Energy Savings in Residential Buildings: The Role of Investor-Owned Utilities

Lisa R. Stearns

TABLE OF CONTENTS

I. INTRODUCTION

A 1979 Office of Technology Assessment report estimated that 30 to 60 percent of the energy used in the residential buildings today is wasted.[1] Subsequent studies have confirmed this assessment of a large conservation potential.[2] In 1984, approximately 20-21 percent of primary electrical energy was consumed by residential users.[3] Conservation in residential buildings is therefore an issue of concern.[4] Currently available technology allows residential consumers to conserve energy through conservation measures including residential retrofitting and the use of renewable energy supplies.[5]

Residential retrofitting refers to the increased use of insulation in building structures and systems within dwellings, double-

1. OFFICE OF TECHNOLOGY ASSESSMENT, U.S. CONGRESS, RESIDENTIAL ENERGY CONSERVATION, Vol. I, 29 (1979).

2. *See* SOLAR ENERGY RESEARCH INSTITUTE, A NEW PROSPERITY 13 (1981); CONGRESSIONAL RESEARCH SERVICE, A PERSPECTIVE ON ELECTRIC UTILITY CAPACITY PLANNING 144 (1983); Goldenberg, Johannsson, Reddy & Williams, *An End-Use Oriented Global Energy Strategy*, 10 ANNUAL REVIEWS 648 (1985).

3. Telephone interview with Dick Rowberg of the Office of Technology Assessment (Sep. 17, 1985) (approximation from DOE data). Primary energy includes the energy consumed in the creation of electricity used.

4. Schroeder & Miller, *The Validity of Utility Conservation Programs According to Generally Accepted Regulatory Principles*, 3 SOLAR L. REP. 967 (1982).

5. The definition of conservation measures adopted here conforms to the definition of that term as used in Title II of the National Energy Conservation Act with the exception that the Act does not include the application of geothermal technologies within the concept of conservation measures. Pub. L. No. 95-619, § 210, 92 Stat. 3206, 3209 (codified at 42 U.S.C. § 8211 (1982) and amplified by regulations codified at 10 C.F.R. § 456.105 (1985)).

glazed or storm windows, automatic energy control systems, furnace efficiency modifications, weather stripping, efficient appliances, and improved lighting systems. The success of the retrofit experience in the Pacific Northwest is instructive. Retrofits which cost an average of $1,350 resulted in savings representing 40% of the average annual heating bill.[6] The cost of this conserved energy was estimated at about one-half of the retail price of electricity generated through new capacity.[7] Comparable studies of oil and gas-heated homes have also found that a well-designed retrofit can halve heating requirements.[8]

The residential use of renewable energy supplies can be increased by the adoption of appropriate wind, solar or geothermal technologies. Solar hot water and cooling systems in particular have proven to be cost-efficient technologies for residential use.[9] At least one report also suggests a cost effective future for residential earth-coupled heat pumps using geothermal technology.[10]

The degree to which utilities should be encouraged or required to assist in increasing the use of residential conservation measures is a matter of vigorous debate.

This article considers the potential roles for investor-owned utilities. Most of the information upon which the article is based draws on the experience of electric utilities. Similar approaches might be adopted by gas utilities, bearing in mind the following proviso. Unlike electric utilities, gas utilities are primarily in-

6. NATIONAL CONFERENCE OF STATE LEGISLATURES, PRODUCING ENERGY THROUGH CONSERVATION: A LEGISLATOR'S GUIDE 9 (1980) [hereinafter cited as LEGISLATOR'S GUIDE]. Other cost-effectiveness calculations conclude that conservation does not reduce fixed costs or cost per kilowatt in the short term, though it does slow the increase in electric bills and postpones or avoids investment in new plant. Brandimore, Bowles, Barron & Jacob, *Electric Utilities in a State of Transition*, PUB. UTIL. FORT., Jan. 19, 1984, at 13.

7. LEGISLATOR'S GUIDE, *supra* note 6, at 9.

8. *Id.* at 10 (citing a 1979 study by the American Council for an Energy Efficient Economy).

9. White, *Solar Investments by a Municipal Utility*, 55 N.D.L. REV. 409, 413 (1979).

10. *Water's Role in Residential Heating and Cooling Analyzed*, PUB. UTIL. FORT., Feb. 16, 1984, at 66.

volved in energy sales and distribution, rather than production.[11] Consequently, conservation does not offer the advantage of postponing the need for expensive investment in new production capacity, a feature which may make conservation attractive to electric utilities.[12] The minimal conservation efforts undertaken by gas utilities have primarily emerged from efforts to market energy efficient appliances so that gas utility services are competitive with electricity services.[13] Even this measure of incentive, however, has been undercut by the falling price of gas, which on its own, has made gas utilities competitive in many regions.[14]

This article focuses on investor-owned utilities because they account for the largest utility sector.[15] It looks first at the major advantages and disadvantages associated with investor-owned utility participation in increasing residential energy conservation. Concluding that these utilities stand in a position of power which makes their participation desirable, though open to abuses unless carefully controlled, the article proceeds in Part II to examine the generic models of possible utility involvement: conservation information and assistance, financing, supply and installation, and

11. Telephone interview with Karl Pascale, American Gas Association (AGA) (Sept. 24, 1985) who reported the following statistics from AGA, *Gas Facts*, 1984:

Type of Gas Utility	Volume of Sales of Gas in Trillion Btu's
Municipal	286
Combination (Gas and Wood or Electric)	1,358
Integrated (Gas and some Pipeline and Distribution)	1,626
Transmission Only	1
Distribution Only	1,358

12. Naill & Sant, *Electricity Markets in the 1990's: Feast or Famine?* PUB. UTIL. FORT., Apr. 26, 1984, at 19.

13. Telephone interview with Bill Woodard, RCS Division, DOE (Sept. 24, 1985).

14. General surveys of the level of participation in conservation activities have not been undertaken. Telephone interviews with Ms. Altman, DOE Energy Information Administration (Sept. 11, 1985); Gas Research Institute (Sept. 14, 1985); American Gas Association (Sept. 12, 1985).

15. U.S. ENERGY INFORMATION ADMINISTRATION, DEPARTMENT OF ENERGY, STATISTICS OF PRIVATELY OWNED ELECTRIC UTILITIES IN THE U.S. 1979, 15 (Oct. 1980) (78% of the nation's electricity is produced by investor-owned electric utilities); American Gas Association, *Gas Facts* (1984) (94% of gas sales accounted for by investor-owned gas companies—calculation made by Karl Pascale, American Gas Association, Sept. 23, 1985, from data *supra* note 11).

subsidiary formation. Part III considers the major legal problems related to the implementation of the models described in Part II.

A. *Advantages of Utility Involvement*

In general, investor-owned utilities are granted a legal monopoly to provide a particular service to the public within a geographic area.[16] If this virtually complete market penetration is harnessed to a movement to promote energy conservation a number of advantages follow.

The cost of implementing programs through utilities is lessened by the availability of existing machinery for notifying consumers, billing, monitoring and providing customer services. Consumers are also accustomed to dealing with utilities and are more likely to be alerted to and have confidence in a utility-sponsored program than, for example, a promotional conservation program conducted by a particular insulation or solar equipment manufacturer.[17]

The potential for spreading the costs of conservation is also maximized by utility involvement. To the extent that conservation activities are considered the operating and investment costs of producing utility service, they might be defrayed through rates charged to all energy consumers, thus reducing the expense shouldered by individuals.[18]

In addition, a substantial role for utilities in conservation promotion would contribute to reinforcing the social welfare considerations that have only recently begun to be recognized as a necessary part of energy distribution.[19] Historically public regulation of utilities has been based on a model of natural monopolies. This model argues that the role of regulation should be limited to attempting to duplicate the results which would be obtained if competition existed in the energy distribution market.[20] A growing body of opinion, however, argues that utility operations should be regarded as a public service in which private com-

16. For a discussion of utility regulation theory, *see generally* Schroder & Miller, *supra* note 4. For a discussion of rate structures developed under regulation *see* Carvalho, *Energy Conservation through the State Public Utilities Commissions*, 3 HARV. ENVTL. L. REV. 160 (1979).

17. Kellman, *De-Utilizing the Energy Industry, Planning the Solar Transition*, 28 UCLA L. REV. 1, 23-25 (1980).

18. For a general discussion of the ratemaking process *see* Carvalho, *supra* note 16, at 162-66. *See also infra* Sections II.B and III.A.

19. L. HYMAN, AMERICA'S ELECTRIC UTILITIES: PAST, PRESENT AND FUTURE, 134 (1983).

20. Schroeder & Miller, *supra* note 4, at 978-81.

panies are enlisted to discharge an obligation of society to its members.[21] Responses to this change of perception include the establishment of lifeline rates, stricter rules on cutoff of service and more liberal customer-deposit regulations.[22] Were regulatory bodies to further integrate conservation criteria into rate-setting decisions, new construction approvals, etc., this process of redefining utility goals could be furthered.

A commitment to conservation might also enable electric utilities to postpone or avoid the costs of building expensive new capacity.[23] Electricity demand has stagnated over the past six years, but many U.S. utilities forecast that new capacity will be needed for the 1990's demand.[24] Given the uncertainties of forecasting, the present financial uncertainty of many utilities and the high costs of capital, most utility managers would prefer not to have to finance expansion at the present time. Conservation may offer an alternative.[25]

21. *Id.* at 981-85.

22. HYMAN, *supra* note 19, at 134.

23. Brandimore, *supra* note 6, at 21 (arguing that conservation slows increases in electric bills but does not reduce utility fixed costs or cost per kilowatt hour in the short term, though in the long term it can avoid the costs of investment in new plant); *see generally* NATIONAL AUDUBON SOCIETY, AUDUBON ENERGY PLAN (1984).

24. Naill & Sant, *supra* note 12, at 19.

25. It should be remembered that the economic circumstances of utilities and the regulatory framework in which they operate varies widely from state to state and region to region. Texas illustrates the permutation of influences that may impose themselves on utility decision-making. Overall, Texas is experiencing a significant demand increase because of the demographic shift south. On the one hand, this is a force which can lead to increased financial security and demands for capital expansion. *See, e.g.*, recent applications regarding expansion Tx. PSC Dkt. Nos. 6055, 6397, 6190 and 6526. On the other hand, recent regulatory developments have placed incentives on utilities to embrace conservation, *i.e.*, the 1983 Public Utility Regulatory Act now requires: 1) demand and capacity resource forcasting and 2) procedural justification of new facilities on the basis that "conservation and alternative energy sources cannot meet the need." TEX. REV. CIV. STAT. ANN. art. 1446c, § 16(c) (forecasting), § 54(c) (facility justification) (Vernon Supp. 1986). Thus, for example, Commissioners recently denied a notice of intent to expand facilities on the basis of an inadequate consideration of conservation alternatives. Dkt. No. 6055 (1985). Consequently, conditions which might generate a willingness to expand facilities may be tempered by statutory requirements to consider conservation alternatives.

By contrast, despite the demographic changes, for utilities with nuclear resources coming on line, the economic dynamics are very different. Utilities such as El Paso Electric Company, Gulf State Utility and Houston Light and Power are experiencing, or about to experience, rate shocks and excess capacity. These utilities are, euphamistically, caught between a rock and a hard place. Conservation programs can be marketed as a means of cushioning the impact of rate shock on consumers, but the utilities' need to sell excess capacity so as to ensure future financial viability acts as a contradictory incentive. Tele-

B. *Disadvantages of Utility Involvement*

The structure of utilities can create contradictions between business and conservation priorities.[26] Investor-owned utilities are tax-paying corporations which operate their businesses to make a profit for their stockholders.[27] Their profit, in turn, depends on the capital they have invested in plant and machinery, for it is the value of these assets which constitute the rate base upon which regulators set the allowable rate of return.[28] To earn their full allowed rate of return, utilities must sell as much of their capacity as possible; to justify an increase in their rate of return, they must invest in more capital assets which can only be justified by an increase in energy demand. This traditional structure is hardly consistent with the conservationist's goal of reducing overall electricity and gas use, by saving energy and increasing reliance on decentralized, renewable source production.[29]

Moreover, diversification into the alternative energy business does not assure that utilities will redirect plans to expand conventional facilities. Electric utilities, for example, might introduce solar hot water heaters selectively, retaining electrically heated systems either where existing capacity is underused, or where new plant construction is already approved.[30]

The economic crisis faced by many utilities since the late seventies may exacerbate these dynamics. Excess capacity[31] and the burdens of investments in nuclear energy are taking their toll.[32]

phone interview with Mr. Nat Treadway, Texas Public Service Commission (Dec. 20, 1985).

Given the variations of individual utility experience, generalizations should be read with caution.

26. Sterzinger, *Why Utilities Can't be Conservationists*, 8 WORKING PAPERS FOR A NEW SOCIETY, Sept./Oct. 1981, at 17.

27. Cobb, *H.E.A.T.—A Working Partnership*, in NATIONAL CONFERENCE OF STATE LEGISLATURES, THE STATES AND UTILITY REGULATION—ELECTRIC, NATURAL GAS AND TELECOMMUNICATIONS 116, 170 (Jan. 1985).

28. Carvalho, *supra* note 16, at 162; Goldsmith, *Power Production and Regulatory Reform: Easing the Transition to an Economic Energy Future*, 32 BUFFALO L. REV. 221 (1983).

29. Sterzinger, *supra* note 26. For the possibility of capitalizing conservation investments, see Section II.B. For an alternative organizing concept, utilities as marketers of energy services rather than deliverers of energy, *see* Naill & Sant, *supra* note 12.

30. *See* Sterzinger, *supra* note 26, at 18.

