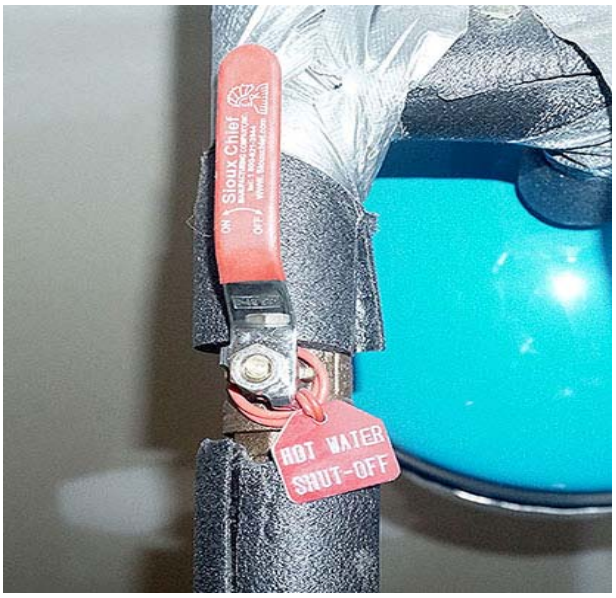
Maintaining your water heater
(Updated 4/19/2017 – see added section)

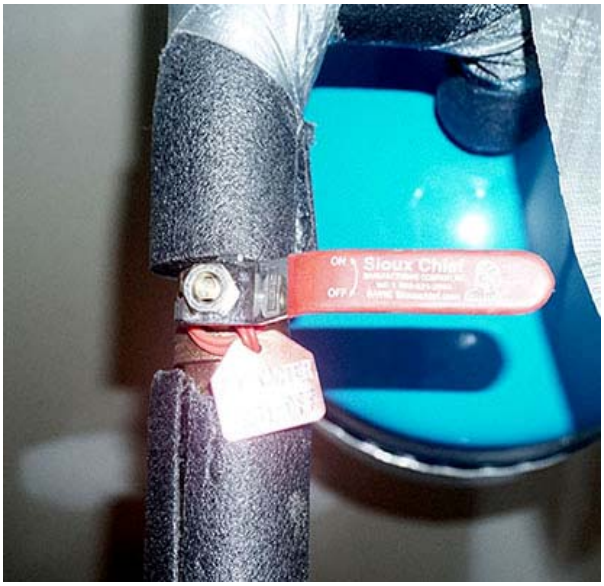
Water heaters have around a 15 year expected life, but to avoid early replacement (a new, electric, 80 gallon unit costs from $950 to $1,900 at Lowes, plus installation), some occasional maintenance needs to be done. It isn't difficult and you don't need to be a plumber to do most of it.

1. Drain and flush the tank at least once per year. Sediment builds up and can interfere with efficiency.

Turn off the electrical breaker for the water heater, to prevent burning out the heating elements. The breaker is usually a dedicated one in the box. **Don't reset it to ON until you are done with the flushing, have cleared air gaps from the hot water faucets, and are sure the water heater has fully refilled.**

Turn off the water intake valve, located on one of the pipes on the top of the tank:





Run a garden hose out the garage door to the street, and connect it to the drain valve:

Run a few gallons of water out until it begins to flow clear.
Be careful! This water will be very hot!
Opening a nearby hot water faucet will speed up the flow. Close the drain valve, then briefly open and close the water intake valve a couple of times. This will stir up any remaining sediment. Drain the tank for a further few gallons, close the drain valve, and re-open the intake valve to fill the tank. Run your hot water faucets, starting with the one closest to the heater and working out to the farthest. This will clear any air pockets in the pipes.

Test the temperature-pressure relief valve by quickly discharging it two or three times. Following the testing, keep an eye out for small leaks from the valve. Put a container under the outlet of the pipe to collect the small amount of water that will come out.

