



**US Army Corps
of Engineers.**
Construction Engineering
Research Laboratory

Fact Sheet

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LIFE CYCLE COST IN DESIGN (LCCID) PROGRAM

The Problem

Department of Defense (DOD) regulations require economic studies to be conducted during the design phase of a project whenever two or more design alternatives exist. The DOD also requires these studies when the cost of performing the study is justified based on potential benefits. Usually, designers conduct these studies to analyze building energy conservation options, but other building features require economic studies as well. The procedures for conducting the studies depend on the criteria source, i.e., the Army, Air Force, or Navy. Furthermore, the criteria, especially for energy studies, continue to change rapidly, often leading to a general misunderstanding of the study's requirements. Consequently, many studies evaluated by Headquarters, U.S. Army Corps of Engineers (USACE) are performed incorrectly.

The Technology

The U.S. Army Construction Engineering Research Laboratory (CERL) has developed the Life Cycle Cost in Design (LCCID) program under the guidance of USACE; Headquarters, U.S. Air Force; and Headquarters, Naval Facility Engineering Center. LCCID permits the designer to perform an economic study, energy related or otherwise, that conforms to the economic criteria of all three services. LCCID contains the correct economic methodologies, discount rates, fuel escalation values, and algorithms. It performs calculations conforming to Army, Air Force, and Navy criteria; standard Federal criteria; and Energy Conservation Investment Program (ECIP) criteria. The program produces reports that conform to USACE requirements outlined in Technical Manual 5-802- 1, Economic Analysis for Military Construction Applications, dated 1986, for design projects as well as ECIP summaries. With appropriate supporting information, these reports can be used for design submittal.

Benefits/Savings

An independent study indicated that the development of LCCID resulted in a 102:1 return-on-investment (ROI). LCCID meets the regulations for required Life Cycle Cost Calculations, incorporates criteria nuances into the program, and incorporates the annual energy escalation values publication.

Status

CERL completed the development of the program, written in FORTRAN 77, and thoroughly tested it. Versions of LCCID are available for IBM compatible personal computers. CERL published a Technical Report E-85/07, Development and Use of the Life Cycle Cost in Design Computer Program, dated November 1985, describing the development of the program. USACE announced the initial release of LCCID in April 1986 in an Engineering Improvement Recommendation System Bulletin. Since then, LCCID has been incorporated into several Engineer Technical Letters, Energy Engineering Analysis Program, and ECIP guidance as well as Proponent Sponsored Engineering Corps Training courses. The Army's Architectural Engineering Instructions has required LCCID or

equivalent studies for new facility designs since 1989. LCCID incorporates the latest version of Department of Energy/DOD energy escalation values into its database.

LCCID will be updated with each energy escalation value publication and will also be updated according to response of users and criteria changes.

MCACES GOLD has an interface module to LCCID. A Windows™ version of LCCID is available.

Points of Contact

CERL POC is Ms. Linda Lawrie, COMM 217-373-7260; toll-free 800-USA-CERL; FAX 217-373-6724; E-mail [http://www.l-lawrie@cecer.army.mil](mailto:l-lawrie@cecer.army.mil); or CERL, ATTN: CECER-CF-N, P.O. Box 9005, Champaign, IL 61826-9005.

LCCID, complete with user instructions, is available from the BLAST Support Office, COMM 217-333-3977, e-mail http://www.support@blast.bso.uiuc.edu; or University of Illinois, 144 Mechanical Engineering Building, 1206 West Green Street, Urbana, IL 61801.

Visit the CERL homepage at <http://www.cecer.army.mil>.