

ENVIRONMENTAL LAW INSTITUTE

ENERGY EFFICIENCY IN INDUSTRY

Norman L. Dean, Jr.



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Energy Efficiency in Industry

Norman L. Dean, Jr.



Environmental Law Institute
State and Local Energy Conservation Project



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To: Norman, Helen, and Dennis Dean



Preface

Better than homeowners, better than drivers, better than operators of office buildings, American industry has responded with real action in the face of the energy crisis. In 1973, industry consumed 40 percent of our nation's energy; now it is using only 36 percent. Even more remarkable, American businesses are now producing 12 percent more product than they did in 1973 yet using 6 percent less energy to do it. Many observers believe that this admirable record arises from the particular sensitivity to rising prices that a sharp businessman must have to survive. If analysis suggests that energy prices are rising in the future, only a fool would install inefficient machinery. Fortunately, few American businessmen are fools!

Yet even with the successes so far, the potential for improved energy efficiency in industry has scarcely begun to be tapped. Other countries produce steel, build engines, and manufacture chemicals using only a fraction of the energy per unit of output common here. Over time, the normal process of capital turnover will help our industry to meet and exceed its foreign competitors. Yet while waiting for this process to occur, we must be careful that our laws and regulations assist rather than impede the transition. Too often, it appears that we frustrate our own best interests by passing laws and regulations that stand in the way of sensible practices and investments. It is to these issues—the so-called legal and institutional barriers—that Norman Dean's book is addressed.

The heart of Dean's book is a detailed examination of the barriers to two of the most important energy conservation opportunities

available to industry—improved waste management (including recycling, reuse, and redesign of products) and industrial cogeneration (the simultaneous production of electricity and steam or heat). Using the analytic tools of the law and public policy, Dean examines the barriers that exist and suggests remedies to remove unnecessary impediments.

In addition, the book takes a critical look at the more conventional approaches for encouraging industry to save energy. These conventional approaches include tax incentives, loan guarantees, grants, bond financing programs, and state credit corporations. All of these forms of subsidies have been either suggested or tried either nationally or locally. Dean concludes that these subsidy programs are so fraught with legal and practical difficulties that they should be used with caution, if at all. As an alternative to such incentives, he argues for the value of teaching businessmen about energy conservation opportunities and calling their attention to the energy impacts of their actions. Thus, energy extension or advisory services and energy impact statements find more favor than tax credits in this volume.

At its inception, it always was clear that this book had a high potential for being technical and opaque to the layperson. It is a tribute to Norman Dean that he has succeeded in writing a volume that is highly accessible to the lay reader. It contains a basic introduction to the technology of energy efficiency, and an appendix summarizing every piece of industrial energy conservation legislation enacted by a state legislature since 1974.

With these aids to the puzzled, it fits comfortably into the Environmental Law Institute's State and Local Energy Conservation Project series, of which it constitutes the final volume. This series examines legal and administrative strategies that states and localities can use to promote energy conservation. Funded by a grant from the National Science Foundation, the series offers a range of legal and regulatory approaches to eliminating costly energy waste in various sectors of the economy. Other books in the series deal with land use planning for more energy-efficient cities, government procurement and operations for energy efficiency, energy conservation in the agricultural sector, use of economic disincentives for conservation, and efficiency improvements in buildings. The recommendations in each book are based on a study of existing laws and regulations and experience with conservation programs that have already been adopted. The books have been shaped to fit the energy information needs of state and local government officials charged with preparing and implementing effective energy conservation programs. But the books

are also written for citizens and legislators concerned with enhancing energy conservation efforts.

Many worry that America is passing through a period of uncertainty and malaise, affecting the confidence of citizens and business leaders alike. The challenge that lies ahead—and our will to meet it—will surely be a test of whether these fears are those of a passing moment or are grounded in some more fundamental truth. This series, and Norman Dean's contribution to it, proceed on the optimistic assumption that we can and we will manage this problem intelligently and economically.

Grant P. Thompson
Principal Investigator
Energy Conservation Project



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An Introduction to Industrial Energy Efficiency

The Congress finds that the fastest, most cost-effective, and most environmentally sound way to prevent future energy shortages in the United States, while reducing the Nation's dependence on imported energy supplies is to encourage and facilitate, through major programs the implementation of energy conservation . . . with respect to . . . industrial plants. [T]he primary responsibility for the implementation of such major programs should be lodged with the governments of the States.

Energy Conservation and Production Act, 42 U.S.C. 6851(a).

[I]n our experience state governments lack both the experience and competence to make any significant contribution to promoting energy conservation. State governments appear to have extreme difficulty even carrying out their rudimentary functions, without becoming embroiled in such a highly sophisticated area as energy conservation.

Letter to the author from an oil company executive.

Industrial energy waste is one of the nation's most important potential energy resources. The waste heat that pours into the environment from the stacks of boilers, engines, ovens, kilns, and furnaces; the energy that is thrown away every time valuable fossil fuels are burned at extremely high temperatures to produce low temperature heat; and the fuel that is squandered every time a company uses an inefficient, outmoded industrial process can be harnessed to reduce our reliance on costly, dirty, and limited supplies of coal, oil, and natural gas.

Unfortunately, government officials—especially those at the state and local levels—have shied away from programs aimed at reducing