

Mandates: Unnecessary Burdens on Consumers, Industry, and Government

*Brian Langston**

I.

INTRODUCTION

On March 9, 1980, the Board of Directors of the California Solar Energy Industries Association (CALSEIA) voted to oppose local regulations which require solar hot water systems in all new residential construction.¹ This action might, at first blush, confuse many observers. One might suppose that an organization representing over 400 commercial solar energy firms would eagerly advocate regulations requiring the use of their products. However, CALSEIA did not act without a thorough examination of the issue. Its decision was based upon specific concerns about the burdens such regulations (henceforth referred to as a "mandate") would impose on the solar and housing industries, the housing consumer, and the government. The purpose of this article is to articulate those concerns and to explain why it is unwise for local governments to adopt mandates.

Local government, the solar and housing industries, and the housing consumers are the primary bearers of the burdens of a mandate ordinance. Because the load falls differently on each, the discussion below will examine each separately, then conclude by examining the effects of a mandate on their collective interests.

II.

THE GOVERNMENT'S RESPONSIBILITY IN PASSING A MANDATE

A local government's role in the mandate process involves three

* Mr. Langston is a solar businessman, consultant to various solar groups, and was President of the California Solar Energy Industry Association during 1980.

1. SUN UP: ENERGY NEWS DIG., Apr. 1980, at 1.

stages: 1) formulation of the ordinance, 2) implementation of the ordinance, and 3) enforcement of the ordinance. A failure by local government at any one of these stages would be fatal to the success of the ordinance.

A. Formulation of the Ordinance

The process of formulating a solar mandate ordinance requires more than a general willingness to increase the use of solar energy within the community. As a first step, the local government should examine the alternatives to mandating solar hot water systems to determine whether or not better methods of saving energy are available.² Assuming that the local government decides to adopt a mandate it must, at a minimum, determine that the solar hot water systems required by the mandate are cost effective.³ Although cost effectiveness is the minimum determination required by state law, a "successful" ordinance will require a much more intensive analysis than this minimum determination demands.⁴ Such an analysis should include investigation into the types of water-heating systems currently being installed in new housing, the extent of opportunity for new housing construction, and the availability of sunlight at those potential construction sites. This investigation will help to determine the form of the mandate ordinance and will also indicate the potential for energy savings under the ordinance. An adequate feasibility analysis would also include a parallel study of methods to secure solar access for affected parcels. Without solar access guarantees, solar units installed under the mandate will be unprotected from shading caused by future development. This shading could render the in-

2. Alternatives to a solar mandate range from standard energy conservation programs such as weatherization and insulation promotions and conservation workshops encouraging insulation of existing homes, to curbside recycling programs to save both resources and energy-intensive materials from the trash stream. Many of the alternatives would save more fossil fuels than a solar water heating mandate.

3. CAL. PUB. RES. CODE § 25402.1(f)(2) (West Supp. 1980) requires a local government to file with the Energy Commission a determination that a mandate is cost effective in order to avoid preemption by state building code regulations.

4. San Diego County was the first county to pass a solar mandate ordinance. A very detailed analysis was performed to support this ordinance and is contained in the 116-page report by E. PULLIAM, SOLAR ORDINANCE FEASIBILITY ANALYSIS FOR SAN DIEGO COUNTY (1978). The City of Los Angeles has been studying the possibility of passing a mandate since the fall of 1979. For a discussion of the issues confronted at the beginning of this effort to formulate a mandate, see TASK FORCE ON MANDATING SOLAR WATER HEATERS, REPORT TO THE ENERGY AND NATURAL RESOURCES AND BUILDINGS AND SAFETY COMMITTEES OF THE LOS ANGELES CITY COUNCIL (Jan. 15, 1980).

vestment in solar equipment useless.⁵

B. Implementation

Once a mandate is adopted, regulations must be promulgated that incorporate the planning objectives which underlie the ordinance. The regulations should also specify the minimum characteristics of a system. The regulations should specify minimum square footage for the collectors, minimum storage for the system, installations guidelines, components standards, and generic types of systems that may be used.⁶ Without such guidelines a mandate can be easily circumvented and thereby fail to significantly offset the use of conventional fuels. The regulations should also address the procedural problems of integrating the mandate into the standard approval process for residential construction. Simple procedures must be established to determine whether or not a system satisfies the minimum technical requirements. The regulations should provide a variance process and define the situations for which a variance is appropriate.⁷ Finally, the entire mandate process must be smoothly integrated into the procedures for checking building plans, issuing building permits, and inspecting for proper installations.

