Retrofitting for Energy Conservation

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McGraw-Hill

New York  San Francisco  Washington, D.C.  Auckland  Bogotá
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ABOUT THE AUTHOR

WILLIAM H. CLARK is a mechanical, plumbing, structural, electrical, and lighting engineer who has been active in renovation projects throughout his career. An expert on energy-efficient materials and designs, he is a nationally known authority on retrofitting for energy conservation. Mr. Clark has written articles for numerous trade and technical journals, as well as several computer programs to model energy conservation strategies.
Developing a Research Agenda for Retrofitting Sustainability. Contents. Introduction. Energy conservation for urban housing. Energy conservation in commercial, institutional and industrial buildings. Climate change and built environment. Water management. Energy-relevant factors of building envelopes include window-wall ratio, insulation levels of walls and roofs, the thermal resistance and solar heat gain coefficient of windows, the degree of air-tightness to prevent unwanted exchange of air between inside and outside, and the presence or absence of operable windows. Several energy conservation measures have been documented as contributing to fire ignition. These range from long-term heat entrainment resulting in smouldering ignition to the effects of prismatically focused solar energy on the internal components of solar collectors. This projection assumes that all building retrofits and new construction projects will, at a minimum, utilize the same technology currently used in existing buildings and that the current campus energy consumption pattern will not change significantly in the future. It is possible that actual future energy consumption will be lower as improved or newer energy savings technologies develop and are incorporated into LACC operations. In this subsection some energy conservation measures (ECMs) commonly recommended for commercial and industrial facilities are briefly discussed. It should be noted that the list of ECMs presented below does not pretend to be exhaustive nor comprehensive. In addition to the reduction in the total facility electrical energy use, retrofits of the electrical systems decrease the cooling loads and, therefore, further reduce the electrical energy use in the building. These cooling energy reductions, as well as possible increases in thermal energy use (for space heating), should be accounted for when evaluating the cost-effectiveness of improvements in lighting and office equipment.