How Habitat for Humanity of Summit and Wasatch Counties is building homes of the future today!

**STEP #2: INSULATION AND AIR SEALING**

1. **MAKE IT AIR TIGHT**
   Air sealing a home is a highly effective way to reduce heating and cooling energy use. "Air Changes per Hour" (ACH) is the standard to measure a home’s air tightness at 50 pascals of pressure. A blower door test can measure the ACH throughout construction and identify leaks in need of sealing. A zero energy home should have an air tightness between 0.6 to 2 ACH50.

2. **BLOWER DOOR TESTS**
   For the first blower door test, the ceiling drywall needs to be installed and sealed ahead of the normal construction sequence, and exterior sheathing needs to be sealed as much as possible, but the drywall should not yet be installed on the walls. After identifying and sealing leaks at this stage, an additional test should be conducted after the electrical, plumbing, drywall are installed.

3. **SEALING THE WALLS**
   Lay a solid bead of construction adhesive around a home’s exterior plywood and then another bead below bottom plates before walls are tipped up. To attach drywall to the framing in an airtight manner, choose large drywall pieces, seal the gap where drywall touches the top plate of the wall framing, and also seal all possible air leakage points around holes cut into the drywall.

4. **AEROSOLIZED AIR SEALING**
   An alternative to Steps 3 - 6 is to seal the home using aerosolized air sealing material, such as AeroBarrier. Through this approach air sealing material is sprayed into the air inside of the home while a blower door creates a negative pressure within the home, forcing tiny particles of air sealing material through all air leaks throughout the home.

5. **LOCK DOWN AIR LEAKS**
   To avoid other air-loss culprits, use only air-tight recessed lighting and eliminate bathroom exhaust fans by utilizing the ERV ventilation system. In addition, choose a ductless heat pump (mini-split system), and avoid plumbing on outside walls wherever possible. Place wires and plumbing in exterior double-stud walls in the interior set of studs. And once electric boxes and wiring is installed, seal the electrical boxes with spray foam, or duct mastic.

6. **WINDOWS AND DOORS**
   Don’t forget about window and door frames which should be sealed to the wall frames with caulk or foam depending on the size of the gap. Casement windows are ideal because they close tightly creating a firm air seal. Compression gaskets and weather stripping give the best air seal. An airtight gasket should also be installed on the crawl space door.