C. Enforcement

To enforce the mandate, training programs for building inspectors will be required. These programs should encourage not only the training of personnel for the local government's building permit and inspection process, but also education of builders and architects as to the ordinance's requirements. Because the mandate will require the use of a technology with which many housing consumers are unfamiliar, the local government should also conduct

5. For a good discussion of the need to provide for solar access, see generally CALIFORNIA ENERGY COMMISSION, *SOLAR ACCESS: A LOCAL RESPONSIBILITY* (1978).

6. These technical aspects of formulating a mandate are discussed in SOLAR STANDARDS DEVELOPMENT COMMITTEE, REPORT TO THE ENERGY AND NATURAL RESOURCES AND BUILDING AND SAFETY COMMITTEES OF THE LOS ANGELES CITY COUNCIL (May 22, 1980). Similarly, the factors are addressed in DEPARTMENT OF PLANNING AND LAND USE, DEVELOPMENT REGULATION DIVISION, COUNTY OF SAN DIEGO, *SOLAR WATER HEATING SYSTEMS, INFORMATIONAL GUIDELINES, PER SAN DIEGO COUNTY ORDINANCE No. 5324* (Oct. 1, 1979) [hereinafter cited as *GUIDELINES*].

7. The variance process would have to respond to those situations where solar access could not be secured or where, for some other reason, solar water heating would be uneconomical.

information programs to inform homebuyers of the care and use of solar equipment.

Once trained, building inspectors and other city personnel responsible for approving building plans and permits must be kept informed of advances in solar technology and must be constantly updated on installation and system advances. In a like manner, there must be a continuing information program for builders, developers, and consumers in order to minimize delays and inconvenience caused by the mandate.

The foregoing discussion suggests that local government's role in the mandate process involves far more than merely passing an ordinance. Formulation and adoption of the mandate must be followed by promulgation of implementing regulations, and implementation must be supported by a carefully coordinated enforcement effort.

This outline of local government's role in putting a solar mandate in place points to a significant disadvantage: the resource drain imposed on scarce government funds and personnel. We are now in a period where local governments must meet many financial pressures.⁸ Yielding to the pressure to reduce the cost of the mandate by cutting corners, and thereby failing to provide necessary financial and human support, would be detrimental to all parties involved. On the other hand, local government can learn from the California Energy Commission's experience with the implementation and enforcement of statewide energy performance standards for buildings.⁹ These standards, contained in Title 24 of the California Administrative Code, establish maximum levels of non-conventional fuel use for new residential buildings. Despite devoting extensive resources to formulating the regulations, followed by an equally extensive program to instruct local building permit officials to check for compliance, there are strong indications that a significant number of buildings are

8. In testimony before the State Assembly Ways and Means Committee, Cliff All-enby of the California Department of Finance predicted that, because of reduced state revenues, fiscal year 1981 would feel the full effects of Proposition 13. *California Financial Shape Worse than Expected, Aide Says*, Los Angeles Times, Nov. 18, 1980, § 1, at 3, col. 5. Proposition 13 reduced local revenues from property taxes. It was passed by the voters in 1978 and is now CAL. CONST. art. XIII A.

9. The Warren-Alquist Act, CAL. PUB. RES. CODE §§ 25000-25986 (West Supp. 1980) directs the California Energy Commission to promulgate energy performance standards for new buildings in California. *Id.* § 25402. The standards, contained in part 6 of Title 24 of the California Administrative Code, were first adopted in 1977, became effective in 1978, and were recently amended in September 1980.

still obtaining permits without complying with the standards.¹⁰ Though the regulations themselves deserve some of the blame, the most significant factor in Title 24's problems to date has been an inadequate enforcement effort.¹¹ Without competent enforcement personnel the Title 24 program was doomed to a troubled future. Similarly, a mandate cannot succeed without well-trained enforcement teams in sufficient numbers to permit each enforcement officer to perform his job thoroughly and skillfully.

