Richland/Pulaski Energy and Cost Saving Actions Fact Sheet

Below is some information and resources related to clean, energy efficient technologies and climate action strategies that residents and businesses in the Town of Richland or Village of Pulaski could implement.

Heat Pumps

Clean heating and cooling technologies provide environmental benefits, energy bill savings, increased comfort levels, and health benefits compared to conventional heating and cooling technologies. There are three main kinds of heat pumps, Ground-Source (also known as Geothermal), Air-Source, and Heat Pump Water Heaters, each explained below. More information can be found at https://heatsmartcny.org/heat-pumps/ and https://cleanheat.ny.gov/.

There are incentive and financing options available to install heat pumps regardless of the type of heat pump you are considering! Visit https://heatsmartcny.org/incentives/ or https://cleanheat.ny.gov/find-available-rebates/ for more information.

Ground-Source Heat Pumps (also known as Geothermal)

Geothermal technology harnesses the heat of the earth to provide for heating and cooling needs inside a building. Ground-source heat pumps (GSHP) take advantage of the relatively constant temperature (50-60°F) of the earth's surface layer as a heat source in winter and a heat sink in summer GSHP extract heat from the ground during cold weather via an underground pipe system, which is then distributed throughout a building. During warmer months, the process is reversed to provide cooling. Geothermal heat pumps are also known as geothermal heat pumps, low-temperature geothermal, or geo-exchange systems.

Investments in GSHP often produce significant net cost savings due to the high efficiency of ground-source heating and cooling and the long-term reduction in energy costs. Other benefits of implementing geothermal technology include reducing fossil fuel use, lowering GHG emissions, and helping your community understand the benefits of adopting the technology in homes and businesses.

Air-source Heat Pumps

Similar to GSHP, air-source heat pumps (ASHP) extract heat from the air outside and distribute it inside a building (yes, there is some amount of heat in the air that can be harnessed even during the cold winter months!). During warmer months, the process is reversed to provide cooling by pulling heat out of a building. This process may seem complex but it's similar to how a refrigerator cools food.

There are two main types of ASHP – ducted central systems or ductless mini-split systems. Central systems connect to a single indoor unit (often a furnace), pushing air through a series of ducts, which gets exhausted through vents throughout a home. Central systems rely on an outdoor compressor/condenser. Ductless mini-split systems consist of an outdoor compressor or condenser unit that connects to an indoor unit to distribute heat or cool a home.

Heat Pump Hot Water Heaters

Heat pump water heaters (HPWH) are electric appliances that heat water by absorbing heat from the air and moving it into a storage tank, as opposed to generating heat through burning fossil fuels or resistance heating. A heat pump water heater is very much like a refrigerator running in reverse: instead of pushing heat out of the inside of the refrigerator into its surroundings, a heat pump water heater absorbs heat from surrounding air to heat water.

Since it takes far less energy to move heat than it does to create heat, heat pump water heaters are much more efficient than conventional water heaters: heat pump water heaters offer 250-300+% water heating efficiency compared to 60-70% for fossil fuel storage water heaters and 90-95% for traditional electric water heaters. Heat pump water heaters heat water slowly over the course of the day and typically have a backup electric heating element to help speed up water heating during periods of high hot water demand.

Electric Vehicles

The use of plug-in hybrid electric vehicles (PHEVs) and all-electric vehicles (EVs) can result in substantial reductions of air pollution and greenhouse gas emissions compared to internal combustion engine (ICE) vehicles, especially in upstate NY where our electric grid is primarily powered by low- or no-emission generation sources.

PHEVs include both an internal combustion engine and the ability to run on electricity. These vehicles differ from conventional hybrid vehicles in that they can be plugged into an electric power source to charge the battery. EVs are powered solely by electricity and must be charged by an electric power source to operate.

NYSERDA also provides an EV Calculator tool online to help you decide if an electric vehicle is right for you. The tool can be found at https://nyserda.wattplan.com/.

Incentives for purchasing electric vehicles include:

- The NYSERDA Drive Clean Rebate - offers a point-of-sale rebate, up to $2,000, towards the purchase or lease of a new electric car: https://www.nyserda.ny.gov/All-Programs/Drive-Clean-Rebate/How-it-Works (information on eligible models and participating dealers can also be found on this site!)
- Tax credits up to $7,500 for certain EV purchases (more details can be found at https://afdc.energy.gov/laws/409)

Insulation and Air Sealing

There are many benefits to improving insulation and air sealing at your home or business, ranging from energy cost savings, health improvements, comfort, and building durability.

- Insulation and air sealing are crucial steps to improving energy efficiency and decreasing heating and cooling costs.