31. Miller, *Strategies for an Electric Utility Industry in Transition*, PUB. UTIL. FORT., JUNE 13, 1985, at 30.

32. R. MUNSON, THE POWER MAKERS 130 (1985) (for a description of the $2.25 billion default of Washington Public Power Supply System due to cost overruns on nuclear plants, *see id.* 130-134; for an accounting of how regulators have required stockholders to

Since rising interest rates make capital intensive utilities less attractive to stock purchasers, utilities are also vulnerable to mere changes in the perception that interest rates might rise. In July 1985, for example, the Dow Utility Index, usually considered a good indicator of future market action, suffered its worst single day loss in 23 years.[33] Some of the biggest losers were energy utilities such as Consolidated Edison and Southern California Edison. Perceiving that interest rates were going to rise and utility stocks decline in value, portfolio managers energetically sold utility stocks. This perception proved erroneous and utility stocks in fact did well during the last months of 1985. Nevertheless, the July experience illustrates the vulnerability of utilities.[34] Furthermore, currently decreasing fossil fuel costs tend to make investments in conservation or renewable resource supply less attractive. In this economic context, there is a substantial danger that the long term public interest in conservation will take a back seat to short term economic imperatives.

The 1983 Electric Utility Solar Energy Activities Survey suggests a low level of utility interest is renewable resource programs. Only 4% of reporting utilities were engaged in incentive, sales, leasing or educational programs to increase customer use of solar systems during 1983.[35] The conflict between public utility goals and conservation through renewable source production is reflected in laws passed in three states to prohibit utilities from

bear the brunt of cost overruns, or how regulators have sought federal bailouts, *see id.* 138-141.)

33. N.Y. Times, July 24, 1985, at D8, col. 3. *See also* Studness, *Electric Utility Dividend Changes and Production Growth During 1984*, PUB. UTIL. FORT., Feb. 7, 1985, at 48. (six of a sample of 85 electric utilities, accounting for 95% of investor-owned electric utilities, have cut their revenues or omitted their dividends in 1984. Only 3 had done so during the previous 40 years. Of the remaining nine, 82% of them raised their dividend. A net *decline* of 1.9% in the industry's indicated dividend rate was registered however; the first decline since the 1930's.)

For a more optimistic view, *see* Hyman, *Utility Finances, 1985*, PUB. UTIL. FORT., Feb. 7, 1985, at 17.

34. Telephone interview with Hal Rubenstein of Prudential Bache (Nov. 21, 1985) (indicating that future interest rate trends are highly unpredictable).

35. ELECTRIC POWER RESEARCH INSTITUTE, ELECTRIC UTILITY ENERGY ACTIVITIES: 1983 SURVEY (1984) [hereinafter EPRI]. Note, however, that this is a slight increase for the second consecutive year. EPRI, at S-1, 243. This is despite the fact that Laitos and Feuerstein's report revealed no outright hostility by utilities to the development and adoption of on-site solar technologies. J. LAITOS & R. FEURERSTEIN, REGULATED UTILITIES AND SOLAR ENERGY (Solar Energy Research Institute No.TR-62-255, 1979).

taking antagonistic action against conservationists.[36] Utility involvement in supporting retrofit initiatives may be somewhat greater.

Economic impediments to utility conservation initiatives exist but they are not insurmountable. The changing nature of such variables as the prevailing costs of capital, the willingness of customers to accept conservation incentives and the availability of technological innovations, may make conservation attractive within the context of some utility operations. Financial viability and an imminent need for new capacity are necessary prerequisites for a utility to be a forceful proponent of conservation activity though that may not be sufficient.[37] Finally, it must be remembered that utilities are subject to regulation capable of counteracting these structural dynamics to some extent. The following proposals for possible utility conservation activity must, however, be judged with an understanding of traditional utility priorities.[38]

II. Proposals for Utility Participation in Residential Energy Conservation

A. *Conservation Information and Assistance*

Utilities can provide information and facilitative services to customers regarding energy conservation without becoming involved in more demanding ways by, for example, purchasing, selling, leasing or financing conservation measures.

In an effort to provide a minimum basis for this type of utility participation, the National Energy Conservation Policy Act (NECPA) provides for gas and electric utility participation in two conservation programs: 1) the Residential Conservation Service (RCS), and 2) the Commercial and Apartment Conservation Service (CACS).[39]

36. Iowa Code Ann. § 476.21 (West 1985); Me. Rev. Stat. Ann. tit. 35, § 102 (Supp. 1978-84); Okla. Stat. Ann. tit. 17, § 156 (West 1981). Illinois has a similar statute effective until October 1989. Ill. Ann. Stat. ch. 111 ⅔, § 38 (Supp. 1985) (prohibiting utilities from establishing discriminatory rates or charges for service or commodities sold to customers based on a customer's use of renewable energy sources or from discontinuing service or subjecting a customer to prejudice or disadvantage because of the customer's use or intended use of renewable energy sources).

37. *See supra* note 24 and accompanying text.

38. *See* Brown & Levett, *Conservation in Perspective*, Pub. Util. Fort., Apr. 12, 1984, at 15.

39. National Energy Conservation Policy Act (1978) as amended by the Energy Security Act (1980) (hereinafter NECPA). For RCS provisions, *see* 42 U.S.C. §§ 8211-8266 (1982);

1. RCS

Under the RCS provisions states are to establish a plan under which utilities will offer home inspection services for residential dwellings and multi-family dwellings of less than five units.[40] Audits should be designed to identify economical improvements in energy efficiency, and recommend to the audited resident specific conservation measures, including the anticipated costs and estimated energy savings.[41] Lists of contractors who install the recommended measures and lending institutions that will provide financing are also to be provided.[42] The RCS audits must evaluate the following:[43]

1. caulking and weatherstripping for doors and windows
2. furnace efficiency modifications including:
   a. replacement of burners, furnaces or boilers
   b. modifications to flue openings
   c. replacement of pilot lights with electrical or mechanical devices
3. clock thermostats
4. ceiling, attic, wall or floor insulation
5. water heater insulation
6. storm windows and doors including multiglazed, heat reflecting or absorbing glass
7. electric load management devices
8. solar and wind energy devices for residential application
9. low or no-cost conservation actions (*e.g.*, shower flow restrictors, reduced thermostat settings, etc.)

Where states fail to obtain approval for their RCS plan from the Secretary of Energy, the Secretary is required to promulgate and implement a plan for utility conservation activity in that state.[44]

The usefulness of the audit approach to utility involvement has been hotly disputed.[45] The history of RCS implementation sug-

for CACS provisions, *see* 42 U.S.C. §§ 82821-8284 (1982). NECPA applies to 350 of the largest utilities serving approximately 90% of the nation's population. Satlow, *The Energy Security Act and Public Utilities: A Yellow Light for Utility Solar Financing and Marketing*, 2 SOLAR L. REP. 907, 910 (1981).

40. 42 U.S.C. §§ 8213-8214 (1982).

41. *Id.* at § 8216.

42. *Id.*

43. See the definition of residential energy conservation measure, 42 U.S.C. § 8211(11) (1982).

44. 42 U.S.C. § 8220 (1982).

45. *Implementation of Residential Conservation Service (RCS) under NECPA 1978: Hearings on S. 98-95 Before the Subcomm. on Energy Conservation and Power of the Comm. on Energy and Commerce*, 98th Cong., 1st Sess. (1984) [hereinafter cited as *Hearings*].

gests however, that criticisms may not be based on reliable indicators.

The Department of Energy under President Reagan adopted an anti-regulatory posture that rapidly came into conflict with the congressional design behind NECPA.[46] In 1981, the Department issues a declaration that the RCS program was "inconsistent with administration policies."[47] Since that time, DOE has been accused of conducting "a campaign to delay, discourage, and hinder the timely implementation of the program despite the fact that it was mandated by Congress."[48] Another indication of poor Administration support came in early 1985, when DOE issued a statutory interpretation of NECPA to the House Energy Committee arguing that the RCS provisions lapsed as of January 1, 1985. The GAO disagreed,[49] and consequently, in September, 1985, the DOE and the utilities are obliged to continue administering their responsibilities under a statute for which they have little enthusiasm.[50]

An evaluation of RCS commissioned by DOE, perhaps not surprisingly, concluded that "from the societal perspective, participation in the RCS program has not proven cost effective for the comparatively small number of audited energy customers who have responded to the opportunity to have an energy audit to date. While there have been savings in total national energy use attributable to RCS, these are too small to be significant."[51] This conclusion was reached, however, only after acknowledging in the body of the report that the societal perspective obscures specific advantages for various groups. When disaggregated, the data indicated positive returns for participants, non-participants and government. Most importantly, however, this study admits in a lengthy disclaimer that the conclusions should be subject to caveats concerning the quality and consistency of the data, as well as

46. Randolph, *The Local Energy Future: A Compendium of Community Programs* 3 SOLAR L. REP. 253, 282 (1981).

47. *Hearings, supra* note 45, at 1 (testimony of Congressman Ottinger).

48. *Id.*

49. Copies of the DOE memorandum and the Controller General's memorandum setting out their respective positions are reprinted in 131 CONG. REC. S10217 (daily ed. July 29, 1985).

50. Telephone interview with staff of the RCS Division, Dept. of Energy (July 25, 1985).

51. Frankel & Duberg, *Energy Audits as an Investment: The Residential Conservation Service Program Analyzed*, PUB. UTIL. FORT., Apr. 12, 1984, at 24.

possible distortions caused by the threshold assumptions adopted.[52]

Some state legislatures have also been slow to impose the obligations of an RCS plan on the utilities under their jurisdiction. The September 1983 hearings before a Subcommittee of the Energy and Commerce Committee cited a GAO report that nearly one-half of the states had no RCS program or were not implementing a program consistent with NECPA requirements.[53] In July 1985, the utilities' RCS activities in six states were still being directed by DOE, because state plans had not been submitted.[54] One estimate claims some ten million households are in states with no approved state plan.[55]

Utility endorsement has been inconsistent as well.[56] Criticisms include that the RCS system is not cost effective,[57] that it is administratively cumbersome,[58] and that it is inequitable.[59]

According to the Energy Conservation Coalition, under these conditions criticizing the RCS programs is like "the landlord

52. *Id.*

53. *Hearings, supra* note 44, at 1.

54. Virginia, Utah, Idaho, Alaska, Wyoming and Arizona were operating on Federal standby plans at the time of the telephone interview, *supra* note 50.

55. Sweet, *Utility Regulation and the Low-Income Consumer—The State Perspective* in NATIONAL CONFERENCE OF STATE LEGISLATURES, *supra* note 27, at 201.

56. The telephone interview, *supra* note 50, indicated general utility resistance; *see also* Application of Wisconsin Electric Power Co., Wisc. Pub. Ser. Cm. No. 6630-CR-14, Dec. 22, 1981 (reprimanding Wisconsin Electric Power Company for not following through on the requirements of the state plan. "[Despite] rhetoric concerning the utility's commitment to conservation," the record showed that the utility had "not initiated the conservation program without delay as ordered . . . [and] demonstrated inadequate planning, management and implementation." As cited in Sweet, *supra* note 55, at 201 n.33.

But see Crandall, Elgas & Kushler, *Making Residential Conservation Service Work*, PUB. UTIL. FORT., Jan. 10, 1985, at 28.

57. *Hearings, supra* note 45, at 7 (testimony of Southern California Gas) (estimating that each audit costs the utility company $113, resulting in an annual savings of $22 on the homeowners' gas bill and what was described as a protracted payback period of 5.1 years.)

58. *Id.* (criticizing as cumbersome the requirement that State Plan amendments must be authorized by the state regulatory body, the State DOE and the Federal DOE. These requirements do not reflect the statutory position in 42 U.S.C. § 8213(c)(1)(C) (1982) as amplified in regulations codified at 10 C.F.R. 456.204 (1985). The regulations provide "The governor may submit proposed amendments to an approved State Plan at any time. The Assistant Secretary shall approve or disapprove a proposed amendment within 90 days of the receipt of the proposed amendment." 10 C.F.R. 456.204(e) (1985)).

59. *Hearings, supra* note 45, at 7. While the statute provides that the costs of the audits may be spread over the rate base, tentative data show that an average of only 3.4 to 5.6% of utility customers avail themselves of the RCS services and that those advantaged by participation disproportionately represent educated customers with incomes of over $20,000 a year, living in single family homes that they own rather than rent.

turning down the heat, letting the pipes freeze and then blaming it all on the tenants."[60] Had the program received federal, state, and utility support, the Coalition argues, participation levels would have been higher. Programs with some continuity and support, for example, have reached a more respectable 22% participation rate. At least one study reports that 95% of customers who have used an RCS service enthusiastically endorse it.[61]

Efficiency calculations often do not weigh indirect program benefits.[62] Investment in such programs may, for example, forestall the expense of building new capacity—an expense which falls more onerously on the low income sector than do audit system costs. Uncounted benefits also flow from programs implemented as a consequence of established RCS services. California's Public Utilities Commission, for example, endorses the RCS provisions, "as the core of its residential conservation and solar program."[63] And there are other indirect benefits such as improvements in retrofit quality, increased consumer comfort, fewer adverse environmental impacts, increases in jobs, and less depletion of nonrenewable resources, to name a few.[64]

Criticisms of the federal RCS system do not, therefore, argue effectively for the repeal of NECPA requirements; they speak rather for the need to retain the NECPA baseline requirements for utility conservation activity while amending the statute to make it more effective.

Senate Bill 410 introduced February 6, 1985 by Senator Johnston and passed by the Senate on July 29, 1985 is a defensible effort in this direction.[65] If accepted by the House, this bill would:

1) Extend the expiration date of Section 215 of NECPA notification requirements to January 1, 1988. Through that date utili-

60. *Id.* at 407 (testimony of Energy Conservation Coalition and Florida Public Service Commission).