The current financial status of local government in California makes it doubtful that these bodies will provide adequate funds and personnel to satisfactorily perform each stage of the mandate process. Thus, from the perspective of local government's role in mandating, the mandate is better discarded as a tool of energy policy. Moreover, a mandate program inadequately supported by local government will undoubtedly result in increased costs to the building industry, the solar industry, and housing consumers without obtaining the desired savings in conventional fuels.

III.

THE BURDEN IMPOSED ON THE SOLAR AND HOUSING INDUSTRIES BY A MANDATE

A. The Housing Industry

From the housing industry's perspective, the success of a solar mandate would require: 1) favorable market conditions for solar homes, 2) coordinated response by industry, government, labor, and manufacturers, and 3) time to acquire experience with solar installations. The likelihood of such a combination is remote.

10. See Ingram, *Contractors Held to be Ignoring Energy Rules*, Los Angeles Times, May 4, 1980, at 3, col. 1. The article quotes W. Wilms, an energy specialist and Professor of Education at UCLA, as saying that the Title 24 standards face "wholesale non-compliance" because local building inspectors are failing to enforce them. *Id.* at 26. Wilms was the principal investigator in a study made for the United States Department of Energy to evaluate the implementation, acceptance, and enforcement of Title 24. See W. WILMS, M. MCCARTHY & R. MOORE, *MANPOWER REQUIREMENTS FOR ENERGY CONSERVATION: A CASE STUDY FOR CALIFORNIA* (1979) (final draft). This report reviews the education and training effort undertaken by the California Energy Commission. The California Energy Commission program reached 7000 people, half of whom were involved in local inspection activities. *Id.* at 36. The Commission is credited with putting "a substantial effort into individualized training for each building department in the State." *Id.* at 49. Yet, the report concludes that "many local building departments were unable or unwilling to give energy conservation any priority" and that "the greatest weakness in the system lies in the ability of local building departments to adequately check plans for compliance." *Id.* at 57-58, 62.

11. W. WILMS, *supra* note 10, at 62.

The housing industry did not have a good year in 1980.¹² With high interest rates and skyrocketing housing costs, sales of new single-family houses plummeted.¹³ The construction of new multi-family projects also declined drastically.¹⁴

The advent of solar mandates will only add to the industry's headaches. For instance, the additional red tape that a mandate would require will inevitably delay building permit approvals, plan approvals, and site inspections.¹⁵ This delay increases the cost of the housing and thus makes the homes less marketable. Expenses incurred in purchasing and installing the solar equipment will also increase new housing prices and reduce the already small percentage of qualified purchasers.¹⁶

12. See, e.g., *Housing Industry on Hold*, Los Angeles Times, May 4, 1980, § 11, at 1 (San Diego County edition), which indicates that housing starts in 1980 were down more than two-thirds from 1979. The article quotes a San Diego Savings and Loan executive's observation that loans for new houses were down 31 percent from 1979. It also cites the prediction of Robert Grenoble of the Building Contractors' Association (BCA) that between 10 and 15 percent of BCA's 761 members would be out of business by the end of 1980 if the situation remained unchanged. Finally, the article noted that 35 percent (12,000 workers) of San Diego County construction workers were out of work. *Id.* at 3.

13. See SECURITY PACIFIC NATIONAL BANK, CONSTRUCTION TRENDS (Oct. 30, 1980) (Table III) [hereinafter cited as CONSTRUCTION TRENDS], showing that in 1979 permits were pulled for 127,471 new single-family units in California. In 1980, the annual estimate (as of October) indicated that only 85,000 permits would be pulled for single-family dwellings—a reduction of one-third. See also REAL ESTATE COUNCIL OF SOUTHERN CALIFORNIA, REAL ESTATE CONSTRUCTION REPORT, THIRD QUARTER 18 (1980) [hereinafter cited as REAL ESTATE], which indicates that for the first nine months of 1980, the reduction in the number of permits issued for single-family dwellings in Southern California (including the counties of Los Angeles, Orange, Riverside, San Bernardino, Ventura, San Diego, and Santa Barbara) was even greater. In 1979, 44,307 permits were issued through September. In 1980, only 26,178 permits were issued during the same period. This is a reduction of over 40 percent.

