#51 EXECUTIVE SUMMARY

Duct Testing & Repair Programs

Duct testing and repair is one of the most exciting new areas for potentially huge energy savings. Recent studies and pilot programs show that these savings can be realized in southern and northern latitudes... and that the per home savings can be as high as 8-10% of total household energy use, or as much as 10-15% of household electrical use. In short, duct testing and repair represents one of the newest and largest gold mines for residential energy savings.

The recent focus on duct testing and repair is really the brainchild of three independent energy analysts. John Tooley and Neil Moyer of Natural Florida Retrofit had the insight that a tremendous amount of energy is wasted as a result of leaky ducts. They also gained the respect and support of Jim Cummings of the Florida Solar Energy Center who was simultaneously working on the same concept. Fortuitously, the three teamed up and began to champion the cause with the critical financial support of the Florida Energy Office. They found that leaky ducts are a common, if not universal problem in Florida.

This profile, unlike others in The Results Center's 1992 and 1993 Profile Series, does not focus on any one specific utility, but instead presents brief descriptions of the "founding fathers" of duct testing and repair (the Florida Solar Energy Center and Natural Florida Retrofit), then some of the base concepts involved with duct testing and repair, and then presents the experiences of several utilities to date in this field. These utilities include The City of Lakeland (FL) Electric and Water Utility, Florida Power Corporation, Florida Power and Light, Pacific Gas and Electric, and Duke Power Company.

As alluded to above, repairing leaky ducts bears a great potential for energy savings (both electric and gas and other home heating fuels as well.) But repairing leaky ducts can have significant air quality benefits as well. Often leaky duct returns, which are under negative pressure or a mild vacuum, pull poor quality air from attics, garages, and basements. Tightening these ducts can thus enhance indoor air quality. The flip side of this equation is that by reducing leakage from a home there is a potential to upset delicate pressure balances, and with it the chance of exacerbating safety issues related to appliances that rely on combustion, such as gas hot water heaters. Thus care has to be taken and most utilities perform combustion safety tests before and after their duct repair efforts.

One of the great ironies of this emerging field is that ducts ought to be installed correctly in the first place. If they were, there would be much less need for costly and time-consuming retrofits. PG&E's new duct testing and insulation program discussed in this profile includes a "High Performance Ducts" component in its residential new construction program. As such, builders can earn incentives for installing and testing duct systems in accordance with requirements set forth by PG&E, obviating the need for later repairs.

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DUCT TESTING AND REPAIR PROGRAMS

Organizations:	*Florida Solar Energy Center and Natural Florida Retrofit*
Sector:	*Primarily residential, but research is being conducted in the commercial sector*
Measures:	*Repair of leaks in duct systems*
Mechanism:	*Duct systems are tested and areas of leakage are identified by qualified contractors. Duct repairs are made using mastic and fiberglass mesh. Combustion safety testing is performed as part of the duct testing and repair process.*
History:	*FSEC and NFR began investigating duct testing and repair in 1985 and 1986. Utilities have been implementing system-wide programs since 1991.*

Potential Savings per Home

Annual energy savings:	*1,400 kWh*
Winter peak capacity savings:	*1.6 kW*

The Results Center produced 126 profiles of the most successful energy efficiency and renewable energy programs in the United States and around the world in the early and mid 1990s. With the support of the John D. and Catherine T. MacArthur Foundation, Ted Flanigan directed a research team at Colorado-based IRT Environment to produce and distribute these exceptional examples. Thanks to strong demand for solid case studies, The Results Center was supported by dozens of major utilities and energy associations worldwide. Today, The Results Center is managed again by Ted Flanigan, now at California-based EcoMotion Incorporated, a firm focused on strategic consulting, information dissemination, program design, outreach services, and aggressive implementation. To nominate highly successful programs, contact: The Results Center, c/o EcoMotion, 15375 Barranca Parkway, F-104, Irvine, CA 92618, (949) 450-7155, or TFlanigan@EcoMotion.us