61. *Id.* at 412, citing a Centaur Associates Study. For a comparative guide to the costs and participation rates of RCS programs from April 1, 1981 to March 31, 1982, *see* Energy Conservation Coalition RCS, *RCS Index* (1983).

62. Frankel & Duberg, *supra* note 51, at 25.

63. Calif. Pub. Util. Comm. Dec. No. 92251 (September 16, 1980).

64. Frankel & Duberg, *supra* note 51, at 25. *See also* Sweet, *supra* note 55, at 201, 203. In 1983, those participating in Michigan's RCS saved 6 MBtu of natural gas; Wisconsin participants saved 3 MBtu, Minnesota participants saved 5 MBtu and California participants saved 3 MBtu.

65. S.B. 410, 99th Cong., 1st Sess. S. REP. No. 94, 131 CONG. REC. S10212 (daily ed. July 29, 1985).

ties would be under an obligation to inform their customers of RCS services and deliver general conservation information to their customers.

2) Require the Controller General to prepare and transmit to Congress a thorough report evaluating the RCS program, one which would factor in indirect benefits.

3) Create a waiver provision for utilities or states which can show that they have alternative programs which are *as good as or better* than RCS programs.

4) Provide additional protection against unfair or anticompetitive practices in energy conservation business activities.

2. CACS

The Energy Security Act of 1980 amended NECPA to add provisions requiring the development of the Commercial and Apartment Conservation Service.[66] The design of this program is similar to that of the RCS program, except that the CACS program is targeted to save energy in commercial and apartment buildings instead of residential buildings as in the RCS program. The deadline for submitting plans to DOE for approval was June 4, 1984,[67] but states were not required to begin offering services until one year after approval of the state plan.[68] Consequently, this program has yet to evidence an impact, As of June 27, 1985, only one state, Michigan, had begun offering CACS services.[69]

As with the RCS program, however, the DOE position is that CACS provisions should be repealed.[70] Even more sympathetic analysts suggest there is a problem with the likely effectiveness of CACS since the audits offered need not be building specific.[71] In compromise dealings between those who favor retention of both RCS and CACS and those who favor repeal of both, it is likely that Congress will repeal CACS and retain an amended version of RCS.[72]

66. Pub. L. No. 96-294, 94 Stat. 752 (1980).

67. 42 U.S.C. § 8282 (1982); 10 C.F.R. 458.204 (1985).

68. 10 C.F.R. 458.304(A) (1985).

69. S. REP. No. 94, 99th Cong., 1st Sess. 4 (1985) (S. 410 would enable Michigan to authorize its CACS program under state legislation and not have to discontinue its operation. 131 CONG. REC. S10215 (daily ed. July 29, 1985)).

70. S. REP. No. 94, 99th Cong., 1st Sess. 4 (1985).

71. BLEVISS & GRAVITZ, ENERGY CONSERVATION AND EXISTING RENTAL HOUSING 5 (Energy Conservation Coaltion 1984).

72. *See* 131 CONG. REC. S10227 (daily ed. July 29, 1985).

The problem of stimulating energy conservation in multi-unit dwellings operating on central heating and cooling systems is one which deserves renewed attention. Rising energy costs have proved to be a major reason for the explosion in rental operating costs.[73] This trend, in turn, threatens rent stabilization efforts thereby feeding the conversion-to-condo process and threatening the inner city poor.[74]

One market incentive may encourage utilities to tackle conservation in the rental sector. It has been suggested that rental housing, disproportionately occupied by the poor, accounts for a large fraction of uncollected utility bills.[75] Conservation could lessen this problem by decreasing the amount of energy used, thereby lowering energy bills. In addition, because large apartment houses consume a significant amount of power, both during base and peak load times, controlling energy use in these buildings can be a means of efficient load management.[76]

Examples of utility initiatives in the apartment sector include the Seal and Certificate program, the personal energy use presentations of Wisconsin Gas;[77] the audit and zero-interest loan programs of Pacific Gas and Electric;[78] and the installation rebate program of San Diego Gas and Electric.[79] It is worth noting, however, that all three of these utilities first undertook these conservation measures in the apartment sector under orders from their regulatory bodies.[80] A renewed regulatory or statutory agenda may therefore be necessary if utilities are to expand their conservation role in the multi-unit residential sector.

B. *Capitalization: Earning a Rate of Return on Conservation Initiatives*

Capitalization should be distinguished from schemes considered part of operating expenses and schemes which may not be recognized as part of legitimate service costs.[81]

73. BLEVISS & GRAVITZ, *supra* note 71, at 5.
74. *Id.*
75. *Id.* at 25.
76. *Id.*
77. *Id.* at 27-29.
78. *Id.* at 30-31.
79. *Id.* at 32-33.
80. *Id.* at 27, 30, 32.
81. Roberti, *Financing Solar Energy: State Policy Options* 8 J. OF LEGIS. 46 (1981); FELDMAN & WIRCHAFTER, ON THE ECONOMICS OF SOLAR ENERGY 188 (1980); NATIONAL CONFERENCE

When utilities capitalize they are allowed a rate of return on their investment that is set by the regulatory authority. Operating expenses are not considered in calculating the allowed rate of return, though they must be considered in establishing rates, which are designed to cover the costs of service. By contrast, expenditures which are seen by regulatory bodies to be outside the legitimate costs of utility services are not even factored into the equation by which rates are determined; they must be paid by a utility out of its permitted return on equity.[82]

Under NECPA as amended, the allocation of costs incurred pursuant to utility finance, installation, or supply programs is left to state regulation.[83] State law will, therefore, determine whether these costs will be capitalized as a part of the rate base, charged to ratepayers as current operating costs, or charged to the customer for whom the service is performed.

A few state statutes provide specifically that financing and supply of energy conservation measures are proper public utility services.[84] Two states not only allow investments in conservation measures to be included in the calculation of the allowed rate of return, but also allow a higher rate of return on such investment.[85]

Traditionally, utilities are allowed to earn a rate of return on the gross valuation of utility plant-in-service minus accumulated depreciation.[86] The methodology used to assess valuation of utility plant-in-service varies; the question is whether investments in conservation programs should be included. Patently they contribute to the production of energy either indirectly through energy saved by retrofitting or directly through increased alternative source production, as with solar energy installations. Those who argue against capitalization, however, charge that it invites discriminatory cross-subsidization and gold-plating.

OF STATE LEGISLATURES, ELECTRICITY PRICING AND DEMAND (1978) [hereinafter cited as PRICING AND DEMAND].

82. Satlow, *supra* note 39, at 924 ("If conservation and solar equipment are held to be appliances, they may be subject to the rule in the majority of states that customers not pay for any part of these activities.")

83. 42 U.S.C. § 8216(c)(1)(C) (1982) provides for the allocation of RCS program costs, but omits mention of cost allocation for other programs. *See* Satlow, *supra* note 39, at 923-24.

84. *See, e.g.*, ILL. ANN. STAT. ch. 96½, § 7315 (Smith-Hurd 1979); IOWA CODE § 93.30 (1984); ARK. STAT. ANN. § 73-2503 (1979).

85. See *infra* notes 93-97 and accompanying text.

86. Pricing and Demand, *supra* note 81, at 14.

Rate making is based on the principle that rates should be fair in apportioning costs among customers. To require those who do not benefit directly from the installation or financing of the conservation measures to pay for them through increased rates which reflect these expenditures not only as a cost of service, but as a capital investment, could be considered discriminatory rate making.[87] The problem is one of magnitude. As long as conservation expenditures would have only a small impact on rates as traditionally determined because of the small proportion of utility capital involved, the problem will probably not arise. If, however, the proportion of capital at issue rose, one regulatory cure would be to require that capitalization of conservation measures be accounted for separately and rates of return on it be charged to users only.[88] While this would avoid cross-subsidization, "advantaged" customers might end up paying more. Customers benefiting from solar investments by a utility would, for example, be charged the marginal cost of the solar energy while conventional supply continued to be based on average costs.[89] Unless the cost saved on conventional energy offset the higher rates paid for solar energy, consumers would not find conservation through solar supply attractive, even if it were purchased and installed by the utility. On the other hand, where the investment was smaller and the energy saved larger, as might be the case with some retrofit measures, users might still benefit even if the costs of the utility investment were not spread.

Gold-plating is another risk of capitalization. Because utility rates are dependant on the size of investment in physical plant only, not expenditures for maintenance and installation activity, utilities are arguable biased toward expensive, overdesigned sys-

87. See Section III.A.

88. FELDMAN, *supra* note 81; RCS provisions provide an example of separate cost accounting. 42 U.S.C. § 8216(c)(1)(A) (1982) requires that all amounts expended by a utility which are attributable to a state program under a state RCS plan must be accounted for on the books and records of the utility separately from the amounts attributable to all other activities of the utility. Note, however, that audit costs are recouped through the rates charged to user and non-user customers alike, though no rate of return is earned on this utility expenditure.

89. *Marginal cost* is the expenditure of resources necessary to produce one additional unit of the good. *Average cost* is calculated from the utility company's historic (or embedded) investments for facilities presently in service, a financial return on those investments, plus expenses incurred in supplying customer demand. PRICING AND DEMAND, *supra* note 81, at 2.

tems that are excessively capital intensive.[90] Such a bias raises the possibility that utilities will choose to underinvest in glazing, insulation and weatherstripping in favor of solar technology or to invest in excessively expensive solar designs instead of those which could save as much traditional energy but require additional maintenance.[91]

A means of offsetting the gold-plating tendency is to allow utilities a higher rate of return on investments in conservation than on investments in traditional capacity.[92] Two states, Kansas and Washington have such legislation.[93]

In Kansas, if the State Corporation Commission finds that a utility has:

> invested in projects or systems that can be reasonably expected . . . 2) to cause the conservation of energy used by its customers, or 3) to bring about the more efficient use of energy by its customers, the commission may allow a return on such investment equal to an increment of from one-half percent (½%) to two percent (2%) plus an amount equal to the rate of return fixed for the utility's other investment in property found by the commission to be used or required to be used in its services to the public.[94]

Kansas utilities have not reacted favorably to such incentives. To date, only two utilities in Kansas have applied for such an increased rate allowance since the 1980 legislation was passed. Both those utilities received the incentive for investments in load management technology.[95]

In Washington, similar legislation was welcomed and used extensively.[96] The Washington legislation allows qualifying investments in measures to improve the efficiency of end use (including energy conservation loans to utility customers) to receive an in-

90. FELDMAN, *supra* note 81, at 216; *see* Kahn, *Using Utilities to Finance the Solar Transition*, 2 SOLAR L. REP. 543, 546 (1980).

91. Kahn, *supra* note 90, at 546-547.

92. NATIONAL AUDUBON SOCIETY, THE AUDUBON ENERGY PLAN 91 (1984).

93. *See also* California legislation allowing a rate of return of .5 to .10 percentage points higher on investments in projects designed to generate or produce energy from renewable resources. CAL. PUB. UTIL. CODE § 454 (1985); TEX. STAT. ANN. art. 1446c, § 39 (Vernon 1986) (reasonable return may be set in light of the utility "efforts and achievements" in the conservation of resources.)

94. KAN. STAT. ANN. § 66-117(d) (1980).

95. Telephone interview with P. Dubach, Energy Program Supervisor, Kansas Corporation Commission (July 23, 1985).

96. Telephone interview with M. Thompson, head of Puget Sound Power Rate Department (Oct. 1, 1985).

crement of two percent (2%) in addition to the rate of return on common equity permitted on the company's other investment.[97] Puget Sound Power, in its next rate hearing, will be requesting to apply the higher rate to investments in efficient hot water tanks purchased pursuant to its hot water rental program.[98]

C. *Financing by Utilities*

Between 1978 and 1980, NECPA prohibited most utility financing of residential conservation measures.[99] The Energy Security Act of 1980 (ESA) deleted that prohibition, however.[100] Utilities covered by NECPA may now engage in financing activity so long as: 1) loans are made at reasonable rates and on reasonable terms,[101] and 2) such loans do not have a substantial adverse impact upon competition or involve the use of unfair, deceptive or anticompetitive practices.[102]

There now exist, therefore, a host of possible ways in which utilities might be involved in assisting the consumer to finance conservation measures.[103] Any generic financing arrangement can be varied and numerous combinations of the several major types of financial interaction can be envisioned. The following describes the generic possibilities, their potential successes and pitfalls.

1. Direct Utility Loans

The potential role for utilities in financing residential conservation through loans has been widely discussed. Depending on how analysts weigh the advantages and disadvantages of this option, some argue that utilities are probably the best source of financ-

97. WASH. REV. CODE ANN. § 80.28.025 (Supp. 1986). The Report on H.B. 1419 (1980) from Committee on Revenue indicated that loans to customers would fall within the provision.

98. Interview with M. Thompson, Puget Sound Power, *supra* note 96.

99. National Energy Conservation Policy Act of 1978, Pub. L. No. 95-619, § 216(a)(2) and (c), 92 Stat. 3206, 3217 (1980) (codified as amended at 42 U.S.C. § 8217(g) (1982)). Loans for less than $300, or the purchase and installation price of furnace efficiency modifications or clock thermostats were exempted. *Id.*

100. Energy Security Act of 1980, Pub. L. No. 96-294, § 546(a)(2); 94 Stat. 611, 743 (1980).

101. 42 U.S.C. § 8214(a)(4), § 8217(g)(2)(A) (1982).

102. *Id.* § 8217(g)(2)(B).

