WHAT TECHNOLOGIES ARE AVAILABLE TO HOMEOWNERS TO HELP THEM CONSERVE ENERGY?
In the last couple of decades, technological advances in insulating materials along with improvements to household appliances and new mechanical devices now offer quite a few options for the homeowner to consider (Energy Star - Energy Efficient Products, Energy Savings at Home, Low Energy House). The important topic of powering a house using alternative energy sources is not covered in this paper. For more information on that topic, please see Works Cited, Low Energy House – Renewable Energy.

In an unimproved home, a substantial amount of the energy bill will probably go toward heat lost through ceiling, walls and windows (Energy Star - Energy Savings at Home, Seal and Insulate Your Home). The most efficient technique to curtail this is to employ super-insulation. Although retrofitting with super-insulation is not nearly as effective as designing it into a new house, it can be advantageous. To super-insulate an existing house one would lower ceilings and extend walls to provide space for additional material. Instead of installing more mineral wool or cellulose insulation, the conventional choices, one would fill the additional space with upgraded, lower heat transfer materials. For instance, rigid phenolic boards with reflective facings could be tightly packed into this extended space (Low Energy House – What Is Super-Insulation).

If a building envelope is not made as nearly airtight as possible, a good deal of the savings that would have been gained by super-insulating will be lost. Doors, windows, utility service openings, ducts and every construction joint should be properly sealed with caulk and weather stripping (Energy Star - Energy Savings at Home, Why Seal and Insulate?).
Because a super-insulated, well-sealed house is nearly airtight, it becomes important to include a mechanical heat recovery ventilation unit - important both for energy conservation and for good air quality within the house. This system will recover warm air from the interior that has been generated by various appliances, electronics, light fixtures and from the bodies of people in the house. This recovered air is used to warm the fresh, cooler air being pumped into the house. The process uses a double fan system, one fan pumps warm, stale air out; the other, pumps fresh air into the house after it has been warmed by proximity to the outgoing, warm air. Besides energy conservation, this cycling process helps maintain good air quality within the house. Additionally, less auxiliary heat from a HVAC system will be needed (Low Energy House – What Is Super-Insulation? Super-Insulation and Mechanical Heat Recovery Ventilation).

Second in importance to adequate insulation are the glass components in the house, especially windows. They should feature double or even triple panes with an inert gas such as argon between the panes and a coating on the glass to reflect ultra-violet wavelength and allow the appropriate amount of heat transfer for the climate zone. When selecting windows, climate zone is critical. The National Fenestration Rating Council (NFRC) establishes these ratings (Energy Star - Energy Efficient Products, Certified Products, What Makes It ENERGY STAR?).

Power-consuming household items from the largest appliance to the smallest electronic item should be assessed against more energy-conserving models and replaced where assessments so indicate. A helpful check list of such items to jog one’s memory can be found on the Energy Efficient Products, Certified Products page.
Works Cited

Energy Star – The simple choice for energy efficiency

Web Site: *Energy Star – The simple choice for energy efficiency* with links to *Energy Efficient Products - Your source for energy efficient product information* and *Energy Savings at Home - Advice, tools, resources and inspiration to help you save energy*.


(U.S. Department of Energy together with U.S. Department of Environmental Protection, Updated 2016.)

[https://www.energystar.gov/](https://www.energystar.gov/)

Low Energy House – the home of energy saving


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