A STUDY
OF
THE FEASIBILITY OF
ENERGY DISTRIBUTING COMPANIES TO
ANCE HOME AND BUSINESS INSULATION
TO
THE GOVERNOR
AND
THE GENERAL ASSEMBLY OF VIRGINIA

Senate Document No. 8

COMMONWEALTH OF VIRGINIA

Department of Purchases and Supply

Richmond

1978

COMMONWEALTH OF VIRGINIA

PRESTON C. SHANNON
CHAIRMAN

THOMAS P. HARWOOD, JR.
COMMISSIONER

JUNIE L. BRADSHAW
COMMISSIONER

BERNARD L. HENDERSON, JR.
ASSISTANT TO THE COMMISSIONERS
BOX 1197
RICHMOND, VIRGINIA 23209

STATE CORPORATION COMMISSION

December 13, 1977

Mr. Will D. Baugh
State Printing Manager
217 Governor Street
Room 224
Richmond, Virginia

Dear Mr. Baugh:

Enclosed please find a report submitted subsequent to Senate Joint Resolution No. 125. We would appreciate your preparing this as a Senate Document.

Also please find enclosed our requisition for 200 copies of the printed Senate Document.

Very truly yours,

Bernard L. Henderson, Jr.

BLHjr/m
Enc. (2)

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STATE CORPORATION COMMISSION

December 13, 1977

The Honorable Mills E. Godwin, Jr.
Governor of Virginia

and

The General Assembly of Virginia

The report contained herein is pursuant to Senate Joint Resolution No. 125 of the 1977 Session of the General Assembly of Virginia.

This report comprises the response by the State Corporation Commission to the directive that a study be made of energy distributing companies' financing the insulation of homes and usinesses and that a report be submitted stating the findings, conclusions and recommendations resulting from the study. The study was conducted by the Commission's Division of Economic Analysis and Research.

Respectfully submitted

Preston C. Shannon, Chairman

Thomas P. Harwood, Jr., Commissioner

Junie L. Bradshaw, Commissioner

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SENATE JOINT RESOLUTION NO. 125

Requesting the State Corporation Commission to study the feasibility of energy distributing companies financing of home and business insulation to achieve energy conservation.

Agreed to by the Senate, March 4, 1977

Agreed to by the House of Delegates, March 4, 1977

WHEREAS, the conservation and prudent utilization of our nation's energy supplies is of paramount importance to the maintenance of our economy; and

WHEREAS, a considerable reduction in energy consumption could be realized relatively easily through the proper insulation of homes and businesses; and

WHEREAS, such a reduction in energy consumed will have a positive impact on everyone, including the electric utilities since they would thereby be able to make more efficient use of their generating facilities, thus allowing the curtailment or reduction of future construction of higher capital-intensive power plants; and

WHEREAS, recognizing the benefits accruing to them their customers, and to the nation, Pacific Gas and Electric and Michigan Consolidated Gas Company have begun a program whereby they provide for the insulation of homes and in turn are indemnified through the customer's regular utility bill; now, therefore, be it

RESOLVED by the Senate, the House of Delegates concurring, That the State Corporation Commission is requested to study, with the cooperation of the Commonwealth's energy distributing companies, the feasibility of such companies financing the insulation of homes and businesses.

The Commission shall complete its study and report its findings, conclusions and recommendations to the Governor and the General Assembly no later than November one, nineteen hundred seventy-seven.

SUMMARY

Senate Joint Resolution No. 125 mandates that the State Corporation Commission undertake a study of the feasibility of energy distribution companies financing the insulation of homes and businesses. This report presents the results of that study. The Resolution in its entirety is presented as a preface to this report.

The financing of insulation in homes and businesses by energy distribution companies is feasible; two companies provide such financing in Virginia and at least 13 companies operate programs in other states. This study finds that adequate insulation financing is available through existing conventional finance sources. An analysis of cost data provides evidence that energy distribution companies are not able to lend funds for insulation at a lower cost than conventional finance sources. Therefore, there is no compelling reason to rely on energy distribution company insulation finance programs as a means of improving the level of insulation in homes and businesses in Virginia.

This study does not question the potential benefit resulting from insulation as a means of energy conservation. It assumes benefits are sufficient to justify the installation of more insulation. This study addresses the desirability and need of having energy distribution companies engage in the financing of such insulation.