103. The California Public Utilities Commission identified 60 variations, *see* CALIFORNIA PUBLIC UTILITIES COMMISSION, FINANCING THE SOLAR TRANSITION, REPORT TO THE CALIFORNIA LEGISLATURE (Jan. 1980) at viii-ix, as cited in Kahn, *supra* note 90, at 547.

ing,[104] while others argue that utility financing is generally unfavorable to consumers.[105]

In support of utility loan schemes it can be said that the administrative costs are minimized by an existing network for billing and customer service. Similarly, existing market penetration facilitates the advertising of such schemes and the confidence with which consumers view them.

Arguably a loan scheme is more broad-based than tax incentives which target the highest income groups. By coupling the availability of loans with a special incentives for the low-paid and elderly, this advantage could be augmented.[106] Utility loans also provide some assurance that conservation initiatives will not be stymied by credit crunches within traditional lending institutions.[107] The high cost of writing small loans has already limited the number of traditional lending institutions willing to underwrite residential energy conservation.[108]

For fiscally delicate utilities a loan-incentive scheme may be an unattractively expensive endeavor, however, particularly if the utility is operating on existing excess capacity. The profitability of utilities depends on keeping the sales of existing capacity high, so that the allowed return rate can be maintained without applying for a rate increase, while the costs of capital investment continue to be paid. Often it is only when a utility faces the need to invest in new capacity that conservation will appear affordable.[109]

Loan schemes alone may not succeed in creating an incentive for customer investment. Nashville Electric Service, for example, found that there was substantial customer interest in their solar financing program, but little follow-through by customers because of a shortage of contractors willing and prepared to deal with the installation of the new technology. The loan program

104. Lawrence & Minan, *Financing Solar Energy Development Through Public Utilities*, 50 GEO. WASH. L. REV. 371, 373-74 (1982).

105. *See generally* Brown, *Should Utilities Finance Solar Systems?*, PUB. UTIL. FORT., Mar. 12, 1981, at 26 (1981); MUNSON, *supra* note 32.

106. Lawrence & Minan, *supra* note 104, at 404.

107. *See* Roberti, *supra* note 81, at 58.

108. LEGISLATOR'S GUIDE, *supra* note 6, at 29.

109. Brown, *supra* note 38; *but see* ALLIANCE TO SAVE ENERGY, UTILITY PROMOTION OF INVESTMENT IN ENERGY EFFICIENCY 127 (1983) (arguing programs can be designed to be efficient even for utilities with low differentials between marginal costs and average rates and with excess capacity.)

was disbanded for "lack of consumer uptake."[110] This information suggests that in addition to consumer education, training for contractors or installation services might be considered necessary components of successful loan schemes.

There continue to be fears that by conditioning loans, utilities could inhibit competition.[111] Experience with loan schemes grandfathered in under the 1978 NECPA legislation did not generally bear out this fear,[112] but a body of sentiment still warns against the possibility.[113]

a. Threshold policy issues

If utilities are going to act as bankers for residential customers, a variety of threshold issues must be addressed. The decisions on these issues will affect the balance of advantages and disadvantages.

(i) *The percentage of the proposed investment to be financed*

Unlimited financing may push prices artificially high while limits may be arbitrary, administratively burdensome or inadequate to overcome consumer inertia. It should be borne in mind that utility cost of capital is usually higher than bank rates where bank loans are available. Utility financing is likely, therefore, to cost more than conventional methods in the same loan period.[114]

(ii) *Whether to charge interest, and if so, at what rate*

Long-term savings to a utility from the resulting conservation must be considered against the short-term costs of a loan program. On the basis of such calculations, some utilities provide financing at market rates with billing and repayment arranged through the utility as part of the monthly billing statement. Other utilities offer financing at lower, subsidized, interest rates. Electric utilities in Oregon, for example, finance weatherization at a statutorily set 6.5% interest.[115] Subsidized rates can be justified

110. Nashville Electric Service is part of the Tennessee Valley Authority, but their experience highlights a consideration that is applicable to investor-owned utility programs. Telephone interview with Bill Bennet of National Electric Service (July 23, 1985).

111. For a strong argument favoring increased competition in the energy industry see MUNSON, *supra* note 32.

112. Satlow, *supra* note 39, at 915.

113. *Id.* at 931. *See also* Section III.B.

114. Kahn, *supra* note 90, at 549.

115. OREGON REV. STAT. § 469.633 (1983).

as an investment that is less expensive than building additional capacity,[116] but this justification must consider the potential of discriminatory cross-subsidization being imposed on non-beneficiaries.[117]

In some instances, no-interest loans have been found justifiable. Pacific Power and Light (PP&L) operates a no-interest loan program for residential weatherization.[118] Other California utilities offer 8% loans.[119]

(iii) *The time period over which to expect repayment*

The PP&L loan program, deemed one of the most successful, does not require repayment of the loan until the customer's house is sold.[120] The loan is capitalized in the rate base so that all customers pay the carrying charges on the capital, but only until the property is sold and the loan repaid. Since most homes are sold within ten years, the cost to nonparticipants is limited, while customers are afforded a convenient repayment schedule.[121]

A risk of postponed repayment is that it lowers the purchasing customer's incentive to bargain with the seller since the assumption is, that whatever the cost of the conservation equipment, it can be recouped on the sale of the property. Prices, it is argued, might therefore be distorted upward.[122]

(iv) *What security should be required*

Loans should be secured in a way which preserves the customer's ability to sell her home without having it subject to a lien or to use her home as security on other borrowing.[123] Otherwise, customer interest will not be triggered. The *Audubon Energy Plan, 1984* suggests an alternate method of protecting a utility's investment. When a building is sold the utility could negotiate directly with the new owner, who would be given the option of continuing payments on the installed conservation measures or of having them removed. The report anticipates that the requests for removal would be few, thereby keeping the costs of this method

116. NATIONAL AUDUBON ENERGY PLAN, *supra* note 23, at 92.
117. See discussion *infra* note 207 and accompanying text.
118. Kahn, *supra* note 90, at 551-52.
119. Cal. P.U.C. Dec. 84-07107, 18 July 1984.
120. Kahn, *supra* note 90, at 551-52; Feldman, *supra* note 81, at 192.
121. Kahn, *supra* note 90, at 551-52.
122. *Id.*
123. Roberti, *supra* note 81, at 53.

manageable when spread out over the entire program.[124] Alternatively, loans can be guaranteed out of public funds. Under Florida law the Public Service Commission may pledge up to $5,000,000 of the Florida Public Service Regulatory Trust Fund to guarantee such loans.[125]

(v) *What conditions should be placed on loans*

To avoid charges of anti-competitiveness, the conditions placed on participation in loan schemes must be carefully worded (see section III.B). Loans conditioned on the purchase of "approved" systems must avoid arbitrary endorsement of one product as opposed to another. In the interests of consumer protection, however, quality certifications or efficiency standards could be used as a prerequisite if criteria were clear and defensible.[126] Financing may also be conditioned upon the customer having been refused financing from a traditional lending institution. Money typically costs utilities more than it does banks and other conventional financial institutions.[127] By encouraging utility financing where traditional loans might be available, one may be choosing a more expensive source of finance.[128] To mitigate this uneconomical choice, Ohio law requires utilities to loan only when traditional lending has been refused.[129] Though defensible on economic principle, such conditions may act as a barrier to consumer participation in the scheme.

2. Utility Credits, Rebates and Grants

Under most utility credit and rebate plans, customers purchase solar units or retrofitting with cash or with financing from a conventional leader. The utility then refunds some part of the cost of the system through lump sum payments (rebates) or through payments in installments (credits). Credits can be administered eas-

124. THE AUDUBON ENERGY PLAN, *supra* note 23, at 92.

125. FLORIDA STAT. ANN. § 366.82 (Harrison Supp. 1984).

126. 42 U.S.C. § 8217(c)(2)(C) (1982) (utility financing of supply or installation can be made subject to "reasonable conditions" imposed by the utility "to insure the quality of supply and installation") Hurst, *Antitrust Aspects of Involvement by Utilities in Residential Solar Energy* 16 NAT. RES. LAW 511, 515 (1983).

127. Feldman, *supra* note 81, at 183.

128. One must remember, however, that there are marketing costs attached to encouraging customers to use loans and utilities might, in this sense, be seen as marketing entrepreneurs.

129. OHIO REV. CODE ANN. § 4933.021 (Baldwin 1978).

ily since they are payable through the existing billing schedule. They can, however, tend to discourage the creation of conservation habits by customers, since they tend to disguise the level of consumption being billed.[130]

Rebates afford considerable incentive value but are expensive for utilities. They can, however, be useful as a load management device. For example, under the Southern California Edison's Demand Subscription Service project customers who agree to have their peak demands reduced to a pre-agreed level when necessitated by load management difficulties are offered a monthly rebate.[131]

One means to calculate the amount payable under these schemes is to measure the difference between what it would cost the utility to finance the new capacity contributed by the customer's conservation measure and what it costs the customer to finance its installation.[132] This system of utility participation is approved by private lenders (since they remain the prime source of financing), non-participant ratepayers (since the calculation of what is paid avoids subsidization), and the solar industry (since it minimizes utility interference in the market).[133]

Numerous programs using this approach can be cited. California PG & E offers cash to cities that reduce peak electricity demand within municipal boundaries. Cities receive $10,000 for each percent shaved off their usage between 1 PM and 6 PM, up to a $100,000 limit. The same utility offers builders a $1,000 rebate for each solar home they build.[134] Such programs may, however, run afoul of general provisions prohibiting certain classifications of utility activity.[135]

Grants, by contrast, are upfront payments by utilities toward the purchase of a conservation measure. Most typically they are

130. Lawrence & Minan, *supra* note 104, at 392.

131. ENERGY BRANCH, CALIFORNIA PUBLIC UTILITIES COMMISSION, 1984 ENERGY CONSERVATION PROGRAM SUMMARY 15 (1985).

132. *See* Kahn, *supra* note 90, at 548-550. Capacity calculations are also used under PURPA. It may be of some value to devise a single formulation for this calculation.

133. Roberti, *supra* note 81, at 58.

134. Randolph, *The Local Energy Future: A Compendium of Community Programs*, 3 SOLAR L. REP. 253, 279 (1981).

135. OHIO REV. CODE ANN. § 4905.33 (Baldwin 1978) prohibits utility rebates, special rates or free services which are discriminatory or anti-competitive.

used as a device to provide incentives in the low-income sector. Grants can cover part or all of the cost of purchase.[136]

Wide-spectrum grant programs are likely to meet resistance in most jurisdictions. The "give away" aspect, the difficulties of selecting participants and the potential of grossly excessive incentives make grant schemes expensive and politically suspect.[137] Proposals that are narrower in focus also face these difficulties, but it can be argued for proposals aimed at low income customers that grants are a means of readjusting the discriminatory rate features of loan schemes. In a package of conservation incentives, grants may be acceptable. Southern California Gas, for example, makes customers earning less than 150% of poverty income eligible to have their homes weatherized and minor energy-saving repairs made to their building envelope at no cost.[138]

Promotional grants have also been used successfully. For example, Atlantic City Electric Company has operated both wind and solar promotional grant schemes.[139]

D. *Supply and Installation*

When the prohibition on financing by utilities was lifted, the general prohibition on supply and installation of conservation mechanisms established by NECPA in 1978 was nonetheless retained.[140] Exceptions to the prohibition cover a number of programs subject to the requirements that certain standards of arms-length dealing, preservation of competition, and fair dealing are met. The following programs are not prohibited: 1) supply of furnace efficiency modifications, clock thermostats or load management techniques for the type of energy sold by the utility;[141] 2) supply or installation done by a utility through a contract between the utility and in independent contractor;[142] 3) the continu-

136. Households with incomes less than $5,000 per year in 1981 were almost as likely as higher income households to purchase inexpensive insulation but were much less likely to buy expensive insulation or any equipment to improve efficiency. OFFICE OF TECHNOLOGY ASSESSMENT, U.S. CONGRESS, ENERGY EFFICIENCY OF BUILDINGS IN CITIES 150 (1982).

137. Lawrence & Minan, *supra* note 104, at 393.

138. *Hearings, supra* note 45, at 8 (using poverty income as set up by the Department of Health and Human Services).

139. See Appendix *infra*.

140. 42 U.S.C. § 8217(a) (1982).

141. 42 U.S.C. § 8217(b) (1982); 10 C.F.R. § 456.503 (1985).

142. 42 U.S.C. § 8217(c) (1982); 10 C.F.R. 456.504 (1985).

ation of pre-1978 supply and installation programs;[143] and 4) programs authorized by pre-1978 state law.[144]

Utilities desiring to operate programs that do not fall within these exceptions may apply for a waiver from the prohibition.[145] This would be necessary, for example, where the utility itself, a subsidiary, or an affiliate, rather than an independent contractor, supplies or installs the retrofit or solar equipment. Such a waiver may be issued if the utility can demonstrate to the Secretary that the prohibited activity is to be conducted by charging fair and reasonable prices and interest rates, and that the activities would not be inconsistent with the prevention of unfair methods of competition.[146]

A danger inherent in utilities diversifying into supply and installation is that they will favor certain manufacturers or contractors thereby distorting the market. The original application for waiver submitted by Public Service Electric and Gas Co. (PSE & G) for example, sought permission to implement a program in which only a *single* type of solar hot-water heater from a single supplier would be available. Moreover, if purchased, that equipment was to be installed under the supervision of the utility by a contractor to be chosen by the utility. The application patently did not meet the waiver requirements. Nevertheless, public interest groups demanded a hearing. They were worried that, without public discussion, the political influence of the utility might enable such an anti-competitive program to slip through the waiver process.[147]

In an effort to prevent utilities from exercising a potentially negative impact on the solar energy market, the California legislature has passed a law requiring public utilities to get approval before they undertake manufacture, leasing, sale or other ownership or control of solar energy systems. Approval will only be forthcoming if the utility demonstrates that its program will not restrict competition or the growth of the solar energy industry and that it will accelerate the development and use of solar energy.[148]

143. 42 U.S.C. § 8217(d)(3) (1982).
144. 42 U.S.C. § 8217(d) (1982); 10 C.F.R. 456.506 (1985).
145. 42 U.S.C. § 8217(e) (1982); 10 C.F.R. 456.505 (1985).
146. 42 U.S.C. § 8217(e) (1982).
147. Satlow, *supra* note 39, at 916-17.
148. CAL. PUB. UTIL. CODE § 2775.5(a)-(d) (West Supp. 1985).