14. For multiple-family dwellings, permits for 82,555 units were issued in California during 1979. The annual estimate for 1980, as of October, indicated that only 55,000 permits would be issued in 1980. This represents a reduction of 33 percent. CONSTRUCTION TRENDS, note 13 *supra*. In Southern California, 39,893 units for multiple-family housing received permits during the first nine months of 1979. Only 25,472 units received permits during the same period in 1980—a 34 percent reduction.

15. See *Mandation—Plus—Paperwork*, SUN UP: ENERGY NEWS DIG., Aug. 1980, at 1. This article indicates that prior to the passage of the mandate ordinance in San Diego County, solar installers had to file two sets of papers to obtain approval. The solar installer now has to file seven different forms.

16. Merrill Butler, testifying before the United States Senate Banking Committee on January 7, 1981, stated that at prevailing interest rates only four percent of the families in America can afford the payments on a 30-year \$60,000 mortgage. *Builder: The Voice of the American Housing Industry*, NATIONAL ASSOCIATION OF HOMEBUILDERS, Jan. 12, 1981, at 1.

Although precise figures do not exist on how large a percentage of the California population is able to consider the purchase of a new house, some rough numbers can

Builders will operate under another handicap: Their economic success will depend upon a coordinated response to the mandate by labor, government, manufacturers, distributors, and architects. When a builder begins a project he stands to lose a great deal if the mandate process is not properly integrated into the standard approval procedures. The city's failure to train adequate numbers of inspectors or to have knowledgeable personnel approving building plans will delay construction. If the work force does not have enough experienced installers available, construction may be further delayed while the needed installers are passed from project to project. Alternatively, the industry could resort to the use of untrained or inadequately trained installers, but this would increase the potential for faulty installations, which have in the past been a major cause of failures in solar hot water systems.¹⁷ The

be obtained by analyzing available cost and income data. In the purchase of a \$100,000 house with a 20-percent downpayment, monthly payments at mortgage rates of 14 percent would be \$947.90 for a 30-year loan. Taxes (one percent of market value) would be \$1,000 per year or \$83.33 per month. If insurance is assumed to be about \$19 per month, the total payment (interest, principal, and impounds) would be approximately \$1,050 per month. A rule of thumb in obtaining loans is that the monthly payment should be no more than 30 percent of monthly take-home pay. Thus, to get the loan, the purchaser must take home \$3,150 per month. Assuming 25 percent of gross income is paid for federal taxes, state taxes, local taxes, state disability, and social security, the purchaser would have to gross \$4,200 per month or \$50,400 per year.

The latest income information available is for 1978. Assuming incomes have inflated at a rate of 10 percent per year during the last two years, a \$50,400 per year income in 1980 would be equivalent to an income of approximately \$41,600 per year in 1978. Only five percent of the taxpayers in California had incomes over \$40,000 in 1978. CALIFORNIA FRANCISE TAX BOARD, 1979 ANNUAL REPORT 45 (1979). This analysis is oversimplified and ignores many relevant purchaser characteristics that may affect the ability of a given family to purchase a new house. However, the point of the analysis is that only a small percentage of Californians have any chance of purchasing a new house and any addition to the price of a home will make this percentage smaller.

It is also worth noting that there are opportunity costs foregone in requiring a builder to use one form of conservation over another. A builder could chose to select more expensive, efficient appliances, instead of a solar hot water system to satisfy existing consumer demand for energy-efficient housing. There is evidence that housing consumers may be more willing to invest in this type of conservation rather than in solar water heating. *See Energy Features Strongly Backed*, Los Angeles Times, Apr. 10, 1980, § VIII, at 8. The article reports the results of a survey which shows that more homebuyers would be willing to spend extra for extra insulation than for solar-assisted hot water.

