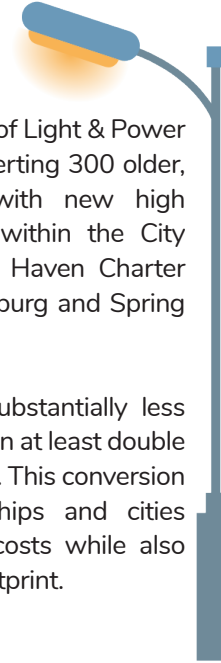
Energy dollars can pour out of your living space through drafty doors and windows, as well as unused portions of the home. **Cut Your Energy Costs Day (January 10, 2023)** encourages people to make a small investment of time for big dividends in keeping their home or apartment warm and cost-efficient.

### Your Energy Efficiency Checklist:

- Track your energy use through your GHBLP SmartHub app. Visit [ghblp.org](http://ghblp.org) to get started.
- Install a programmable or smart thermostat. According to the Department of Energy, lowering the temperature by 7 to 10 degrees for 8 hours a day can reduce energy costs by up to 10 percent.
- Replace your furnace filter at least every 3 months to save energy and improve heat circulation.
- Open curtains and blinds on sunny days to let the sunlight warm your home, and close them on gloomy days and at night to keep the heat inside.
- As long as there is a cold air return, you can close the vent and door for rooms you do not use. Experts say without a cold air return, closing off a room can build up pressure that causes the furnace to work harder.
- Use caulk to seal gaps in the walls of your home or apartment. Wherever building materials meet, or wiring comes out of a wall, gaps may contribute to the loss of heat in your home.



## LED Street Light Conversion Project



The Grand Haven Board of Light & Power is in the process of converting 300 older, inefficient streetlights with new high efficiency LED fixtures within the City of Grand Haven, Grand Haven Charter Township, City of Ferrysburg and Spring Lake Township.

The LED fixtures use substantially less energy and have a lifespan at least double that of traditional fixtures. This conversion will save these townships and cities money in their energy costs while also reducing their carbon footprint.



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## PLUGGED IN



## What's Happening with Energy Storage?

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# What's Happening with Energy Storage?

Michigan is working hard to transition to greener generation options. However, no amount of renewable capacity can ensure consumers get power if the wind isn't blowing or the sun isn't shining. Storage creates greater reliability in renewable energy supply, giving suppliers a backup when needed.

Using a definition from the University of Michigan Center for Sustainable Studies, grid storage is "the process of converting electrical energy into a stored form that can later be converted back into electrical energy when needed."

Originating in Italy and Switzerland at the turn of the century (in the form of pumped hydro storage), grid storage has only increased in demand as utilities around the world turn to renewables and distributed energy resources (DERs). Energy Storage World Forum, a trade conference, stated, "Since the electrical grid has existed, so has the need for stored forms of energy that can be drawn on to meet times of peak demand and regulate frequency. In the past, the bulk of this extra energy came from fossil fuel plants that were [more easily] fired up and down with demand."

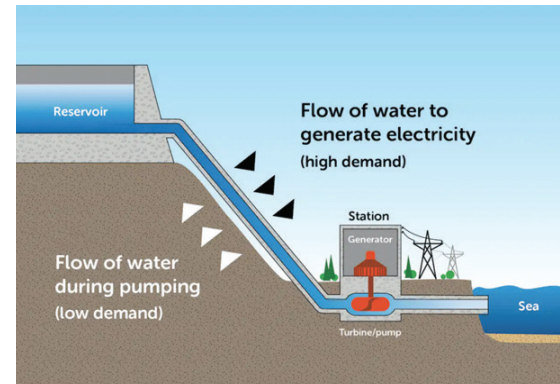
Here in the US, Energy Secretary Jennifer Granholm announced a plan last summer to reduce the cost of grid storage by 90% within the decade. She said, "We're going to bring hundreds of gigawatts of clean energy onto the grid over the next few years and we need to be able to use that energy wherever and whenever it's needed."

While there are many technologies contending for leadership in grid storage, there are two meeting or nearing commercial viability in

Michigan: pumped storage hydropower and battery storage.

## Pumped Storage Hydropower

The U.S. Department of Energy defines pumped storage hydropower (PSH) as, "A configuration of two water reservoirs at different elevations that can generate power as water moves down from one to the other (discharge), passing through a turbine. The system also requires power as it pumps water back into the upper reservoir (recharge). PSH acts similarly to a giant battery because it can store power and then release it when needed [See Figure 1]."



Currently, pumped hydropower makes up almost all of the world's current energy storage at 95% (Energy Storage World Forum) and Michigan follows this trend. In fact, Consumers Energy and DTE have a 2,292 MW facility (one of the largest in the world) overlooking Lake Michigan near Ludington, which holds enough water to power 1.6 million households.

Not only does this technology make energy more affordable, but according to Consumers Energy it also "enables the plant to respond quickly to the daily, weekly and seasonal highs

and lows of Michigan's energy demand."

"I wish we could build 10 more of these. I love 'em," said Eric Gustad, the community affairs manager for Consumers Energy, in a Detroit News story early in 2022.



Image credit: Consumers Energy

The Detroit News reported "the nation currently has only 43 pumped storage facilities... and just one small operation has been added since 1995." Many more have plans in the works, but "it's unknown how many of more than 90 planned can overcome economic, regulatory and logistical barriers that force long delays."

Despite the benefits of pumped hydropower, delays and land availability will likely force Michigan to look for alternative options.

## Li-ion Batteries

Several universities and utilities in Michigan are actively trialing batteries as grid storage solutions. The U.S. Department of Energy recently granted Western Michigan University a \$9.6 million grant to "supercharge ongoing

lithium-ion battery research" using a "printing technique."

Leading the team of scientists and engineers is Dr. Qingliu Wu, an assistant professor in WMU's department of chemical and paper engineering. Together, they will discover ways to make high-energy lithium-ion batteries more efficient and cost effective.

"If successful, the printing technology that we proposed for this project will further reduce the energy consumption during cell fabrication, and thus pollution to the environment," said Dr. Wu. "In addition, the technology could also significantly reduce the cost of electrodes, and make cheaper batteries possible for customers."

With li-ion energy increasing rapidly in the automotive industry, the density of energy storage is increasing constantly. Several pilot projects including a Consumer's project near Western Michigan University hold some promise to test out the robustness of these solutions for the grid.

## What's Next on Grid Storage

While emerging grid-scale energy storage is not yet affordable enough for commercial use, its costs are decreasing. The greatest hurdle in utility scale storage isn't economic. We still need to develop long-term storage for renewable options to resolve the seasonality of these sources (ex. storing excess solar energy in the summer to use in the winter). Despite these challenges, organizations like the Michigan Public Power Agency are continually evaluating new technologies to increase the reliability and sustainability of power in our communities.