E. *Leasing and Rentals*

If a utility directly leases or rents equipment owned by it, the activity amounts to "supply" and must either fit one of the statutory exceptions to the supply prohibition, or be the subject of an approved waiver.[149]

Puget Sound Power, for example, runs a rental system by taking advantage of the contractor's exemption. Under contract with the utility, contractors purchase and install hot water heaters meeting utility efficiency standards. The contractor then retains the maintenance contract, but sells the hot water heater to the utility, which, in turn, rents it to the customer.[150]

In Puget Sound Power's case, the costs, including a rate of return on investment, is to be included in setting the general rates; the revenue is to be credited to general costs.[151]

Alternatively, a utility could recoup the full costs of the program through the rental rate, thereby avoiding the problem of whether non-users should subsidize the investment.

A lease or rental scheme also has the potential advantage of appealing to apartment dwellers, who are often reluctant to purchase equipment with a long pay-back period.[152]

F. *Utility Subsidiaries*

Utility companies do and in the past have engaged in businesses only tangentially related to their monopoly over gas or electric supply (*e.g.*, the sale of stoves or other energy-using appliances) by separating these operations from their regulated activity through subsidiary corporations.[153] States differ in the degree of regulation to which utility subsidiaries are subject. Some states limit the lines of business a subsidiary may engage in, others regulate all subsidiaries in which the utility owns a controlling inter-

149. Satlow, *supra* note 39, at 914; 42 U.S.C. § 8217 (1982).

150. Telephone interview with Mr. R. Sievers, Rental Program Coordinator, Puget Sound Power (Oct. 3, 1985).

151. Telephone interview with M. Thompson, *supra* note 96. The rate application considering this scheme has not been made, but the program has provisional commission approval.

152. Sweet, *supra* note 55, at 205; *see* BLEVISS & GRAVITZ, *supra* note 71, at 16-22.

153. For an excellent legal analysis of the legal issues arising in the use of utility subsidiaries, *see* ALLIANCE TO SAVE ENERGY, *supra* note 109, at 371-78.

est,[154] and still others place utility subsidiaries wholly outside the jurisdiction of state regulatory bodies.[155]

The creation of an audit subsidiary has been suggested for example. This would enable utilities to pool resources in fulfilling RCS requirements, thereby meeting the cost arguments leveled against those programs.[156] Financing residential solar development may also be an appropriate endeavor for utility subsidiaries.[157]

Regulators will examine such schemes to determine if the transactions between the utility and its subsidiary are reasonable. It is considered unreasonable and discriminatory for a utility to use its profits to subsidize a subsidiary to the disadvantage of its competitors.[158] Thus, careful accounting is needed to separate parent from subsidiary costs.[159] For utilities to create subsidiaries for the financing of solar equipment, different accounting controls are needed, because in this case it is illogical to separate the utility from the financing.

From the utility's perspective, the use of separate subsidiaries increases flexibility in some respects, but also imposes some undesirable constraints. Regulatory limits on utility activities would diminish, but program options under which the utility's expenses could be included in the rate base would be eliminated. Unlike expenditures for conventional capital assets, a utility's investment in financing through subsidiaries is not eligible for the allowed rate of return when calculating service rates.[160] Extended diversification can also increase the overall risk attached to investment in a company. Utilities currently suffering a credibility crisis in the eyes of investors might therefore be advised not to diversify.[161]

From the consumer's perspective, subsidiaries are another means (like leases, etc.) by which beneficiaries of an activity would

154. *E.g.*, CAL. PUB. UTIL. CODE § 218 (West Supp. 1985).

155. *E.g.*, UTAH CODE ANN. § 54-2-1(30) (1953); MO. ANN. STAT. § 393.140(12) (Vernon 1951).

156. *Hearings*, *supra* note 45, at 415.

157. *See*, for example, Pacific Gas & Electric's application to the California Public Utility Commission, No. 59537, March 25, 1980 in Cal. Pub. Util. Comm., Dec. 84-07-107, July 18, 1984. The creation of a *secondary* financial institution to buy loans made by utilities or private lenders would enable the individual debts to be handled on a large scale. *See also* Roberti, *supra* note 81, at 59.

158. FELDMAN, *supra* note 81, at 548.

159. *See* Kahn, *supra* note 90, at 553.

160. *Id.*

161. FELDMAN, *supra* note 81, at note 35.

alone bear its costs. Though this avoids discriminatory rate calculations, it also raises the costs of service. Nevertheless, the services' delivered by such subsidaries could arguably benefit from the advantages of utility expertise and infrastructure. In addition, without monopoly status, subsidiaries would not invasively disrupt the competitive market in alternative energy. Conservation technology could continue to flourish—a process which should drive down prices.[162]

Solar manufacturing firms, however, are concerned that utility subsidiaries manufacturing solar equipment, as opposed to selling it, would still have a competitive advantage which could retard innovative research and development.[163] Furthermore, with no guaranteed rate of return on these investments, utility subsidiaries would be likely to operate with an eye to quicker pay-back periods and larger profits.

III. Major Legal Issues Raised by Utility Participation in Conservation

A. *Discriminatory Rates*

1. Rate-making Criteria

The ability of utilities to make a rate of return on conservation investment, or to recoup conservation expenses through the rates, will influence both utility interest in initiating conservation programs and consumer interest in participating in such programs. Regulatory bodies in most states are mandated to review the means by which rates are calculated.

Two related principles inform this review: 1) only reasonable expenses which are used and useful to utility customers should be included as expenses in a rate-making determination, and 2) nonbeneficiaries should not have to subsidize the costs of an utility expenditure that only benefits another class of customer.[164]

What is a "reasonable cost" often depends upon assumptions about what constitutes "utility oriented activity." Traditionally, utility activity was narrowly construed as including only the provi-

162. Kellman, *De-Utilizing the Energy Industry: Planning the Solar Transition*, 28 UCLA L. Rev. 1, 29-30 (1980).

163. Rhodes, *Implementing Federal Solar Policy: Learning from the Nuclear Power Experience*, 3 J. Energy L. & Pol'y 189, 214 n.64 (1983).

164. Subsidization does, in fact, take place regularly. *See infra* note 180 and accompanying text. On ratemaking generally, *see* Electricity Pricing and Demand, *supra* note 81.

sion of electricity or gas in sufficient quantities as to meet prevailing and projected demand. This meant excluding from the revenue requirements costs associated with merchandizing activities or appliance sales.[165] A growing body of scholarly work and other opinion now suggests that a broader conception of "utility oriented activity" is warranted. One alternative seeks to have utilities recognized as public service entities accountable to long range public interests in energy production and distribution.[166] Another suggests that utilities stop thinking of themselves as deliverers of one type of energy, and instead develop a concept of themselves as marketers of energy services.[167] Either redefinition would more readily support the assessment of conservation costs as "utility oriented activity." A sensitivity to this process of redefinition can be seen in the regulatory decisions.

Advertising related to conservation and safety has been allowed in Wisconsin as a legitimate operating expense.[168] Similarly, the advertising of energy efficient appliances has been accepted as an allowed expense in Hawaii.[169] If the expense furthers a legal obligation it will also be allowed.[170] Elsewhere, advertising, promotions or publicity expenses which can be said to provide a material benefit to the ratepayer, may be counted as expenses.[171] A conservation program may have to demonstrate an empirical energy savings, however, to have related advertising expenses allowed.[172] Care must be taken that the expenses are informa-

165. *See* Satlow, *supra* note 39, at 924 n.122.

166. Schroeder & Miller, *supra* note 4; THE AUDUBON ENERGY PLAN 1984, *supra* note 92, also makes this argument at 90.

167. Wellinghoff & Mitchell, *A Model for Statewide Integrated Utility Resource Planning*, PUB. UTIL. FORT., Aug. 8, 1985, at 19; Colton, *Conservation, Cost Containment and Full Energy Service Corporations: Iowa's New Definition of "Reasonably Adequate Utility Service,"* 34 DRAKE LAW REV. 1 (1984-85). THE AUDUBON ENERGY PLAN 1984, *supra* note 92, at 94.

168. Re Wisconsin Natural Gas Company 62 PUB. UTIL. REP. 4th (PUR) 287, 290 (1984). *See also* Re Iowa Power & Light Company, 59 PUB. UTIL. REP. 4th (PUR) 599, 610 (1984) (costs related to improved load factor allowed).

169. Re Gasco Inc., 63 PUB. UTIL. REP. 4th (PUR) 472, 479 (1984).

170. Re Wisconsin Gas Company, 64 PUB. UTIL. REP. 4th (PUR) 4 (1984); *But see* Idaho PUC Cases Nos. U-1009-137 and U-1109-138, Order No. 18833, April 30, 1984, reported in 1984 UTIL. L. REP. ¶ 24,389.03 (though a legal obligation to allow weatherization program expenses, a one year amortization was inappropriate: only the unamortized amount based on a three year amortization could be rate-based).

171. Re Wisconsin Electric Power Company, 65 PUB. UTIL. REP. 4th (PUR) 151, 154-55 (1985); *Cf.* 65 PUB. UTIL. REP. 4th (PUR) 151, 155 (advertising for load retention programs that did not directly produce net benefits to consumers was disallowed).

172. Re Atlanta Gas Light Company, 63 PUB. UTIL. REP. 4th (PUR) 346, 351-52 (1984) (no evidence that advertising encouraged off peak load or net benefits to the system).

tional, not institutional;[173] that they are not expended merely in a promotional exercise;[174] and that they are necessary.[175]

Where state statutes prohibit including the cost of institutional or promotional advertising as an operating expense, conservation activities may be affected. In Connecticut, 25% of the advertising of high efficiency equipment was disallowed after assessment under the state statute.[176]

If solar or retrofit equipment are considered an appliance, then expenses incurred to promote its sale may not be recoverable,[177] even if the promotions provide information on comparative costs.[178] Nor will the expenses of the appliance service or rental program be recoverable.[179]

The requirement that non-beneficiaries not subsidize services to others need not stand in the way of a new approach to what constitutes discriminatory rates. It is true that according to classical rate-making theory no class of consumer should subsidize the cost of energy to another class. If rigidly adhered to, this theory would obviate paying for any residential conservation incentive scheme through the rates, since non-beneficiaries would be left to pay an incremental cost for their conventional supply over and above what they would pay had the utility not incurred conservation expenses. In practice, however, cross-subsidization regularly takes place.[180]

173. Re Ohio Edison Company, 61 PUB. UTIL. REP. 4th (PUR) 241, 263 (1984) (advertising of a ratepayer booklet on electricity was informational).

174. Re Columbia Gas of Ohio, Inc., Case No. 82-1174-6A-AIR, Nov. 9, 1983 (program in schools characterized as purely promotional), digested at [ANNUAL 1984] PUB. UTIL. REP. 4th (PUR) 97 (1983).

175. Re Pacific Gas and Electric Company, Dec. 83-12-068, Appl. 82-12-48, Dec. 22, 1983 (community meetings duplicated function of public utilities hearings).

176. *See* Re Southern Connecticut Gas Company, 64 PUB. UTIL. REP. 4th (PUR) 393, 404 (1985) (applying CONN. GEN. STAT. § 16-19 (West Supp. 1985)).

177. Pa. Pub. Utility Commission v. National Fuel Gas Distribution Corp., 55 Pa. PUC 665, R-811600 *et al*, Mar. 26, 1982 (digested at [ANNUAL 1983] PUB. UTIL. REP. 4th (PUR) 143 (1982); Re Haverhill Gas Company, 49 PUB. UTIL. REP. 4th (PUR) 426 (1982). *See also* state statutes: PA. CONS. STAT. ANN. § 509 (Purdon 1979); WASH. REV. CODE § 80.04.270 (1983); WIS. STAT. ANN. § 196.59 (West Supp. 1985).

178. Re Hawaiian Electric Co. Docket No. 3705, Order No. 6275, July 9, 1980, digested at [ANNUAL 1981] PUB. UTIL. REP. 4th (PUR) 152 (1980).

179. Re Minnesota Gas Co. Docket No. G-008/GR-80-630, Aug. 27, 1981, digested at [ANNUAL 1981] PUB. UTIL. REP. 4th (PUR) 95 (1981).

180. New users, for example, are subsidized by existing users with respect to the costs of installation, and by past users, who paid for the new capacity to which present users are connected.

Rate-making more often resembles an average costing than a strict class-of-customer-costing. Sometimes this results as a consequence of accounting obstacles, but often it is justified by the difficulty of identifying non-beneficiaries. For example, the cost incurred by a utility in financing a solar greenhouse, or providing a grant for insulating low income housing, only directly benefits the residence where it is installed. Arguably, however, such expenditure also benefits other consumers indirectly by saving on energy production costs overall or by increasing load management potential.

Federal legislation has considered conservation as a general benefit to all classes of consumers, because it decreases the reliance of the United States on the world oil market, and increases the ability of the country to meet its future energy needs.[181] Hence NECPA provides that the costs of RCS and CACS may be charged to all ratepayers.

Following the federal lead some state legislatures have passed statutes allowing utilities to recover through rates the just and reasonable costs of conservation activities.[182] Other states have specified which conservation costs shall be recoverable, *e.g.*, Arkansas legislation allows utilities to increase rates to recover costs incurred as a result of programs which encourage the use of solar energy.[183] In the balance between non-beneficiary burdens and indirect benefits accruing to all customers, it is open to regulators to find the latter weightier.

