Building AMERICA

Project Summary
Cold/Dry Climate

Improved Framing and Ductwork Lower Energy Costs

McStain Enterprises — Longmont, Colorado

Building America is sponsored by the U.S. Department of Energy. The program aims to:

- Build 2,000 efficient, affordable homes by the end of 2000
- Reduce energy use by 50% and reduce construction time and waste
- Improve indoor air quality and comfort
- Encourage a systems-engineering approach for design and construction of new homes.

McStain Enterprises' new cottage-style homes built under the U.S. Department of Energy's (DOE's) Building America program are designed to greatly reduce energy costs and improve indoor air quality for their customers in Longmont, Colorado. In addition, energy-efficient features in the homes provide owners with greater durability and value, allow some buyers to qualify for special energy-efficient mortgages, and can result in higher resale values. Features of these McStain homes include:

- **Building Envelope**—Advanced framing, panelized walls, and low-emissivity windows. Instead of 2 x 4 framing, McStain is using 2 x 6 framing to allow room for thicker insulation. Prefabricated wall panels result in better quality control and less waste. Windows use low-emissivity glass and vinyl frames to reduce heat loss in winter.
- **Air Distribution System**—Air distribution system consolidated and tightly sealed. Centrally located and shorter heating and cooling ducts reduce air leakage and lower builder costs.
- **Heating and Cooling Systems**—High-efficiency gas furnace, optional high-efficiency air conditioner, and programmable thermostat. Energy-efficient features allow for a smaller heating system and reduce the need for cooling in the Colorado climate. A programmable thermostat makes it more convenient for occupants to save energy during the winter by lowering the temperature at night and during unoccupied periods.
- **Indoor Air Quality**—Automated multi-port exhaust ventilation and sealed-combustion appliances. The ventilation system maintains indoor air quality by providing occupants with a controlled amount of fresh air. Sealed-combustion appliances keep gas combustion products from escaping to the house.
- **Green Builder Concepts**—Design principles from Colorado's Green Builder program and Building America are used in all of McStain's homes to increase energy efficiency and help protect the environment. These include carpeting, decking, siding, and floor joists all made from recycled or resource-efficient materials. Sprayed cellulose insulation, which is made from recycled newsprint, is installed in exterior walls.

Warren Gretz, NREL/PIX08742

Houses built by McStain Enterprises under Building America include better insulation, shorter ducts, low-emissivity windows, recycled building materials, and controlled ventilation.

McStain has been working with the Consortium for Advanced Residential Buildings (CARB), one of the five Building America industry teams, to develop and build innovative new house designs. McStain's Building America homes are designed to achieve 35%–40% savings in heating and cooling energy costs compared to homes built in accordance with the 1993 Model Energy Code (MEC)—a code that defines the national standard for energy efficiency in new homes.

BUILDINGS FOR THE 21ST CENTURY

Buildings that are more energy-efficient, comfortable, and affordable ... that's the goal of DOE's Office of Building Technology, State and Community Programs (BTS). To accelerate the development and wide application of energy efficiency measures, BTS:

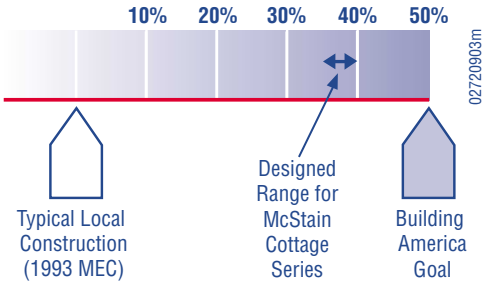
- Conducts R&D on technologies and concepts for energy efficiency, working closely with the building industry and with manufacturers of materials, equipment, and appliances
- Promotes energy-/money-saving opportunities to both builders and buyers of homes and commercial buildings
- Works with state and local regulatory groups to improve building codes, appliance standards, and guidelines for efficient energy use
- Provides support and grants to states and communities for deployment of energy-efficient technologies and practices.

The Approach

Building America's systems-engineering approach unites segments of the building industry that have traditionally worked independently of one another. It forms teams of architects, engineers, builders, equipment manufacturers, material suppliers, community planners, mortgage lenders, and contractor trades. More than 150 different companies make up the five Building America teams:

- Integrated Building and Construction Solutions (IBACOS)
- Consortium for Advanced Residential Buildings (CARB)
- Building Science Consortium (BSC)
- Hickory Consortium
- Industrialized Housing Partnership.

Building America Performance Goal
(Heating and Cooling Energy Savings)



The teams design houses from the ground up, considering the interaction between the site, building envelope, mechanical systems, and other factors. With this approach, the teams can incorporate energy-saving strategies at little or no extra cost.

VISIT OUR WEB SITES AT:

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Printed with a renewable-source ink on paper containing at least 50% wastepaper, including 20% postconsumer waste

March 2000 NREL/FS-550-27208