The question is approached by first estimating the amount of insulation needed in Virginia. This is done to determine the annual amount of financing required. Attention is focused on single-family housing rather than business or multi-family installations. There are several reasons why this is done. The average cost of insulation retrofitting is found to be in the range of $500. This amount should not be a problem for a business or landlord that is seriously considering insulation. Economic incentives for installing insulation are lacking for those cases where a tenant supplies the heating and cooling energy. Further, it may not be possible to retrofit high rise multi-family units. Therefore, this study concentrates on single-family housing. Census and other published data indicate that the annual financing requirement for retrofitting the single-family, occupied housing in Virginia is in the range of $18 million per year over the next six years.

The second section of the study examines the dollar flows and terms of conventional financing sources that are now available to meet these requirements. In addition, current government programs for meeting insulation needs are discussed. These conventional and government financing sources appear sufficient to meet the projected insulation retrofitting financing requirements.

The third section discusses potential constraints pertaining to financing of insulation by energy distribution companies. In this section relevant legal issues are discussed and financing programs that are either planned or now being conducted by energy distribution companies are set forth. An analysis of these programs provides no evidence to suggest that energy distribution companies are able to lend funds at a lower cost then existing conventional financing sources.

In the fourth section, the economic advantages and disadvantages of having energy distribution companies finance insulation are summarized and the conclusions of the report are presented.

I. VIRGINIA INSULATION FINANCING REQUIREMENTS

Recent increases in the prices of fuels affect consumers in many ways. Higher fuel prices are reflected in higher consumers' monthly energy bills and retrofitting techniques, such as attic, wall, or floor insulation, storm windows, doors and weatherstripping, are gaining popularity as methods to lower those monthly bills. Such conservation efforts can benefit society by saving scarce energy. Consumers in the aggregate can benefit because reducing the growth rate of the demand for fuel will keep prices from rising further, and because improving load factors may allow better utilization of capital as peak demand use is moderated.

This report does not attempt to determine the benefits resulting from the installation of insulation. It assumes that the benefits of insulation are sufficient to provide incentives for its use. This study examines the feasibility of having energy distribution companies finance the installation of insulation.

Number of Homes in Virginia

There exists no exact estimate of the number of homes or commercial establishments in Virginia that justify the installation of additional insulation. Census data have only recently begun to survey the extent to which homes are insulated. Prior to 1970, insulation was less important because of the relatively low cost of energy. The 1975 regional census did ask questions concerning the existence of attic insulation but the responses were classified merely as "yes," "no," or "don't know." The tabulation of these responses is of limited value because they do not indicate the amount of insulation in those cases which affirmed its presence.

The starting place to determine the financing requirement for retrofitting insulation for Virginia housing is the number of houses in the State. Table 1 presents an estimate for the total number of single-family and multi-family housing units in Virginia by time periods in which they were built. In this table, the housing stock as reported by census data is adjusted and restated to reflect removals that have occurred since the census was taken in 1970. The removals are estimated to occur at approximately 1/2 of 1 percent per year. Department of Commerce data and other studies indicate this is an appropriate rate to utilize for this type of an adjustment. The resulting estimate of the total number of houses in Virginia, both single-family and multi-family, amounts to 1,717,000 units.

Table 1

Estimated Total Virginia Housing Units
Single-Family and Multi-Family

Year Built	Number of Homes	Number of Homes Adjusted to Reflect Removals from Housing Stock
Prior to 1940	439,000	360,000
1940 1949	220,000	205,000
1950 1959	322,000	320,000
1960 1969	453,000	453,000
1970 1974	307,000	307,000
1975 1976	72,000	72,000
	1,813,000	1,717,000

Source: Washington Gas Light Company Study of Census Data.

U. S. Department of Commerce, Bureau of the Census, 1970 Census of Housing in Virginia, Washington: August, 1972.

Tayloe Murphy Institute, Virginia Housing Units Authorized By Building Permits: Planning Districts, Counties, and Cities, compiled by Mary Kay Shernock, Elsa V. Cooke, and William J. Serow, Charlottesville, Virginia: 1970-1976.