There are however, some inherent dangers in this approach. While there is elasticity in the definition of what constitutes a discriminatory rate, one must be aware of the organizational dynamic that may lead utilities to exploit this justification for rate increases. Unless careful fiscal accounting and regulatory supervision is maintained, fiscally threatened utilities may inflate conservation costs without providing commensurate payoffs to non-directly benefiting customers, *i.e.*, without effecting substantial energy conservation. This problem was highlighted in a recent

181. 42 U.S.C. § 8201 (1982). *See* Mich. Pub. Serv. Comm. Case No. U-6633-R (1982), June 13, 1984, UTIL. L. RPTR. 58,099, 58,104 (§ 24,452) (use of audit kits for public information and promotional seminar meeting is within the scope of RCS program and therefore could be factored into the revenue requirement, but recompensable advertising costs were reduced by the amount they contributed to company image rather than RCS program promotion).

182. *E.g.*, N.Y. PUB. SERV. LAW § 135-n (McKinney 1983).

183. ARK. STAT. ANN. § 73-2503 (1979).

California Public Utilities Commission Decision on a PG & E rate increase application. The California PUC staff urged that past performance in administering the zero-interest loan program be considered in evaluating the additional costs claimed by the utility:

> In 1983, PG & E came as close as it has ever come to achieving its ZIP (Zero Interest Program) goals. The fact remains however, that PG & E did not achieve its goals in 1983, and never has achieved the goals which it set *for itself* when it comes before the Commission in a ZIP rate case. Furthermore, although PG & E failed to accomplish all it promised to do in 1983, the company spent more than it was authorized in rates for that year. Clearly, this situation cannot be allowed to continue. Ratepayers cannot be expected to continue to pay more for less. And the Commission should insure that they are not required to.[184]

2. Fourteenth Amendment

Constitutional challenge is unlikely to stand in the way of conservation costs being payable through the rate base. Challenges of discrimination contrary to Fourteenth amendment protections require the presence of "state action." The courts have generally interpreted this prerequisite as requiring more than the involvement of state-regulation and more than the presence of services affecting the public interest.[185]

B. *Antitrust Claims of Interference with Competition*

Central to criticisms of utility participation in conservation activity are fears that monopoly involvement will damage consumers and competitors by interfering with competitive market forces. The desire to avoid such distortion is evident in the veritable hedge of protective requirements which must be met by utility programs. NECPA provides that nothing in the statute relating to utility programs shall be "construed as restricting the authority of any agency or instrumentality of the U.S. or of any state to use any provision of law to prevent unfair methods of competition. . . ."[186] Private antitrust remedies are also expressly preserved vis-á-vis action affected by the Energy Security Act

184. Cal. Pub. Util. Comm., Dec. 84-07-107, July 18, 1984.
185. Jackson v. Metropolitan Edison Co., 419 U.S. 345 (1974).
186. 42 U.S.C. § 8221(b) (1982).

amendments of NECPA.[187] Consequently, utility programs will be subject to antitrust restrictions under federal and state law.

NECPA itself enjoins the DOE, the state energy agencies and the regulatory bodies to protect against anti-competitive utility activities. No state RCS or CACS plan shall be approved unless it contains adequate measures for preventing anti-competitive acts affecting commerce.[188]

Similarly NECPA contains a provision against anti-competitive utility activities in supply and installation.[189] Generally, such utility activity should be conducted through independent contractors. If a utility chooses a supplier or installer, the choice must be made on a basis that does not involve unfair competition or have a "substantial adverse effect on competition."[190]

Conditions on financing must also "insure [*sic*] the quality of supply and installation," and not be designed to benefit the utility alone. Furthermore, financing may not discriminate among suppliers or installers or against do-it-yourself advocates.[191]

Both the Clayton Act[192] and the Sherman Antitrust Act[193] may also be applied in the context of utility schemes. The most relevant provisions are sections prohibiting restraint of trade,[194] and prohibiting monopolization or the attempt to monopolize.[195]

This plethora of restraints on utility activity are justified by the historical commitment to allowing utilities to take advantage of

187. The Act provides that nothing in the amendments shall bar antitrust action by "any person" for "activities conducted under any program established under this title" or "convey to any person immunity from civil or criminal liability, create defenses to actions under antitrust laws or modify or abridge any private right of action under such laws." Pub. L. No. 96-294, § 548, 94 Stat. 745, codified as 42 U.S.C. § 8211 (1982). As it stands, the provision, however, may not seem to cover financing unless financing is included in a state RCS plan (a "program established under this title"); and it does not apply to programs grandfathered-in under section 216(d) or programs permitted under waiver since such programs were not affected by the amendments, though the waiver process itself requires an antitrust analysis. Satlow, *supra* note 39, at 933. Senate Bill 410 would clarify the applicability of private antitrust remedies to all provisions of NECPA, *supra* text and note 65.

188. 42 U.S.C. §§ 8214(b), 8282(a)(1)(A), 8217(g)(B) (1982).

189. 42 U.S.C. § 8217(c) (1982).

190. *Id.*

191. *Id.*

192. 15 U.S.C. §§ 12-27 (1982).

193. 15 U.S.C. §§ 1-7 (1982).

194. Section 1 of the Sherman Antitrust Act and Section 3 of the Clayton Act. A lower court has held that electricity is a "service" not a "commodity" and so not covered under Section 3 of the Clayton Act. *See* Hurst, *supra* note 126, at 516-17.

195. Section 2 of the Sherman Antitrust Act.

the presence of large economies of scale, while restraining the effects of their "natural monopoly" in the market place. These "natural monopolies" have never been seen to extend beyond the provision of a particular service. Thus, where separate utilities provide gas and electricity, competition has been preserved as between gas and electric utilities. Now the existence of independent competing power producers is also guaranteed by the Public Utility Regulatory Policies Act of 1978 (PURPA).[196] Indeed, it is argued that electric entrepreneurs who employ cogenerators, burn waste and harness sun, wind, water and steam, currently constitute one of the nation's fastest growing industries.[197]

Large and small businesses developing, supplying and installing insulation, double-glazed windows, efficient appliances, computer-controlled heating, solar technology, etc., should be encouraged rather than inhibited by utility activities. The problem is to design schemes which use the utilities to foster this competitive environment, not stifle it.

Since 1978, only one antitrust claim involving a conservation program has appeared in either the Public Utility Reports or the Utility Law Reporter.[198] This speaks to the ability of utilities to design conservation programs which do not infringe on antitrust law. The likelihood of future problems varies depending on the area of utility activity. The nascent solar industry, for example, is more easily interfered with than well-established insulation and storm window industries. Likewise, there are greater anti-competitive implications in utility supply and demand than in financing.[199]

Some of the federal antitrust aspects of utility involvement in residential solar energy are highlighted below.[200]

196. Public Utilities Regulatory Policies Act, Pub. L. No. 95-617, 92 Stat. 3117 (1978), as amended by Pub. L. No. 98-620, Title IV, § 402(45), 98 Stat. 3360 (1984) and Pub. L. No. 96-294, Title IV, §§ 408(a)-(c), Title VI, § 643(b), 94 Stat. 718, 770 (1980). See also the article on PURPA in this issue, Charo, Stearns & Mallory, *Alternative Energy Power Production: The Impact of the Public Utility Regulatory Policy Act*, 11 COLUM. J. ENVTL. L. 447 (1986).

197. MUNSON, *supra* note 32, at 144.

198. California, Re Southern California Gas Company, Dec. 82-02-135, App. 60446, 60447, Feb. 17, 1982 digested at [ANNUAL 1983] PUB. UTIL. REP. (PUR) 193 (utility weatherization financing and credit program was not anti-competitive in lending or any other relevant markets and did not therefore violate federal or state antitrust laws).

199. Satlow, *supra* note 39, at 926.

200. This discussion summarizes the analysis presented in Hurst, *supra* note 126.

1. Utility Sales

Utilities selling solar units at retail prices must be aware of competing retailers who may argue that the full market penetration of the utility monopolies gives unlawful advantage to their utility sales contrary to Section 2 of the Sherman Anti-Trust Act.[201] There is no *per se* prohibition against a monopolist entering a new market, however, and the utility can argue against claims of the establishment of exclusionary intent; *e.g.*, utility involvement increases consumer acceptance of solar energy, increases the reliability of solar systems, is necessary to control the use of back-up power and meets national conservation priorities.[202]

2. Utility Leasing

Marginally capitalized companies could argue that a utility role here tends to exclude them, since leasing requires more capital than selling and utilities have greater capital only as a consequence of their monopoly position. Arguing that customer interest dictates participation by a utility is a defense that has not worked in the past.[203] The risk of antitrust action is less, however, if a utility restricts its leasing scheme to low-income customers, keeps the terms of the lease short, and includes liberal cancellation provisions.[204]

3. Exclusive Service Contracts

Requiring purchasers or lessors of a utility's solar units to enter into exclusive service contracts risks antitrust challenges by competing service companies and manufacturers who, in effect, would be required to establish monopolization. That decision has since been criticized, but not overruled. It is worth noting that NECPA gives the Secretary of Energy, upon consultation with the FTC,

201. Hurst, *supra* note 126, at 512. Plaintiffs could cite United States v. Aluminum Co. of America (ALCOA), 148 F.2d 416 (2d Cir. 1945) as authority for arguing that a utility, in entering the solar market, is anticipating demand and attempting to preempt the market to discourage entry by competitors.

202. The customer interest argument failed in *ALCOA*, but the interests relied upon could be distinguished.

203. The argument that term leasing was in the customers' interest was rejected in United States v. United Shoe Machinery Corp., 110 F. Supp. 295, 323, 345-46 (D. Mass. 1953), *aff'd per curiam*, 347 U.S. 521 (1954).

204. Hurst, *supra* note 126, at 513.

the authority to stop utility programs with "unreasonable" rates or terms which adversely affect competition.[205]

4. Exclusive Dealing Contracts

It is not a *per se* antitrust violation for a utility to enter into an exclusive arrangement with a single supplier of conservation material. The degree of competition thwarted by the contract will have to be considered. The tests applied are becoming less rigorous, but a safer route to quality control for utilities is the establishment of detailed standards for materials.[206]

5. Discriminatory Rates and Refusal to Supply Back-Up Power

Because the utility possesses monopolistic power over the sale of energy, this conduct would clearly constitute an unlawful use of the utility's legal monopoly. It would also be considered a violation of the tying prohibition if a utility was only willing to sell back-up power to those solar units which it sold, leased or financed.[207]

6. Setting Standards

A rule of reason is applied to tests of certification or standards set by utilities when determining whether they are in violation of antitrust prohibitions.[208] The interests of product quality, reliability and efficient load management are all criteria that favor the reasonableness of allowing this activity by utilities.

C. *Exemption of Utility Actions from Antitrust Challenge*

Under some circumstances, action taken under color of state law may be exempt from antitrust challenge under the "state action doctrine." The nature of the act and the degree of government involvement are the most important.[209] This raises the question of whether a utility program mandated by a state regula-

205. NECPA § 216(g); 42 U.S.C. § 8217(g).

206. Hurst, *supra* note 126, at 520-23.

207. *Id.* at 513, 517.

208. Radiant Burners, Inc. v. People's Gas Light & Coke Co., 364 U.S. 656 (1961). *See* Hurst, *supra* note 126, at 515.

209. J. VON KALINOWSKI, 16E BUSINESS ORGANIZATIONS: ANTI-TRUST LAWS AND TRADE REGULATIONS § 46.03[2].

tory body, or clearly authorized by that body, would be immune from anti-trust attack.

Under the *Goldfarb* and *Cantor* standards, for private conduct to gain immunity based on state action, the degree of government involvement in that activity must be such that the state compelled the conduct by statute or regulation, and dominated the decision-making so as to significantly diminish the private party's freedom of choice.[210] Mere authorization of acts or declarations that an act is lawful will not confer immunity. The acts for which immunity is sought must be necessary to effectuate a legitimate state regulatory scheme, and then immunity only issues to the minimum extent necessary to fulfill that purpose.[211]

What constitutes a legitimate state regulatory scheme will require a balancing of federal interests in a competitive economy and state interests in the regulation. State legislators or regulators seeking to afford antitrust immunity to a utility conservation program will have to be explicit in their intentions and active in their involvement.[212]

D. *Requiring Utility Conservation Activity*

Voluntary utility conservation initiatives are likely to take place only under specific economic conditions which vary regionally and temporally. In short-term economic calculations, conservation programs generally appeal most to utilities that are already in sound financial condition or are approaching the point of further investment in new capacity.

Requiring utilities to perform a conservation role is an alternative to reliance on voluntarism. The mandate to participate could come from any of three sources: federal legislation, state legislation, or regulatory body prescription.

The RCS and CCS provisions of NECPA are examples of federally imposed requirements on utilities to participate in residential energy conservation. Federal obligations imposed on electrical utility rate-making fall short of requiring a full determination of

210. Goldfarb v. Virginia State Bar, 421 U.S. 773, *reh'g denied*, 423 U.S. 886 (1975); Cantor v. Detroit Edison Co., 428 U.S. 579 (1976). *See* VAN KALINOWSKI, *supra* note 209, at § 46.03[2]; and Hurst, *supra* note 126, at 523-26.