17. *See, e.g., R. STOBAUGH & D. YERGIN, ENERGY FUTURE: REPORT OF THE ENERGY PROJECT AT THE HARVARD BUSINESS SCHOOL 194 (1979) [hereinafter cited as ENERGY FUTURE].* The report states that in one study 85 out of 100 systems installed failed to work properly. *Id.* at 320 n.31. The poor performance was primarily due to installation problems.

same problems can result if solar manufacturers and distributors fail to increase their production and distribution capabilities in response to the mandate. Such a failure could force the builder to install lower quality equipment. Finally, the builder must deal with limitations on his/her own ability (and those of his/her architect) to adapt. Because many builders and architects have little or no experience with solar technology, a mandate would force both to learn quickly, or learn by mistake. Obtaining the "hands on" experience necessary for the competent use of the technology will require time. By suddenly forcing the builder to install solar equipment in every new house, installation mistakes will likely be found in a substantial number of houses. Experience would be less painfully obtained by a gradual increase in the number of houses requiring solar installations rather than suddenly requiring solar installations in every new house.¹⁸

B. Solar Industry

From the solar industry's perspective, the immediate effects of a mandate on the industry are twofold: 1) a mandate will retard innovation, and 2) variations in standards from jurisdiction to jurisdiction are likely to impose an excessive burden on those who must comply with the diverse regulations. The solar industry needs a situation in which incentives to innovate are preserved and market requirements are standard enough to facilitate economies of scale and operation over wide geographic areas. Mandates work to the detriment of both of these goals.

The solar industry is now experiencing an era of rapid growth which it hopes to maintain. While solar technology has been used in various ways for many centuries,¹⁹ there is still room for innovative developments which may cut the costs and increase the efficiency of solar systems. Innovation should be encouraged in the

18. See *id.* at 320 n.31, which indicates the need for experience in solar installations. See also *Solar Collector Fire Reported in Boulder*, 2 SOLAR L. REP. 693 (1980) which describes the experience of a developer who installed solar water heaters in his development under a Housing and Urban Development grant. These homes remained unsold during the summer and the solar devices sat unused in the summer heat. As a result, the collectors overheated and caught fire. This is but one of many examples of mishaps that occur when developers are not completely familiar with the equipment they are installing. These mishaps are less costly if experience is first obtained on a few units rather than on a whole development.

19. See, e.g., ENERGY FUTURE, *supra* note 17, at 186; Jordan & Perlin, *Solar Energy Use and Litigation in Ancient Times*, 1 SOLAR L. REP. 583 (1979); K. BUTTI & J. PERLIN, SOLAR WATER HEATERS IN CALIFORNIA, 1891-1930 (reprinted by the California Energy Commission).

solar industry and a mandate could be counterproductive in this respect. Solar ordinances reduce the incentive to develop new systems because implementing regulations will tend to be written with existing designs in a favored position.

Any city desiring to mandate solar water heaters must find that such systems are cost effective.²⁰ Studies performed to determine cost effectiveness generally assume the price of an installed solar hot water system to be in the \$1,200 to \$3,000 range.²¹ The present state of manufacturing technology offers only one type of system at these prices: a single-glazed thermal system. This type of system is not necessarily the last word in efficient or renewable-resource powered water heaters. Yet, regulations accompanying a mandate ordinance will almost certainly be geared to accommodate such systems.²² Because the mandate would force solar manufacturers to focus on today's available technology, the solar market's ability to accept innovative designs may be retarded by the ordinance. The consequences would be even more pronounced for highly efficient non-solar water heaters, which may ultimately prove to offset the use of fossil fuels to an even greater degree.²³

The second immediate effect of a mandate would occur if a large number of local governments were to enact solar mandate ordinances. As noted above, a mandate is unlikely to succeed if the local government fails to specify qualifying standards and guidelines for sizing and installation. However, if each jurisdiction produces its own individualized regulations, it will be virtually impossible for an installer or manufacturer to operate over a wide geographic area.²⁴ This could severely damage the solar in-

20. CAL. PUB. RES. CODE § 25402.1(f)(2) (West Supp. 1980).

21. See E. PULLIAM, SOLAR ORDINANCE FEASIBILITY ANALYSIS FOR SAN DIEGO COUNTY 8 (1978), which estimates the range of costs for installed solar water heaters to be from \$960 to \$3,000. See also Memorandum to Members, Task Force on Mandating Solar Water Heaters and Interested Persons, from Mark Braly, Energy Coordinator, City of Los Angeles, concerning SOLFIN - Life Cycle Cost Analysis. This memorandum explains the methodology of the computer analysis used by Los Angeles to determine the cost effectiveness of solar water heaters. The price of an installed system is assumed to be \$2,100. An alternate analysis assumes the price to be \$1,800.