The number of reinsulatable units in Virginia is of course less than this total number. Some of the newly constructed need no further insulation. Multi-family units that are high-rise apartments, or whose age makes them impractical for retrofitting, are not capable of being reinsulated. Further, if the tenant furnishes his own heat neither the owner nor tenant may have incentive to retrofit the unit with insulation. The landlord does not incur the fuel cost directly and the tenant would be reluctant to insulate someone else's property. The Virginia housing units most likely to be insulated are the single-family, owner-occupied units. The individual homeowner directly experiences the benefits of insulation and thus has economic incentive for retrofitting.

Table 2 sets forth an estimate of the number of single-family, owner-occupied housing units in Virginia. The units are presented by year built and are adjusted to reflect removals from the housing stock.

Table 2

Estimated Virginia Housing Units
Single-Family Owner-Occupied

Year Built	Number of Homes	Number of Homes Adjusted to Reflect Removals from Housing Stock
Prior to 1940	232,000	190,000
1940 1949	119,000	111,000
1950 1959	230,000	229,000
1960 1969	282,000	282,000
1970 1974	172,000	172,000
1975 1976	60,000	60,000
	1,095,000	1,044,000

Source: Census of Housing, Financial Characteristics for the State of Virginia, 1970. Housing Units Authorized, Virginia Data for Planning Districts, Counties, and Cities: 1970-1974; 1975; 1976 by Quarters.

There are at the present time in Virginia approximately 1,044,000 single-family, owner-occupied housing units. Again, the number of houses that require insulation is less than this total. Some of the houses, especially those that were built in later years, have adequate insulation and installing more insulation in them is not justified economically. Estimating the number of insulatable housing units is the next task.

Number of Insulatable Homes[1]

The likely number of units for reinsulation as discussed in the previous section is represented by owner-occupied, single-family housing. To determine the number of single-family, owner-occupied housing units in Virginia that require reinsulation, the total number presented in Table 2 is reduced to account for units which possess sufficient insulation or are not economically feasible to retrofit.

To assess the number of homes already having insulation several different data sources are used. First, some specific characteristics are available from a sample of 30 homes, including an overall measure of fuel efficiency of each home.[2] The sample indicates that the age of the home has a strong effect on its fuel efficiency. This is to be expected; indeed, a California study uses the age of the home as a way to estimate the condition of its insulation.[3] Of the 30 sample homes built prior to 1960, only 62.5 percent have R-11 attic roof insulation, whereas 92.9 percent built in 1960 or later have such insulation. It was during this later period that the FHA minimum standard for thermal insulation improved markedly. The standards set maximum permissible thermal losses of 2,000 BTU's per 1,000 cubic feet per degree day in 1965. By 1973, these maximum permissible losses were reduced by one-half.[4] An estimate of the number of homes lacking R-11 insulation is made by applying the percentage of homes having R-11 insulation to the age distribution of single-family, owner-occupied homes in Virginia (Table 2). By this reckoning an estimated 250,000 Virginia single-family, owner-occupied homes are lacking R-11 insulation.

[1]"R" value is an indicator of the effectiveness of insulation. It is a measure of the insulation's resistance to thermal conductivity. The higher the R value, the greater the insulation quality. The R-30 standard for ceiling insulation was used for this analysis. This is the standard recently issued by Edison Electric Institute for areas with 3500 to 5500 degree days ("All-Weather Comfort Guidelines," February 22, 1977). Virginia lies in this range of degree days. Several state utilities and contractors have advertised this thermal factor, R-30, as a guideline for consumers.

[2]These data were collected by a class of engineering students taught by Professor Dale Metcalf at the University of Virginia.

[3]California Public Utilities Commission, Energy Conservation Team, "Retrofit Ceiling Insulation for the State of California and Associated Utility Financing and Incentive Programs," Case No. 10032, San Francisco, California: July, 1977.

[4]Systems Control, Inc. (SCI), "Analysis of the Impact of Load Management Strategies upon Electric Utility Operating Costs and Fuel Consumption Patterns." Prepared for Federal Energy Administration, Palo Alto, California: August, 1976.

Census data are also used to provide information on the insulation condition of single-family, owner-occupied homes. Data for the southern region indicates that 67 percent of the houses sampled in 1975 have some attic or roof insulation, while 15 percent have some storm doors and 8 percent have storm windows. Estimates for Virginia are obtained by applying these patterns for the southern region to Virginia totals. The results are set forth in Table 3.