- Air leaking through your home's envelope can waste a lot of energy and spike utility costs.
- Poor insulation and air sealing cause uneven heating and cooling, resulting in rooms that are too cold in the winter and too hot in the summer.
- Poor indoor air quality, caused by insufficient insulation and air sealing, can increase the risk of asthma episodes and other respiratory problems.
- Insulation and air sealing prevent pollen, dust, and insects from entering your home or business.
- Ice dams in the winter can result in damaged roofs, leaks into the living space, and increased chances of mold.

Home performance contractors can provide free home energy audits during which they will discuss your home with you, including any specific problems you're facing including cold/hot spots, drafts, ice issues in winter, uninsulated rooms, and fixtures. The contractor will then test the building to identify leaks and potential remedies.

There are incentives at all income levels to help fund insulation and air sealing work - visit https://heatsmartcny.org/incentives/ for more information.

Solar PV

Residents and businesses have options if they're interested in renewable energy, like solar PV.

Home Installation
Solar panels can be mounted on either the roof or to the ground, wherever conditions are best on your property.

Rooftop solar offers you a way to harness the power of the sun through panels installed on the roof of your home, garage, or other buildings on your property. As an added benefit, they protect your roof. This is the most common option for residential solar.

Ground-mounted solar allows you to put panels wherever conditions on your property are best, particularly if you can't or don't want to put them on your roof. For an additional cost, ground-mounted panels can be installed with tracking capabilities to better harness the power of the sun.

NYSERDA's NY-Sun program has resources available regarding solar incentives and financing options, visit https://www.nyserda.ny.gov/All-Programs/NY-Sun/Solar-for-Your-Home/Paying-for-Solar.

NYSERDA Quality Solar Installers can be found at https://www.nyserda.ny.gov/All-Programs/NY-Sun/Solar-for-Your-Home/How-to-Go-Solar/Find-a-contractor/Residential-Installers.

Community Solar
If your home isn't ideal for solar panels or you can't afford the upfront cost, community solar may be right for you. Community solar projects are an array of solar panels installed in an offsite

location. Subscribing to community solar will earn you credits toward your electricity bill, allowing you to benefit from solar if you can't (or don't want to) install panels on your property.

There are many community solar contractors operating in NYS today, as noted on this list: https://documents.dps.ny.gov/PTC/der.

LED Light Bulbs

Upgrading lighting is a low-cost way to save energy and money in your home whether you own or rent. In comparison to conventional lighting options (such as incandescents, fluorescents, and halogens), energy-efficient light bulbs use less energy, cost less to operate, and can last up to 25 years longer. More information about the benefits of LEDs can be found at https://www.nyserda.ny.gov/Residents-and-Homeowners/Use-Efficient-Appliances-and-Lighting/Energy-Efficient-Lighting.

Electric Household Equipment

As NYS works to implement the goals of the Climate Leadership and Community Protection Act (CLCPA), it is becoming clear that electrification of all aspects of our lives will be necessary, including adopting electric stoves/ovens, clothes dryers, lawn mowers, leaf blowers, etc. The idea behind electrifying everything is that the electric grid will continue to get cleaner over time, using more and more renewable energy that does not produce carbon emissions to generate. The state's goal as per the CLCPA is to reach a 100% renewable electric grid in NYS by 2040, so therefore any electric appliances would be powered by 100% renewable energy. You can buy electric versions of these equipment in most places you can buy fossil fuel-powered equipment.

Electric versions of home appliances and equipment are also much cleaner to run. For example, using a gasoline-powered leaf blower for just one hour produces about as much pollution as driving 1,100 miles in a Toyota Camry, according to the California Air Resources Board. Electric leaf blowers that are powered by a clean upstate NY electric grid (increasingly getting cleaner over time) will help to reduce overall pollutants as well as greenhouse gas emissions.

Composting and Recycling

Composting and recycling help reduce waste sent to landfills and incinerators, reducing emissions created at those facilities as the waste breaks down.

Composting food scraps and yard waste can create organic material that can be added to soil to help plants grow. Food scraps and yard waste together currently make up more than 30 percent of what we throw away, and could be composted instead. Making compost keeps these materials out of landfills where they take up space and release methane, a potent greenhouse gas. More information about composting can be found at https://www.epa.gov/recycle/composting-home.

Recycling is the process of collecting and processing materials that would otherwise be thrown away as trash and turning them into new products. Learn more about recycling at https://www.epa.gov/recycle/recycling-basics or https://ocrra.org/services/recycle/.

Planting Trees

Preserving the tree canopy in our cities, towns, and communities provides a number of environmental and economic benefits in our communities, including reducing energy use, removing carbon dioxide from the atmosphere, improving air quality, reducing stormwater runoff and creating a sense of place in urban and suburban areas. In addition, trees can sequester carbon while they are alive, helping remove carbon dioxide from the atmosphere and reducing those emissions.

Planting shade trees in strategic locations can help keep homes and businesses cooler, reducing the need for air conditioning in summer months. During colder months, they can help block cold winds, reducing some heating demand. To see the benefits of your shade trees, check out iTree: https://www.itreetools.org/