22. See, e.g., GUIDELINES, note 6 *supra*.

23. The need for backup water heating for cloudy days requires continued reliance on fossil fuels despite the installation of a solar water heater. Thus, a solar water heater can only be expected to provide up to 60 percent of the hot water energy requirements. It is certainly not difficult to imagine a non-solar device that could offset fossil fuel use to a greater degree.

24. A particularly onerous example of a single jurisdiction specifying extensive and detailed regulations as part of a mandate can be found in the proposed Los Ange-

dustry. Variable regulations would also make it harder to keep the price of solar systems down or to take advantage of economies of scale in the manufacturing process.

IV.

CONSUMERS: THE ULTIMATE VICTIMS OF MANDATES

The negative effects of a mandate will ultimately fall on the consumer. Delays in government approvals will slow housing growth and cause increases in housing costs. The builder's inability to obtain equipment and trained installers will increase the likelihood of both obvious and latent defects in installed systems.²⁵ A local government's failure to train adequate numbers of inspectors to inspect the housing under construction subsequent to the enactment of the mandate could exacerbate these effects. Each of these effects will have an impact on the consumer's opportunity to enjoy the benefits of the solar equipment that comes with the newly purchased home. Moreover, a mandate could severely encroach upon the ability of many consumers to purchase a new home.

The current cost of housing is perhaps the most important factor militating against mandates. The additional \$2,000 to \$3,000 that a solar water heating system will add to the initial cost of a new house will further reduce the already small percentage of the population that can presently afford to purchase a newly-constructed home.²⁶ Although it can be argued that the tax credit will render the cost of the solar system almost insignificant,²⁷ such an

les County mandate. *See* COUNTY OF LOS ANGELES, DEPARTMENT OF COUNTY ENGINEER-FACILITIES, BUILDING AND SAFETY DIVISION, PROPOSED AMENDMENTS TO THE PLUMBING CODE ORDINANCE NO. 2269.

25. Because conventional water heaters will be required as backups to all solar installations, the consumer will not necessarily be aware of failures in a solar water heater. The conventional system will continue to provide hot water, even if the solar water heater is not working. Thus, simple things like a bubble of air in the collector loop or a check valve put in backwards can leave the system apparently working, but actually wasting energy as it attempts to pump water around a closed loop. No existing mandate requires instrumentation to permit the consumer to monitor the performance of the solar water heater. Such equipment would probably make the system no longer cost effective.

26. *See* note 16 *supra*.

27. The federal government permits a homeowner who installs a solar device on his/her principal dwelling to take a 40 percent credit against his/her taxes. The maximum amount against which this credit may be taken is \$10,000. 26 U.S.C. § 44C (Supp. III, 1979). California permits either a developer or an owner of a residence on which solar equipment is installed to take a 55 percent credit against his/her taxes. The maximum credit is \$3,000. CAL. REV. & TAX. CODE § 23601 (West 1979). If

argument ignores the realities of purchasing a new home. First, the down payment and the ability to obtain financing are often the major hurdles for potential homebuyers. Consequently, the first year is the toughest, and obtaining a tax credit four to sixteen months after purchasing the home may not offer much help in overcoming these financial hurdles. Second, while it is fairly certain that local governments consider the actual cost of solar equipment in calculating the cost to the consumer, the costs of construction delays and the government program itself, and the probable increase in failure rates in installed systems are just as certainly ignored. The regulations themselves will therefore contribute significantly to the price of a house over and above the cost of the solar equipment.²⁸ The consumer, therefore, stands to lose twice: first, in the initial cost of the house, which will be inflated beyond the added value of the solar equipment, and second, for the cost of system failures due to artificially accelerated market penetration.

V.

