

The World of Buried Ducts

Air conditioning ducts run through 130°F attics are subject to some pretty hefty thermal penalties. So, why not insulate more? Three years ago, CARB performed energy modeling to evaluate a simple approach in dry climates: bury ducts beneath blown attic insulation. CARB found that “buried” R-4 flex ducts could have effective R-values of 9 to 28, depending on size, installation, and insulation levels. Testing by CARB member **Davis Energy Group** has confirmed the benefits, but implementing this technique on a large scale has proved challenging.

HVAC contractors need to be well informed of a new installation technique, as they typically hang ducts from rafters or trusses. Duct systems must also be better designed to take full advantage of buried duct benefits. “Octopus” systems – where supply and return ducts are run wherever convenient in available attic space (*photo at right*) – are very hard to bury. A buried-duct design should keep ducts as low as possible in runs parallel to attic framing. Crossing framing or other obstacles raise ducts out of the insulation and should be minimized. Attics with stick framing (rather than roof trusses) are especially challenging—ceiling joists are often 2x8s or 2x10s, and ducts running across these joists will be well above insulation levels.



California's new residential energy code (going into effect this month) lists buried ducts as an option for code compliance. Because of complicated verification procedures, few (if any) builders are using the buried duct option. Working with Davis Energy Group and **Consol** in California, CARB is continuing to investigate where this technique works best, when it's worth the effort, and to develop guidelines to help builders and contractors make this practice effective.

Come to Colorado



The **Energy & Environmental Building Association's** 2005 Excellence in Building Conference and Expo, October 26-28 in Colorado Springs, Colorado, will feature the latest and greatest in building performance education, with emphasis this year on developments in green building. The **U.S. Department of Energy's Building America** program will be featured in a number of sessions, including a “Best Practices” series and case studies of Building America green pilot homes and communities. Steven Winter and Maureen Mahle will discuss how the Building America program can expand its energy-focused performance goals to include other performance attributes like green building. The development of national green building guidelines from the **National Association of Home Builders** and the **U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) for Homes** provide an opportunity to measure green attributes. Winter will demonstrate how energy-efficient Building America homes rate on various green building program scales. See you there!

Building America in Yakama

The Yakama Nation Housing Authority (YNHA) has received approval in next year's low-income tax credit program to continue applying Building America principles to its housing rehabilitation projects. The Yakama Nation, the largest Native American tribe in the Pacific Northwest, occupies a 1,573-square-mile reservation in south central Washington. As part of its pioneering partnership with CARB, YNHA performed major rehabilitation on 25 of 40 homes in its Adams View development this year. Features like higher R-value insulation, air sealing, low-e windows, PEX piping, metal roofing, and heat pumps were installed by YNHA's employees and subcontractors. Steven Winter Associates, Inc. provided energy modeling, specifications, training, and testing. Because space heating is the major energy component for these homes, the team focused on efficient HVAC and tight building envelope. YNHA purchased its own equipment for cellulose insulation and its team of workers became experts in achieving good air seals around problem areas such as crawlspace hatches and exhaust fans. A 47% total source energy savings from pre- to post-rehab condition was calculated, and a number of opportunities were identified for further HVAC installation improvements in future renovations. Based on the project's success, the YNHA will receive funding to apply the CARB retrofit package principles to the remaining rental homes at Adams View before beginning renovations on its Wolf Point project.



Sign Up for Multifamily Building Training

SWA's multifamily team is applying CARB principles to multifamily buildings, training building operators how to save energy and lower utility bills. During hands-on training, participants will learn methods to conserve resources while improving the health, safety and comfort of existing multifamily housing. [Click here](#) for more information about upcoming trainings.



Our 100th Issue!

By the way, this issue of *CARB News* is the 100th edition of what has proved to be a very popular way to keep the industry, the research community, and movers-and-shakers in the industry abreast of CARB, DOE's Building America, and the **National Renewable Energy Laboratory**. It goes to nearly 10,000 subscribers monthly, and if you're not already one of them, [click here!](#)

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