How to replace existing hard-wired smoke detector

The National Fire Protection Association (NFPA) recommends replacing smoke alarms every 10 years (see http://www.nfpa.org/public-education/by-topic/smoke-alarms/installing-and-maintaining-smoke-alarms.) Most homes in Lafayette Village have hardwired smoke alarms installed on the ground and top floors of town homes and various places in detached homes. However, those smoke alarms are now over 30 years old and should be replaced. If you are comfortable doing small electrical repairs (replacing a plug receptacle or installing a new light switch), replacing your smoke alarms is an easy task, taking no more than 15 minutes.
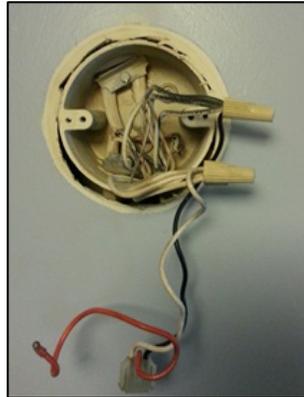

Example of an original smoke alarm

If you chose to replace your smoke alarms, you should replace all of them at the same time – hardwired smoke alarms are normally interconnected (as are the originals), so that if one alarm sounds, all alarms in the house will sound. Also, if you are not comfortable around electricity, you should make sure power to the smoke alarm you're working on has been turned off. You can do that at your electrical panel, located in your basement. (If you are lucky, you have already labeled each circuit breaker.) Turn off the one that provides power to the smoke alarm and other electrical fixtures on the same circuit
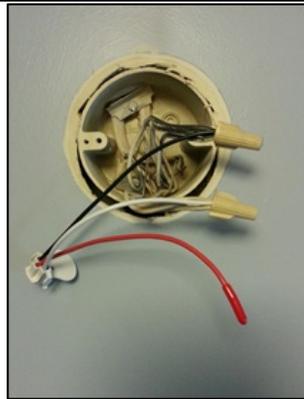
I purchased two Kidde FireX combination smoke alarm and carbon monoxide (CO) detector, model KN-COPE1. I chose this model because it detected both smoke and carbon monoxide, had separate warnings for either event, and had a front loading battery backup system, in the event of a power failure. Each alarm cost about $50 at Home Depot. This model is also available online for around $40.	
Here is the smoke alarm I purchased, fresh from its packaging. From the left, you see the base plate to which the smoke alarm attaches, the wiring harness that connects the house electricity to the smoke alarm, and the smoke alarm itself showing the backup battery door in open position. Not all models have a backup battery. If your new smoke alarm does have a battery, remove any protective plastic covering it, replace it in its container, and close the container door.	
To remove the old smoke detector, twist it counter-clockwise until it comes apart. You will see the wire harness coming out of the wall, consisting of red, black and white wires. The wire harness plugs into the smoke alarm and has connecting clips on both sides securing the plug to the alarm. Grasp the plug on either side and squeeze the connecting clips together to remove the plug.	

Using a flathead screwdriver, unscrew the smoke alarm base plate and remove it from the wall or ceiling. Save the two screws, which you will use to attach the new connecting plate later. Pull the twist-on wire connectors out of the electrical box		
Unscrew the two wire connectors – mine were yellow, and discard the old wire harness. Position the black wire from the new wire harness next to the black wire in the junction box and screw the wire connector onto both wires until you have a firm connection – the wires will not pull out of the connector. Do the same with the white wire from the new harness, connecting it to the white (or yellowed) wire in the junction box.

You do not do anything with the red wire. | | |
| Push the wire connectors back into the junction box. Then using the screws you saved earlier, attach the smoke alarm base to the junction box, making sure the wire harness connector goes through the center of the base.

You are almost done! | | |
| Attach the harness connector to the prongs on the back of the smoke alarm. The connector will snap in with an audible click. You will see a green light on the front of the smoke alarm, indicating it is powered up and active.

Once powered, my smoke alarm went through a power-on test, testing both the smoke alarm circuits and warning and the carbon monoxide circuits and warning. | | |

Push the wires back into the junction box, and connect the smoke alarm to its base, turning it clockwise until it's fully connected to the base. The green light indicates that the smoke detector is powered and functioning. Congratulations – you have successfully replaced your existing wired smoke alarm with a new smoke detector that will last you for the next ten years!	

You can dispose of your old hard-wired smoke detector in the trash – these models do not use radioactive isotopes that can require special handling. Remember to change the battery in your new smoke detector twice a year, and to test your smoke detector monthly.

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