



ENERGY E-TIPS

May 11, 2011

Can I Re-Use My Flood-Submerged House Heating and Cooling Appliances?

In the wake of the recent flooding that has affected much of Arkansas; UAEX offers the following special series of Energy E-tips to provide quick tips on what you can do to re-use (if possible) your flood-submerged electric items in your home or farm. The previous Energy E-Tips (http://www.arhomeandgarden.org/News/Energy_ETips/2011/may102011.pdf) provides a checklist on what to do before returning to your home. This edition of Energy E-Tips continue the work of May 10, 2011 Energy E-tips edition, focusing on heating and cooling appliances.

If possible, check your warranty for heating and air conditioning equipments. Flood damage to these equipments may not be covered by warranty. Following, contact your insurance adjuster to determine your coverage for repair versus replacement. The objective is to make an informed decision on whether repair or replacement.

Repairs, particularly for heating and cooling equipment that has been exposed to flood water, will likely be extensive. Manufacturers usually recommend that all motors, electrical components, safety controls, and gas valves (in the case of gas appliances) be replaced. A detailed and thorough cleaning and disinfecting of all components recommended. Given the likely expense of attempting to have equipment repaired, replacement may be the option of choice. Especially considering the potential for selecting new equipment which is much more energy efficient. However, if you choose to repair heating and cooling equipment, consider the following items.

Heating appliances

Any heating system exposed to flooding should be professionally inspected, cleaned and reconditioned before reuse. Floodwater may have damaged heating equipment and undermined chimneys. If chimney cracks or leaks go unrepaired, it can cause fire or emit carbon-monoxide. Ask the service person if there is anything you can do to help before his/her arrival. Usually this will include turning off fuel and power to flooded units as a safety measure, and removing mud and debris from the furnace housing and inside the chimney. Leave things like inspection of oil storage tanks and cleaning of motors, blowers and other flooded parts to the professional. Flood insurance and federal disaster assistance programs may help replace flooded gas and oil appliances, including furnaces.

- **Oil and Gas Systems:** In general, any flooded parts should be professionally inspected and cleaned before turning the system back on. Check your owner's manual if you are unfamiliar with the system. If your furnace was flooded to the level of the burners, turn off the valve on the pipe leading to it. If burners were hot when flooded, parts may have cracked. Modern furnaces also have an electrical switch for blowers. Turn this off as well if any furnace parts were flooded.
- **Oil-Burning Systems:** Have the storage tank inspected by an experienced person to make sure water and dirt have not entered. Have the electric motor, burners, blowers, fuel pump and gears cleaned

and reconditioned by an expert. Flooded fuel filters should be replaced. Be certain that the fan motor, electric ignition systems and wiring are completely clean and dry before you turn on the electricity. If you have a hot water system, clean the fins on baseboard radiators. Clean any wall radiators.

- **Liquid Petroleum and Natural Gas Systems:** Some natural gas systems may have a valve to the pilot gas line, in addition to the main fuel valve. Turn both off if this is the case.
- **Electric System:** Electric heating systems are part of electrical wiring system clean-up. Many local codes require that a licensed electrician do the work, or that a municipal inspector check the system before you turn the power back on. If power isn't shut off to a flooded furnace system, shut the main switch off at the meter or remove the fuse to the furnace. (**When touching switches, stand on a dry board and use rubber gloves or a dry stick to pull handles.**) Clean mud and debris from electric baseboard heating fixtures, being careful not to damage heating equipment. Have a professional handle cleaning and reconditioning of all working parts.
- **Chimneys:** A cracked, clogged or leaky chimney can cause fires or carbon monoxide poisoning. Be sure you check your chimney for dirt, debris and leaks before lighting the furnace or a fire. If flood damage has occurred, have a professional do an inspection and make repairs. Most chimneys have a foundation in the ground. If the chimney looks like it has settled or tilted, examine the footing to see whether it has been undermined. Have the chimney rebuilt if it has settled badly or is broken where it passes through floors or roof. If mortar in the joints between bricks has disintegrated, have a mason re-joint the chimney with cement.