211. J. VAN KALINWOSKI, *supra* note 209, at § 46.03[2].

212. Jones, *Immunities from the Antitrust Laws for Regulated Entities*, PUB. UTIL. FORT., May 30, 1985, at 37, 41, applying U.S. v. Southern Motor, 466 U.S. 170 (1984).

cost-effective conservation measures.[213] The power to regulate interstate commerce enables Congress to legislate over this area but there is a limit to the workability of federal statutory schemes. Even the RCS and CCS provisions, which set only minimum requirements and leave details of the program to the state plan, are accused of insufficient flexibility in enabling utilities to respond to consumer interests and market development.[214] Although that criticism should be considered cautiously, regional variations in energy supply and demand probably do argue against an expansive role for uniform federal regulations.

State legislatures, closer to the needs of utilities and consumers within their jurisdictions, have, in turn, placed conservation obligations on private utilities. Some have merely mirrored the minimum requirements set out in NECPA, while others have gone further. Oregon, for example, in addition to requiring utilities to perform energy audits and facilitate residential conservation initiatives, requires that utilities provide a financing service which offers customers investing in conservation measures the option of a cash payment limited to $350 per dwelling, or a loan not to exceed $5,000 in principal.[215] Ohio law orders utilities to be lenders of last resort, up to $750.[216] In other states, however, bills proposing that a financing requirement be placed on utilities have failed.[217] Increasingly, state laws require utilities to undertake resource planning in which the potentials of conservation are considered.[218] Some of these laws require regular reporting, others require submissions when rate changes or construction permits are applied for.

213. 16 U.S.C. § 2621 (1982) (requiring state regulatory authorities to consider statutory standards, including what load management techniques are practicable, cost-effective, reliable and useful).

214. *See Hearings*, *supra* note 45, at 21-42.

215. OR. REV. STAT. § 469.633 (1981).

216. OHIO REV. CODE ANN. § 4933.021 (Baldwin 1984).

217. N.Y. (1977) SB 549 B/AB 7904B.

218. CALIFORNIA: CAL. PUB. RES. CODE § 25000 (West 1977); FLORIDA: FLA. STAT. ANN. § 366.81 (West Supp. 1984); IOWA: IOWA CODE ANN. § 476A.6 (West 1985); MINNESOTA: MINN. STAT. § 216B.16 (Supp. 1985); NEVADA: NEV. REV. STAT. §§ 704.741, 751.890 (1983); OHIO: OHIO REV. CODE ANN. § 1551.07 (Baldwin 1984) (by contrast, this statute does not place the obligation for energy planning on the utilities, rather the obligation lies with the Division of Energy of the state Department of Development); WISCONSIN: WIS. STAT. ANN. § 196.491 (West Supp. 1985) and WIS. ADMIN. CODE ch. PSC § 111 (1982).

More than one half of all states require a certificate of public convenience and necessity to be issued before new electric power plants are built.[219] These certification proceedings also provide a forum for requiring conservation issues to be considered.

Rather than regulating the utilities directly by state law, state legislatures may seek to augment the power of the regulatory agencies dealing with the utilities. Plenary powers of the legislature to confer powers on a Public Utilities Commission (or other regulatory body), in addition to the powers which the Commission derives by direct grant in the state constitution, are subject to the limitation that the additional powers bestowed must be consistent with and germane to the regulation of public utilities.[220]

The extent to which a regulatory commission can mandate *the particular form* of utility action to be taken depends heavily on the language of the statute which empowers the regulatory commission. Unless the legislature has clearly given the regulatory agency power to mandate the form of utility action, courts may be reluctant to imply such authority from the statutory language.

In a recent case in point, the Supreme Court of Iowa held that in the absence of clear legislative enactments the State Commerce Commission did not have the power to require utilities to serve as lenders of last resort to residential customers implementing energy conservation measures.[221] The Commission argued unsuccessfully that its power was based on legislation giving it jurisdiction over "programs designed to promote the use of energy conservation strategies by rate or service-regulated gas and electric utilities,"[222] and requiring it to "promulgate rules concerning the use of energy conservation strategies."[223] The Court held that the legislative directives to take action did not authorize the commission to *require* utility financing, it only placed utilities under an obligation to pass rules to "encourage, influence and provide incentives relating to energy conservation."[224]

The California Supreme Court rendered a similar holding with regard to interpreting the California Home Insulation Assistance

219. Carvalho, *supra* note 16, at 175. *See, e.g.*, Arkansas Utility Facility Environmental and Economic Protection Act, ARK. STAT. ANN. §§ 73-276 to -276.18 (Supp. 1977).

220. Southern Cal. Gas Co. v. Pub. Util. Comm'n, 596 P.2d 1149, 1153 (1979).

221. Iowa-Illinois Gas & Electric v. Iowa State Commerce Commission, 334 N.W.2d 748, 752 (Iowa 1983).

222. IOWA CODE ANN. § 476.1 (West 1985).

223. *Id.* at § 476.2.

224. *Iowa-Illinois Gas*, 334 N.W.2d at 752.

and Finance Act.[225] The Act broadly empowers the California Public Utilities Commission (PUC) to "supervise and regulate every public utility in the state," and "do all things, whether specifically designated in this part or in addition thereto, which are necessary and convenient in the exercise of such power and jurisdiction."[226] Nevertheless, the court held that because the statute only authorized the PUC to *permit* a utility financing scheme, it did not authorize it to *require* utility financing.[227] The California PUC has, however, ordered the state's investor-owner utilities to submit plans for demonstration hot water installation and financing programs.[228]

New York's Home Insulation and Energy Financing Act is an example of legislation clearly empowering a regulatory agency to take action on the issue of utility financing. It provides in relevant part:

> After hearings upon reasonable notice, the commission shall establish home conservation plans for each utility . . .[229]
> The Commission may provide that any such plan shall provide participating customers with the opportunity to enter into a financing contract and security agreement with the sponsoring utility for the amount financed. . . ."[230]

Interpreting this statute the New York Supreme Court has upheld a Public Service Commission requirement that electric and gas utilities audit space heating accomplished by oil, and finance replacement of oil burners, without regard to the credit risk of eligible customers. Moreover, financing of available options may be made even where it means converting oil to gas or electricity.[231]

Other regulators have also had broad powers upheld when the enabling statute so permitted—the authority of Pennsylvania PUC to approve a tariff rule prohibiting master metering of multi-ten-

225. CAL. PUB. UTIL. CODE § 2782 (Deering 1979).

226. *Id.* at § 701.

227. Southern California Gas Co. v. Pub. Util. Comm'n, 596 P.2d 1149; 156 Cal. Rptr. 733 (1979).

228. Cal. PUC, Dec. No. 91272, Docket No. OII, 42, Jan. 29, 1980, at 6.

229. N.Y. PUB. SERV. LAW § 135-c(1) (McKinney Supp. 1986).

230. N.Y. PUB. SERV. LAW § 135-d(2) (McKinney Supp. 1986).

231. The court argued that credit risk is not a crucial variable since an eligible customer will already be a customer of the utility and the utility will therefore have a security in a lien on the premises. Rochester Gas and Electric Co. v. Pub. Serv. Comm'n of the State of N.Y., 422 N.Y.S.2d 770, 775 (N.Y. App. Div. 1979).

ancy commercial buildings and requiring direct metering of tenants was upheld in 1980.[232]

Examples of conservation programs which have emerged from regulatory requirements placed on utilities include: the Wisconsin Gas "Seal & Certificate" program, which offers landlords of rental properties a free audit and certification program; the Wisconsin Gas Low-Income, Zero-Interest Loan Weatherization program; the Pacific Gas & Electric Co. Zero-Interest Loan and Weatherization program; and San Diego Gas & Electric's 50% rebates to landlords for installation of qualifying conservation measures.[233] Regulators can also indirectly mandate conservation activity by threatening, as the California Public Utility Commission did, to consider inadequate conservation efforts as the basis for reductions in the allowed rate of return.[234]

E. *Authorizing and Promoting Utility Conservation Activity*

When utilities voluntarily undertake the encouragement of residential conservation, regulatory bodies generally have wide discretion in approving the utility scheme. The only requirement is that the scheme not be anti-competitive.

In 1978, Pennsylvania Power and Light sought authority to refuse the provision of electricity to newly constructed buildings which did not meet building insulation standards. The standards PP & L suggested were more stringent than those set in the Building Energy Conservation Act (BEC Act), but the Pennsylvania Supreme Court held that the BEC Act did not intend to prohibit the Pennsylvania Public Utility Commission from approving standards exceeding the statutory minimum. Moreover, the Commission had the power to approve the standards contained in the PP & L application, even as regards buildings powered by non-electrical energy sources.[235]

232. Crown Am. Corporation v. Pennsylvania Pub. Util. Comm'n, 1981-83 UTIL. L. REP. (CCH) ¶ 24,054 (Commw. Ct. No. 939, C.D. 1980). Since the direct metering of multiresidence buildings has substantial scope for inducing conservation, the decision is of interest outside the commercial sector. *See* BLEVISS & GRAVITZ, *supra* note 71, at 14.

233. BLEVISS & GRAVITZ, *supra* note 71, at 27-32.

234. Southern Cal. Gas Co., 14 PUB. UTIL. REP. 4th (PUR) 498, 504 (1976). *See also* positive incentive discretion provided by CAL. PUB. UTIL. CODE § 454 (West Supp. 1986). *See* Carvalho, *supra* note 16, at 180-81.

235. Pennsylvania Builders' Ass'n v. Pennsylvania Pub. Util. Comm'n, 1981-83 UTIL. L. REP. (CCH) ¶ 24,049 (Supr. Ct. 1983).

It may also be desirable to make utility conservation activity attractive to utilities and their stockholders. The statutes of three states, Kansas, Washington and California, already allow the regulatory bodies in those states to raise the rate of return on qualifying conservation investments.[236]

IV. Conclusion

If utilities are to play a positive role in encouraging residential energy conservation, their participation will have to be carefully regulated. A fundamental contradiction frequently exists between the economic principles which currently inform investor-owned utilities and the twin goals of reasonable rates and conservation. Voluntary conservation initiatives are only likely where use of present capacity is high and utility finances are secure. Even then, such conditions do not insure a long-term commitment to conservation.

Nevertheless, utilities can be directed to increase conservation activity or that activity can be made more attractive to them by the use of incentives. Sometimes initially reluctant utilities discover public relations pay-offs, once they are pushed into participation. Care must be taken, however, not to let utilities use conservation schemes as a means of justifying rate increases that do not have a commensurate pay off to customers. Nor should utility involvement stifle market dynamics that are increasing the availability of new technology and reducing its cost.

236. *See supra* notes 93-97 and accompanying text.

Appendix

INCENTIVE, SALES, LEARNING AND EDUCATIONAL ACTIVITIES CONCERNING SOLAR ENERGY BY ELECTRIC UTILITY COMPANIES

ALABAMA POWER COMPANY
P.O. Box 2641
600 North 18th Street
Birmingham, AL
Greg Reardon
(205) 250-1000

Sales Program

Alabama Power Company Service Area

Alabama Power Company offers high quality solar water-heating systems to its customers through appliance sales outlets that are located in division, district, and local offices. Floor displays were designed and builty by Aircraftsman, the collector manufacturer. Sales began in September 1982.

Educational Program

Birmingham, AL

Alabama Power Company is donating 120 solar panels to various nonprofit organizations. The equipment will be used to educate the public regarding the operation and maintenance of solar systems. Most of the solar panels have been donated.

Educational Program

Birmingham, AL

Alabama Power Company has developed a passive solar home planning book. The guide contains plans that are beneficial to the service area; i.e., with beneficial impacts to both the customer and the utility. The guide is free to its customers.

ATLANTIC CITY ELECTRIC COMPANY
1600 Pacific Avenue
Atlantic City, NJ
Richard Goodleaf
(609) 645-4464

Incentive Program

Atlantic City, NJ

Atlantic City Electric Company will pay $500 each to the first 100 residential customers who install approved equipment to generate electricity from wind-powered devices. To qualify for the money, customers installing windmills must notify the company before work begins and the projects must meet utility standards and requirements for wind generators. The program began in June 1981; as of August 1983, 17 wind turbine generators had been installed on the utility system. For rate-determining purposes, all 17 systems are being monitored for monthly energy production (Btu's). Four systems are additionally equipped to monitor wind speed, power production, and reactive demand every 15 minutes.

Incentive Program

Atlantic City, NJ

Atlantic City Electric Company's solar and wind assistance program provides grants of $300 for new solar domestic water-heating systems installed by residential customers between July 1981 and September 1983. As of June 1983, 277 grants had been made.

CENTRAL ILLINOIS LIGHT COMPANY
300 Liberty Street
Peoria, IL
Mary Ann Wilson
(309) 672-5487

Leasing Program

Peoria, IL

Central Illinois Light Company (CILCO) and Resource Alternatives, Inc., are involved in a cooperative program of leasing solar water heating systems to residential customers. After installation, the customer pays a monthly charge, based on estimated savings, and has the option to buy. The study will determine the amount of interest in solar, if it is available on a rental basis, the measured energy savings possible for local households, the measured impact of the systems on the energy production requirements of CILCO, and the business potential of a solar-leasing program. A report on the results of this demonstration should be available from Resource Alternatives. Resource Alternatives is a cosponsor for this project.

CENTRAL VERMONT PUBLIC SERVICE CORPORATION
77 Grove Street
Rutland, VT
Charles A. Whitehair
(802) 773-2711

Rate Incentive Program

Central Vermont Public Service Corporation Service Area

Central Vermont Public Service Corporation has made available a special rate for customers who plan to supply some of their electricity needs with wind turbines and hydroelectric generators. The special energy rate requires the customers to shift some of their electricity use to periods when the company has sufficient power and the demand is low. The rate was implemented early in 1978. Although the rate is available to all customers, few have participated in the program. The project was modified in 1982 to reflect PURPA regulations.

