

OPTIONS FOR REDUCING ENERGY USE IN MANUFACTURED HOUSING

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The mobile home industry was born out of a need to supply inexpensive, mobile residences for soldiers during World War II, and has grown to become a legitimate housing alternative. Because the median price of a new site-built home is above \$85,000, and because in many areas (particularly rural locations) no other form of housing is available, manufactured homes will continue to fill an important housing niche. The popularity of manufactured housing is strong. In North Carolina 10% of the population currently lives in a manufactured home. Across the state, manufactured homes have represented 30% of the new single-family homes for the last several years.

Manufactured housing is one of the most significant contributors to the growth of residential electric demand. In rural North Carolina, where housing alternatives are limited, often more than 50% of the new utility connects are for manufactured homes. Manufactured homes in North Carolina are almost entirely supplied with electric furnace heaters. In addition, over 60% of these homes are eventually installed with some form of air conditioning. These facts make manufactured housing a significant contributor to the electrical load, and also make these homes an excellent opportunity for improvement in residential energy-efficiency programs.

The fact that the thermal integrity of manufactured homes is less than that of site-built homes has been discussed and analyzed from the inception of the federally mandated Manufactured Housing Construction Safety Standards in 1976. The North Carolina Alternative Energy Corporation joined this movement and began a building energy simulation project hoping to find some unique energy-efficient options for manufactured housing in North Carolina. One important, if often frustrating, part of this project was our inclusion of the opinions and knowledge of the local manufactured housing industrial community. These businessmen steered us to a more focused analysis project that excluded options not currently or likely to become available. The most significant findings of the project show that either of two existing options in manufactured homes provide a 30% reduction in annual energy use at a reasonable capital investment. These two options are (1) an enhanced insulation package already promoted by the state's investor-owned utilities (IOUs), and (2) the use of a heat pump.

The opportunity for energy savings from these two options far outweighs all of the other options that were examined. The state's IOUs currently promote an enhanced insulation package; however, these homes penetrate only 20% of the new manufactured home market within the IOU's territory. Outside the IOU territory, the penetration is less than 10%. Heat pumps, which are not currently promoted in manufactured housing by any North Carolina utility, capture only 6% of the market.

This project also identified significant barriers preventing energy-efficient options of any kind from entering into market. Among the more important barriers are:

- Retailers and consumers do not believe the benefits of the energy-efficient home
- Retailers lack sales tools that they WILL use
- No consensus exists among the utilities for an energy-efficient standard
- Manufactured housing is an excessively cost-competitive industry

Our current effort in manufactured housing is to demonstrate that energy efficiency can be successfully marketed to prospective home buyers. The state manufactured housing industry trade group remains very interested in these efforts and is investing both time and money in this project. The project has engaged a rural utility, an Electric Membership Cooperative (EMC), to serve as the host for a marketing demonstration project. The specific goals for this project are:

- Demonstrate that manufactured home buyers want, and will buy, energy-efficient homes
- Develop a proven sales kit for retailers
- Market the energy efficiency available in these homes
- Achieve a significant improvement in penetration of the enhanced insulation standard and heat pumps in new manufactured homes
- Promote a consensus standard for energy-efficient manufactured homes that is recognized by all the utilities in the state

There are three phases to this marketing project: gathering information, design of marketing tools, and implementation. The first phase, gathering information, was carried out through surveys of recent manufactured home buyers in the test market area and the manufactured home retailers who service that area. Fifteen hundred surveys were sent to customers in the EMC service area. Some of the results from the consumer survey were used to develop a subsequent retailer survey. Designed by marketing and public relations consultants both inside and outside of the manufactured housing industry, the marketing tools include consumer and retailer education, advertising, point-of-sale information, and retailer incentives. The implementation phase will begin in September with one EMC for a six-month period, and will then expand after an evaluation period to as many as four EMCs.

Recorded sales of energy-efficient homes will be used to demonstrate the efficacy of this marketing effort. A successful project will encourage retailers across the state to treat energy efficiency as a sales tool in their own promotion instead of as an added expense.