Lowes has a good how-to article:

https://www.lowes.com/projects/repair-and-maintain/water-heater-maintenance/project

Change the anode rod if you haven't done so for a few years. Your water heater's glass-lined steel tank is protected from corrosion by an element inside the heater called the *sacrificial anode rod*. This rod usually uses up its sacrificial material well before the heater itself is ready for replacement, but you can buy a new one for around $20 to $50. This is probably the most useful thing you can do to extend the life of the heater. As usual, Amazon is a good source. Google your heater's manufacturer and model number for info on the correct replacement. The new rod will last a minimum of three years, but should be checked every couple of years thereafter.

Installation can be difficult if the fitting on the tank has had many years to corrode (see update below). Hire a professional plumber if you need to, but enlist an extra pair of strong hands if you do the work yourself. On the State Industries brand water heaters many of us have, this element is down inside a plastic port on the top cover of the tank, not right out in the open. It will be accessible on the top of almost any brand of water heater. Use a 1 1/16" socket and breaker bar to remove and install the rod. Pay particular attention to sealing the new rod in place with Teflon tape.

Here are two good informational sources on how to safely and successfully swap out the rod:

https://www.thisoldhouse.com/how-to/how-to-change-water-heater-anode-rod

https://www.plumbingsupply.com/how-to-change-a-water-heater-anode.html

Insulation. On April 16, 2015, as part of the National Appliance Energy Conservation Act (NAECA), new minimum standards for efficiency of residential water heaters were set by the United States Department of Energy went into effect. If yours is that new, it already has the best possible insulation available. Older units may have had an additional blanket added after installation. If you have an older unit without the added blanket, Lowes and Amazon sell the blankets very cheaply. In addition to a possible small energy savings, the blankets may help to protect a heater installed in an unheated part of the house if you are away for the colder months, and the power goes out for any length of time.

Set the water temperature thermostat to 120 degrees. Hotter water might scald you anyway, and you can save on energy costs by not holding 80 gallons of stored, heated water at a higher point. Your manual will tell you how to adjust the temp, and you may have to remove a metal cover on the side to access the adjustment, usually a small dial.

Replacement. The trend today is moving rapidly toward a very different method of heating residential water, used in Europe for quite some time, known as *Demand* or *Tankless* heating. There are several advantages, not least of all the nearly instantaneous delivery of hot water right at the faucet. One or two of these units can easily service our more compact homes here in Four Seasons, and they are becoming competitively priced if your older tank-type heater is in need of replacement. There is a good article on them here:

https://energy.gov/energysaver/tankless-or-demand-type-water-heaters

Update 4/17/2017

Last week my son and I replaced the anode rod in our State brand electric water heater, model no. ES680DORTW. The replacement rod came from Amazon.com:

https://www.amazon.com/gp/product/B001ATC4I6/ref=oh_aui_detailpage_o00_s00?ie=UTF8&psc=1

Price was $25.83, “free” shipping included.

It was not a simple job, largely because the old rod was so tightly bonded to its threaded fitting in the top of the tank. One of us braced the heater by inserting a length of 2 X 4 between the hot and cold pipes at the top of the tank to offset the twist generated by the wrench on the fitting. We soaked the fitting in WD40 for a couple of hours (common workshop “penetrating oil” would do just as well) to free it up. We were successful and had no damage to the pipes. And as soon as the fitting broke loose, we immediately soaked up the pool of lubricant to keep it from entering the water in the tank. We also flushed the tank using the instructions above, and an amazing amount of crystallized sediment washed out.

Here are photos of the old rod, probably the 2007 original. The metal in it, aluminum, was totally converted to calcified crystals, probably leaving it ineffective for several years. We'll check the new one in three or four years.

We had to bend the old rod to get enough clearance to get it out. The new one was a couple of inches shorter and we were able to get it in without major surgery (we cut about another inch off of it) but you need to carefully measure the clearance above the tank to be sure you can get a new rod in. Clearance must be as much or more than the total length of the new rod to get it into the fitting. If clearance is tight, look for one of the segmented rods that are made for tight spaces. They cost a bit more, but not the $1,000 or more of a new heater.

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