COLORADO SPRINGS DEPARTMENT OF PUBLIC UTILITIES
P.O. Box 1103
Colorado, Springs, CO
Rod Kuharich
(303) 636-5300

Incentive Program

Colorado Springs, CO

Colorado Springs Department of Public Utilities plans to develop an information base for a thermal storage customer class, which includes solar-heating customers. The objectives are to identify thermal storage customers who use electricity or natural gas for backup heating; to identify the peak and winter volume loads for these customers; to identify their impact on the system; and to forecast future customer impact on the utility system. The information gathered will be used to develop thermal storage rates. The project is in the formative stage.

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
4 Irving Place
New York, NY
Robert Noberini
(212) 460-2809

Sales Program

New York, and Westchester County, NY

Consolidated Edison Company of New York, Inc., through a Conservation Services Department program, is offering solar/off-peak water-heating systems for 700 homes in New York City and Westchester County. The system to be sold is Daystar's Solar Energymaster unit with model 1600 solar collectors. Each installation consists of two solar panels, a 120-gal. storage tank with an off-peak heating feature and solar loop heat exchanger, a 5-gal. drain-down tank (freeze protection), pump, and controls.

DETROIT EDISON COMPANY
2000 Second Avenue
Detroit, MI
Harry R. Williams
(313) 237-8000

Incentive Program

Southeastern Michigan

The Detroit Edison Company has developed standards for passive solar homes with electric heat pumps whereby it gives qualifying builders an award after a home has been completed. Promotional assistance is also available to the builders.

Rate Incentive Program

Southeastern Michigan

Detroit Edison Company has been granted a request to establish a new experimental service rate for customers using solar-assisted electric water heaters. The rate is tied to the company's studies to determine the effect of solar-assisted water heating on electric energy consumption. The experimental rate has been granted and differs from the company's conventional electric water-heating rate only in that it provides that a heat exchanger may be installed in the water tank to receive heat transferred to it by solar collectors.

EL PASO ELECTRIC COMPANY
P.O. Box 982
El Paso, TX
James E. Brown
(915) 543-5816

Rate Incentive Program

El Paso, TX

A special rate was submitted to the Texas Public Utility Commission (PUC) to be available to customers using a solar domestic water heater or a solar space-heating device as a source of additional energy. The utility will examine the impact on its system. The Texas PUC has postponed approval until a marginal cost study being prepared by Stone & Webster is completed. El Paso Electric Company will resubmit the rate.

Educational Program

El Paso, TX

El Paso Electric Company sponsors workshops where people build collectors from kits and learn how to install and complete the systems. The program is continuing.

EMPIRE DISTRICT ELECTRIC COMPANY
602 Joplin Street
Joplin, MO
Bill Eichman
(417) 623-4700

Educational Program

Joplin, MO

The RCS Audit provided by Empire District Electric Company includes an estimate of installed costs for the installation of wind and solar equipment as well as an estimate of first year savings and approximate payback time, based on typical weather conditions and fuel costs. To date Empire has mailed approximately 14,000 offers-to-audit to residential customers.

Educational Program

Joplin, MO

An energy van equipped with a solar panel is being used by Empire District Electric Company to acquaint customers with the operation of solar equipment. A solar panel is attached to the roof of the van, with a small fan to circulate air. Both intake and output vents are equipped with thermometers indicating air temperature. The van is utilized at schools, fairs, and other energy displays.

GULF STATE UTILITIES COMPANY
P.O. Box 1151
Beaumont, TX
Roy J. West
(409) 838-6631 ext. 2226

Sales Program

Beaumont, TX

In order to test customer acceptance and marketability, Gulf States Utilities Company began a solar demonstration program in April 1982. One hundred to 150 domestic solar water heaters will be sold in a 20-mile radius of Beaumont. The project is expected to continue through 1984.

IDAHO POWER COMPANY
P.O. Box 70
Boise, ID
John Wennstrom
(208) 383-2200

Incentive Program

Idaho Power Company Service Area

Idaho Power is implementing a large-scale domestic hot water solar-heating program for public awareness and performance studies in southern Idaho. One-hundred solar domestic hot water systems, 20 heat pump domestic hot water systems, and 20 control domestic hot water systems will be installed under a utility-sponsored rebate program. All sites will be monitored for two years for basic performance; 20 sites will be extensively monitored for efficiencies and load characteristics. The program allows customers to select available systems, but Idaho Power will provide the audit, inspetion, and monitoring, along with a cash rebate equal to 20% of the system's installed cost. The main program began in January 1982 and to date, 33 of the 100 systems have been installed and are being monitored. Interim reports are available.

MEMPHIS LIGHT, GAS & WATER DIVISION
P.O. Box 430
220 South Main Street
Memphis, TN
Paul Harris
(901) 528-4748

Incentive Program

Memphis, TN

Local contractors were trained to install solar water-heating systems designed by Tennessee Valley Authority. The units were sold to customers, with long-term, low-interest financing provided by the utility. One thousand units were installed and are providing approximately 65% of hot water needs.

Educational Program

Memphis, TN

Systems for solar water heating were evaluated and approved for use; and long-term financing, inspections, and recommendations were made available to customers. After a slow start, the number of systems being installed is increasing. As of April 1983, approximately 370 solar water-heating systems had been installed. The project is ongoing.

NASHVILLE ELECTRIC SERVICE
1214 Church Street
Nashville, TN
William E. Bennett
(615) 747-3666

Incentive Program

Nashville Electric Service Area

Nashville Electric Service has begun a one-year passive solar retrofit program that will allow the addition of up to five passive retrofits to a home. The utility will provide financing up to $3000 as well as advice on and assistance in design and construction. The five possibilities are a greenhouse, the addition of more glass to the south side of the home, wall heaters, movable insulation, and shading devices such as awnings or curtains for cooling.

NORTHERN STATES POWER COMPANY
414 Nichollet Mall
Minneapolis, MN
Michael Dasmarik
(612) 330-6853

Incentive Program

Minneapolis, MN

Northern States Power Company is providing low-cost wind-monitoring hardware and consultations on siting to the Minnesota Department of Energy and Planning and Development (DEPD). DEPD will lend these instruments to residents for short-term, site-specific wind resource monitoring. The equipment was delivered to DEPD, and installation is complete.

PACIFIC GAS AND ELECTRIC COMPANY
77 Beale Street, Room A 1297
San Francisco, CA
Jonathon Costa
(415) 781-4211

Incentive Program

San Francisco, CA

As an incentive to build passive solar homes, Pacific Gas and Electric Company offered builders up to $1000 per home, awarded on the basis of the energy savings of each design. Every Suntherm home had to qualify as a premium energy conservation home; that is, it must use 50-75% less energy, than a conventional home for space and domestic hot water needs. The pilot program began in July 1979 and was completed at the end of 1981.

Incentive Program

Palo Alto, CA

An awards competition was initiated in 1981 to encourage innovative applications of solar energy technologies. Awards are made annually to residential and commercial/industrial customers whose creative uses of solar energy technologies demonstrate innovative yet practical solutions to improved solar energy use. The first awards were given in May 1982 to two passive-designed homes (heating and cooling systems), one integrated residential water-heating system, and one passive/active hybrid office building. Over 500 customers toured the award-winning structure during a subsequent afternoon open house. The 1983 awards were presented in May 1983.

Incentive Program

Palo Alto, CA

Project SPLASH (Service for Pools on Load Management and Saving Heat) offers energy audits to pool owners. This service includes a solar feasibility analysis and load management by adjustment of time clocks. The program is complete; results were excellent.

Rate Incentive Program

Palo Alto, CA

Palo Alto Electric Utility is one of 14 agencies in California examining national roles accelerating the appropriate uses of solar energy. The comprehensive Palo Alto program features customer education and consumer assurance services, both general and technical. Direct utility financing at low interest rates and a 10% commercial line of credit are available for customer installations. City ordinances and utility rules are also being revised to encourage sensible solar energy applications. The city's goal is to have 3000 solar installations by 1985. The program was initiated in mid-1980 and is now being implemented. Customer response is excellent. Over 100 solar systems were installed through the program in the first six months of 1981.

Rate Incentive Program

Palo Alto, CA

The utility offers a 10% discount on electric bills for customers using residential solar space- or water-heating systems. The system must provide at least 50% of the fuel use for the loads served. The rate went into effect July 1, 1980. As of July 1982, 750 solar systems were installed and 330 customers had applied for and received the discount.

Educational Program

Palo Alto, CA

On-site individualized solar feasibility analysis will be performed for each single-family residence. Each active/passive solar analysis will take approximately 7 minutes. Individual consultations, design assistance, and referrals to other utility programs (e.g., financing) will be offered. Group workshops will be held in each neighborhood (approximately 400 homes) during the next two weeks. The program was implemented in the spring of 1983.

Educational Program

Palo Alto, CA

Visual guidelines for retrofit installations on residential buildings were developed. Design suggestions based on the guidelines will be given to each applicant for building permits for a solar installation. Guidelines were developed and published. The project is ongoing.

PUBLIC SERVICE ELECTRIC & GAS COMPANY
80 Park Place, Room 16A
Newark, NJ
Harry T. Roman
(201) 430-6646

Sales Program

Newark, NJ

Public Service Electric and Gas Company is now actively engaged in the sale and installation of solar water heaters. The utility offers a full five-year warranty on parts and labor for the systems. They are also conducting a program to educate their contractors in the proper installation of the systems.

SOUTHERN CALIFORNIA EDISON COMPANY
P.O. Box 800
Rosemead, CA
Jack Kawahima
(213) 572-1988

Incentive Program

Rosemead, CA

Southern California Edison Company offers to homeowners, through developers, a five-year service agreement on solar water heaters with electric backup. The agreement covers water storage tanks (excluding combination tanks), motors, valves, pumps, and collectors (excluding glazing). The project is authorized for 1250 units.

TENNESSEE VALLEY AUTHORITY
300 Credit Union Building
715 Market Street
Chattanooga, TN
Ira Birnbaum
(615) 751-5135

Educational Program

Various Locations, TN

This program will be directed primarily at market research and development to provide Tennesse Valley Authority (TVA) and commercial and industrial customers with the information necessary for wide-scale application of existing solar water technology to commercial establishments. The program is the first solar program to receive power R&D and appropriated funding for Valley-wide distribution of commercial projects. Seven categories of large hot water users (food stores, eating and drinking places, hotels and other lodging places, laundries, schools, hospitals, apartment complexes) will be targeted for installation of either large-capacity (more than 500 gal. of hot water per day) or small-capacity (500 gal. per day or less) solar water-heating systems. Thirteen of 23 planned commercial hot water systems in the TVA service region are presently under construction.

Educational Program

Various Locations, TN

Tennessee Valley Authority (TVA) will cosponsor the presentation of conservation-solar workshops to national professional associations for their member chapters in the Tennessee Valley. TVA will explain its objectives in presenting the workshop and, following the presentations, will explain how the professionals can use the knowledge gained in the workshop in conjunction with TVA's conservation-solar residential programs. TVA will reimburse the local chapters a percentage of the registration for each professional in attendance, thereby encouraging the local chapters to generate a large turnout. TVA is developing contracts with the national associations. Workshops began in autumn 1983.

Incentive Program

Various Locations, TN

Tennessee Valley Authority is offering financing for solar water heaters in a two-stage program. The first stage, Memphis 1000, includes the design, installation, and low-interest financing of 1000 solar water heaters to supplement existing electric water heaters. The second stage provides for the financing of at least 11,000 solar water-heating systems. The home of each interested consumer is surveyed by TVA to determine the feasibility of installing a solar water heater. Consumers are then offered a choice of approved solar systems and a selection of qualified installation components. After installation, the system is inspected by TVA before payment is made to the installer. As of March 1983, 1899 installations were completed. TVA offers consumers 20-year monthly loan payments through their electric bills for both stages of the program.

Incentive Program

Chattanooga, TN

Commercial and industrial (C&I) customers are provided technical and design assistance for more energy-efficient buildings, both new and retrofit, through Tennessee Valley Authority's (TVA) C&I Passive Systems Unit. Services offered include the following: computer modeling, thermal performance calculations, recommendations for energy-saving strategies, and cost-effectiveness studies. The program provides private-sector design professionals and their clients with direct access to proven passive solar concepts and technologies. In addition, the program promotes these concepts through education and training activities. As of March 1983, 300 formal requests for assistance had been received and processed, and 170 of these received significant assistance from TVA. A partial follow-up survey of the technical and design assistance projects identified 52 projects completed as new construction or retrofits. It also confirmed that one-third of the designers are applying the learned passive solar concepts to other new buildings they design. Publications: *Solar Technology Outreach Program. Factsheets for Individual Technical and Design Assistance Projects*. Contact: James N. West at (615) 632-5153. Publications: *TVA Solar Technical and Design Assistance Program*. Contact: James N. West at (615) 632-5153.

Incentive Program

Various Locations, TN

This project provides interest-free loans to customers for the purchase of approved airtight wood stoves. Only electrically heated, well insulated, single-family dwellings within participating power distributors' service areas qualify for loans of up to $800. A free home energy conservation survey is required. After installation, the heater must pass Tennessee Valley Authority safety inspections before the loan will be provided. As of March 1983, 5263 installations had been completed.

WASHINGTON WATER POWER COMPANY
P.O. Box 3727
Spokane, WA
Blaine Peterson
(509) 489-0500 ext. 2375

Incentive Program

Northern Idaho and Eastern Washington

Washington Water Power Company (WWP) will pay cash incentives to 100 qualifying customers with electric water heating in Washington and Idaho who install solar domestic water-heating systems. Equipment suppliers are required to abide by HUD standards, and the systems must meet 50% of the normal electric water-heating load. The utility will inspect all installations. As of July 1983, 32 manufactured systems and 5 owner-built systems in Washington, 16 manufactured systems and 2 owner-built systems in Idaho had been satisfactorily inspected by WWP.