Hot Water Heaters

Disconnect hot water heaters and remove all panels and any flood-soaked insulation. Have an electrician or professional repair person clean and restore the unit to working order. It is highly suggested that hot water heaters exposed to flood water be replaced, whether gas or electric powered. In a gas unit, valves and controls will likely corrode. In an electric unit, the thermostat and controls will likely corrode. In both types, the insulation surrounding the unit will be contaminated and will be nearly impossible to disinfect. Additionally, the insulation would take a long time to dry, leading to corrosion of the tank from the outside. Even if water heater components have been cleaned and the unit seems to operate properly, parts may corrode in the future. Both gas and electric water heaters have a pressure relief valve that can corrode and stick after being exposed to flood water.

A new water heater is a relatively small investment, and replacing it is fairly easy to do. Next to space heating, water heating uses the most energy in the home. As with furnaces, new energy-efficient models are available. Insulation levels in new gas and electric water heaters are higher today than in the past. Some utilities offer rebates on their purchase. As with furnaces, you may want to look at the operating costs of electric versus gas water heaters.

Heat Pumps and Air Conditioning Systems

Heat pumps extract heat from the outside air and transport this heat into the house with the aid of a refrigerant. Reversing this process allows the same heat pump system to provide air conditioning for the home, eliminating the need for a separate cooling system. Some heat pumps (the unitary type) are simple wall- or window-mount, and some (split systems) are more elaborate, with part of the components indoors and part outdoors.

Even if the system is in contact with flood water for a long period, this sealed system is likely to remain intact. However, if flood water has repositioned either the indoor or outdoor units of a split system by only a small amount, there is the potential for a breached refrigerant system. The heat pump (or air conditioning system) will then require major repair or full replacement.

If the refrigerant system remains intact after the flood, the entire system should be cleaned, dried, and disinfected. You should have a qualified electric or refrigeration mechanic check all electrical and refrigeration connections for both indoor and outdoor units, including all control circuits. The decision to repair or replace should be made by a qualified professional on a case-by-case basis.

As with the other types of heating systems, the heat pump system will also have a system of distribution ducts. The same procedures of disassembling, cleaning, disinfecting, and drying are in order. Remember to carefully reassemble the ductwork without leaks, and to insulate those portions of the ducts that go through unconditioned spaces.

If you need to replace your existing heat pump, or if you are considering switching to a heat pump because your existing heating system is beyond repair, consider the most energy-efficient model available.

Space Cooling Systems

Whether your home has been cooled with a central air conditioning system, a heat pump, or room air conditioners, you can replace flood-damaged units with energy-efficient models that can cut energy use by more than 20 percent. A professional can help you select a unit based on the size and tightness of your home. Your local utility may offer rebates on the purchase of energy-efficient air conditioners, too.

Consumers can compare the efficiency of central air conditioners and heat pumps (in the cooling cycle) using the Seasonal Energy Efficiency Rating (SEER). Efficient units have higher values of SEER. Room air conditioners are rated by a counterpart system called the Energy Efficiency Ratio (EER). The American Council for an Energy Efficient Economy recommends central air conditioners with a SEER of at least 12, and room conditioners with an EER of at least 9. No matter what type of system you choose, make sure that it is sized properly by a qualified air-conditioning technician. If your cooling needs are modest, then room air conditioners may probably be your best choice.

References:

- North Dakota State University Extension Service: Restoring Heating Systems
<http://www.ag.ndsu.edu/disaster/flood/restoringheatingsystems.html>
- Electric Units Require Care After Flood
<http://www.extension.iastate.edu/disasterrecovery/info/electricunits.htm>
- Disaster Response Handbook <http://www.aragriculture.org/disaster/>
- Flood Recovery: Heating and Cooling Systems
<http://www.dep.state.pa.us/dep/deputate/watermgmt/GENERAL/FLOODS/fs1957.htm>

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