

Alterations to Existing HVAC Systems ("Change-Outs")

Introduction

- According to the California Energy Commission, "Up to 30% of all money spent on operating HVAC equipment is lost through duct leakage, with additional waste stemming from improper system design and installation."

What is an "Alteration" or "Change-Out"?

- 1) A system *Alteration* or *Change-Out* is the installation or replacement of space conditioning equipment including air handler, outdoor condensing unit, cooling or heating coil, furnace heat exchanger, or by adding more than 40 feet of new ducts.
- 2) An HVAC change out requires a permit from the Plumas County Building Department and reduced duct leakage verification (testing) by a certified HERS rater.

Cost Benefits of Reduced Air leakage

- 3) Assuming 25% leakage for an existing duct system or an untested newly installed system and a \$200 (conservatively) a month heating bill and a \$300 duct-sealing test. Assuming only 5% leakage with the tested system, the 20% reduction in leakage will save the owner \$40 a month; the payback will be within one to two heating seasons.
- 4) The following video shows a duct test.
http://www.energyvideos.com/popup.php?M=441&V=cec_hvac_overview.wmv&C=205&M1=441&M2=791&U=0

Comfort and Air Quality

- 1) Increased comfort: With proper system design and layout, tight ducts insure you will be more comfortable. The conditioned air will not be lost to underfloor and attic spaces.
- 2) Improved indoor air quality: The home is less likely to be depressurized leading to the introduction of pollutants (dust, molds, insulation, etc) from the crawl space or attic.

Conclusions

- 1) Duct sealing, verified by a duct test, provides the most cost-effective way to reduce duct losses, thus reducing your energy costs.
- 2) The cost benefits continue to accrue for the life of the system.
- 3) Getting a building permit and testing the HVAC system reduces your liability as a homeowner.
- 4) Properly installed systems increase your comfort and satisfaction.