Green Building Basics

This Green Tip Sheet provides an overview of the basic elements of green building, starting with design and moving all the way through maintenance and operation of the home. Future Green Tip Sheets will provide specific information on how YouthBuild programs can successfully implement some of these elements.

Integrated Design Process

An integrated design process uses a whole-systems approach by considering the life cycle of the building rather than implementing a few random green techniques and materials. A team consisting of the developer, architect, engineer, contractor, property management staff, and anyone else who may be involved should create a plan to incorporate green building strategies, systems, and materials. The team should consider the life cycle of the building from the beginning.

The benefits of an integrated design process can include substantially lower development costs, greater health, plus economic and environmental benefits for residents, property owners and communities. Design integration is explained at Green Home: www.greenhome.org/policy/makers/how_p/plan_p/integrate_p.html.

Building Envelope

The building envelope is the outer shell of the building that protects the building's indoor environment and controls the climate. It consists of the foundation, roof, walls, doors, and windows. By insulating and sealing the shell of the home, you can control the flow of air in and out of the home, which will have a tremendous impact on heat loss, cooling needs, HVAC sizing, durability, energy efficiency, moisture control and air quality. A whole building design guide can be found at www.wbdg.org/design/envelope.php.

Energy Efficiency

An energy efficient home makes effective use of heating, cooling, hot water, lighting and appliance energy through building-envelope upgrades, high-performance windows, controlled air infiltration, upgraded heating and air conditioning systems, appliance layout, tight duct systems and upgraded water-heating equipment, appliances and lighting. In addition, windows, awnings, porches, and trees are oriented to shade windows and roofs during the summer while maximizing solar warmth in the winter.

A further step towards energy efficiency is to use renewable energy sources such as solar PV panels, wind turbines, geothermal power, etc. These contribute to improved home quality and homeowner comfort, lower energy demand and costs, and reduce air pollution.

ENERGY STAR® is a federal "good housekeeping seal" of energy efficiency for homes, appliances, windows, and more. Check out Energy Star homes on the Energy Star homepage, www.energystar.gov. Also check out the Database of State Incentives for Renewable Energy at www.dsireusa.org

Water Efficiency

Wastewater treatment and protecting drinking water quality become more expensive every day. Even worse, clean drinkable water is getting scarce! You can reduce water waste in a home by installing fixtures that use less water, including low-flow shower heads, kitchen and bathroom aerating faucets, and low-flush toilets or dual-flush toilets that allow users to choose between two amounts of water. Composting toilets use even less water, eliminating the need for a sewer hookup or plumbing. Other water-efficient elements of a green home include on-demand water heaters, ENERGY STAR dishwashers and washing machines, low-volume drip and weather-based irrigation systems, rainwater collection, and graywater systems. Water-efficient products and techniques can be found on WaterSense at www.epa.gov/WaterSense/index.htm.

Green Materials

Green products and materials conserve energy, water, and natural resources. They also create a healthier and more beautiful living environment and reduce the negative impact the home has on the community and the planet.

Not all materials that are considered "green" are natural. A product or material is evaluated through a life cycle assessment (LCA) that considers the full range of a product's environmental impacts, from the original raw materials used to create it, to the manufacturing process, to its ultimate disposal. For example, an energy-efficient window may not have been created with recycled material, but its impact through its life creates enormous energy savings in a home, making it a green material. Scientific Certification Systems independently certifies products that meet the EPA's environmentally preferable standards at www.scscertified.com.

YouthBuild participants can realize excellent career and entrepreneurial opportunities in green product manufacturing, since there aren't enough suppliers of green materials today and the need for new, innovative green products is huge.

Operation and Maintenance

Once a green home is built, families who move in will need to learn how to operate and maintain their new green homes in the best possible way to continue to save energy. YouthBuild programs should provide this guidance, ensuring that the families have the necessary information for their new home to provide optimum health benefits, energy conservation, and economic performance. YouthBuild programs should begin creating for our families "how-to" manuals on how to best operate their green home, while YouthBuild participants become the teachers for green practices with our families and communities. Please go to http://www.workforce3one.org/page/communities for more information on green building practices.

Link and Learn

EnergyStar is the federal "good housekeeping seal" of energy efficiency for homes, appliances, windows, and more:
www.energystar.gov

Database of State Incentives for Renewable Energy:
www.dsireusa.org