INTERACTING EFFECTS OF SOLAR MANDATES

Sunlight is becoming an important source of energy in the United States. The increasing cost of conventional energy supplies is stimulating the development and use of solar technology. To achieve an even more rapid development will require the cooperation of government, industry, and consumers. A mandate could end up serving no other purpose than to disrupt the rela-

both credits are taken by the same person, the state credit is reduced by the amount credited against the federal taxes. However, if the builder/developer takes the state credit, the homeowner can take the full amount of the federal credit. Thus, between the homeowner and the builder/developer, the cost of the solar device may be offset by 95 percent through tax credits.

28. Regulation in general is a significant factor in the cost of housing. A 1976 study on the cost of housing in California concluded that for a \$50,400 house, over \$5,000 was attributable to government regulation. This represents approximately 10 percent of the cost of the house. CONSTRUCTION INDUSTRY RESEARCH BOARD, ANALYSIS OF COST OF HOUSING IN THE STATE OF CALIFORNIA (1976); see also S. SEIDEL, HOUSING COSTS & GOVERNMENT REGULATION: CONFRONTING THE REGULATORY MAZE 335 (1978) which estimates that the cost of government regulatory excess is 19.7 percent of the cost of a house. In addition, in times of high interest rates, delay is particularly expensive. In testimony before the State Legislature's Joint Committee on the State Economy, Ben Bartolotto, director of the Construction Industry Research Board, stated that the approval process which used to take six months in 1970 now takes two to three years. This delay has increased the cost of housing 25 to 45 percent. *Construction Industry Chief Lets The Blame All Hang Out*, San Francisco Sunday Examiner & Chronicle, Oct. 12, 1980, § BAZ, at 2.

tionships among these three parties in the march of solar technology into the marketplace. The relationship between government and the solar industry could be strained by a misdirected imposition like a solar mandate. This could create industry resistance which would retard, rather than accelerate, solar utilization in California.²⁹ From the consumer's perspective the failure of a mandate could lead to a disenchantment with solar technology and the conclusion that government does not believe solar technology can survive in the free market. The consumer may not know where to place the blame for his/her problems, but will probably point not only to industry and government, but to the idea of using solar devices at all. The end result could be a consumer rejection of all solar technology.

Consumer opposition to solar devices is particularly distressing when many of the disenchanted consumers already own solar water heaters. Although a solar water heater will operate without the knowledgeable attention of the owner, the informed consumer will obtain the most efficient use of the system.³⁰ A disgruntled owner is less likely to reap maximum benefits from his solar water heating system.

VI.

CONCLUSION

For the many reasons set out above a solar mandate ordinance runs a substantial risk of failure. Many industries in the past have survived the consequences of unsuccessful regulation. However, it is not clear that the solar industry can weather a series of poorly drafted, implemented, and enforced mandate ordinances. The solar industry is a new and fragile industry. It has not built up sufficient clout to defend itself *against* government. It also offers products for which there are popular alternatives available. A badly run mandate scheme, therefore, could cause substantial

29. A parallel can be drawn between mandating and the recent California Public Utilities Commission proposals for mandatory warranty periods for solar components—five year full warranty and an additional five years for parts. The warranty program has prompted threats of abandonment of the California solar market by those manufacturers that could afford to. See Cohodas, *Solar Manufacturers Recoil at Utility Commission Tiff*, SUN UP: ENERGY NEWS DIG., Dec. 1980, at 1.

30. By tailoring the scheduled hot water use to the availability of solar heated water, the consumer will realize maximum savings from his/her system. Furthermore, as with most devices, the consumer should keep an eye on the system to insure that it is working properly.

damage to the solar industry and detract from what appears to be a bright solar future.

It was for these reasons that the Board of Directors of CALSEIA took a bold stand against the mandating of solar domestic hot water systems anywhere in California by any governmental agency. Despite the problems and the "we don't care what you think" attitude of most government planners, we must adopt a realistic response to existing solar mandates. Of course, CALSEIA would like nothing better than to be proven wrong in its fears about mandating. In those jurisdictions which have or are planning mandates, CALSEIA will continue to participate in a constructive way to try to make the mandates work. But CALSEIA's deep trepidation remains because, if problems arise, the laws will simply be taken off the books or quietly unenforced. The lawmakers and regulators will not be held responsible. It will be solar technology that gets the bad name and the solar industry that will take the lumps.

