Documents

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5.5 COMPUTERIZED, INSTRUMENTED, RESIDENTIAL AUDIT

5.5.1 The Innovation

The Computerized, Instrumented, Residential Audit (CIRA) is a collection of programs for energy analysis and energy auditing of residential buildings. From a large list of energy retrofits, CIRA can select those that would maximize energy savings and also indicates the sequence in which they ought to be installed. It can be used for houses in different climates, with a variety of economic parameters.

In the CIRA energy calculation model, each retrofit is defined by a change in one or more of the following: (1) the building load coefficient, (2) the furnace or air conditioner efficiency, (3) internal gains, or (4) the heating or cooling distribution losses. To estimate the energy consumed by any given house, CIRA makes use of heating and cooling algorithms developed at Lawrence Berkeley Laboratory, Los Alamos National Laboratory, National Institute of Standards and Technology, and Princeton University. CIRA can present results in both tabular and graphical forms. In sum, the two important functions performed by CIRA are the selection of retrofits and their economic optimization (Sonderegger and Dixon, 1983; Sonderegger et al., 1983).