Table 3

Virginia
Insulation Condition: Single-Family Occupied Homes
1975

Insulation Factor	Number of Homes	Percent of Total
Storm Windows		
All	280,930	22.0
Some	108,541	8.5
Storm Doors		
All	319,239	25.0
Some	191,543	15.0
Attic or Roof Insulation	855,559	67.0

Source: Department of Commerce, Bureau of the Census, Current Housing Reports, Annual Housing Survey, United States and Regions, Series H-150-75-C, Washington, D. C., 1975.

A total of 1,090,726 single-family occupied homes for 1970; 1970 Census of Housing in Virginia. An estimate for 1975; (a) Virginia Housing Units Authorized by Building Permits. (b) Occupancy Rate; 93.7 Percent, Annual Housing Survey. Total number of single-family occupied homes in Virginia equals 1,276,954.

Not all homes that lack adequate insulation may be retrofitted; some are run down or are not expected to last out the life of the insulation, therefore, their installation cannot be justified. Table 4 below sets forth the single-family, owner-occupied Virginia housing units by value and by year built.

Table 4

Virginia
Estimated Number of Housing Units
Single-Family Owner-Occupied
By Value and By Year Built

Year Built	Less Than $10,000	$10,000 $14,999	$15,000 $19,999	Over $20,000	Total
Prior to 1940	48,000	36,000	32,000	74,000	190,000
1940 1949	21,000	20,000	24,000	46,000	111,000
1950 1959	19,000	32,000	41,000	137,000	229,000
1960 1969	18,000	22,000	33,000	209,000	282,000
1970 1974	4,000	5,000	15,000	148,000	172,000
1975 1976	1,000	2,000	5,000	52,000	60,000
Total	111,000	117,000	150,000	666,000	1,044,000

Source: Estimates based on distribution of single-family, owner-occupied housing units by value and year built in the Southern Region of the United States as presented in Current Housing Reports, Annual Housing Survey, United States and Regions, 1975.

Table 4 shows that of the approximately 1,044,000 single-family, owner-occupied housing units in Virginia in 1975, 111,000 have a value less than $10,000 and 228,000 have a value less than $15,000. There are 666,000 worth more than $20,000 and 150,000 worth $15,000 to $20,000 so 816,000 have a value greater than $15,000. A subsequent section of this report indicates that the average cost for insulating a house ranges from $340 to $610. This cost averages about 5 percent of the value of a $10,000 house, and more than 3 percent of the value of a $15,000 house. It is unlikely that such a significant expenditure as that needed to insulate these houses to the R-30 standard would be economically justifiable. This does not mean to infer that no house with a value below $15,000 will be insulated. Some homes will be insulated under government weatherization programs to be described in Section II. However, there are in Virginia about 816,000 single-family, owner-occupied homes valued at $15,000 or more, and they appear to be prime candidates for retrofitting insulation.

To estimate the insulatable single-family, owner-occupied housing units in Virginia, the insulation data by year built is combined with the unit's value. Both the average insulation installed in a particular period, presented in Table 5, and the number of units reinsulated are considered to determine the percentage of units that currently have an insulation level of R-30.

Table 5

Ceiling Insulation
R-Standards

Since 1975	R-30
1970 - 1975	R-19
1960 - 1969	R-13
Prior to 1960	R-6.6

Source: FHA standard in the 1970 to 1975 period was R-19 for ceilings; the SCI study (Footnote 4 above) determined that housing units built during the last 10-15 years tended to have insulation of 6 inches blown-in fiberglass or R-13; and FEA, Department of Commerce Study indicates that houses built prior to 1960 have R-6.6 fiberglass blown-in or R-10 fiberglass batts. The lower R factor was used in this analysis.

A study by the Owens-Corning Company tabulates the number of reinsulated housing units for the period 1974 through June, 1977. Assuming this period is indicative of reinsulation activity, the percentage of the total number of owner-occupied homes that have been retrofitted may be applied to the estimated number of units with a value greater than $15,000. The results of such a process are presented in Table 6.

Table 6

Virginia
Estimated Number of Insulatable Housing Units
Single-Family Owner-Occupied

Year Built	(1) No. of Houses by Age	(2) Estimated No. of Units Value Greater Than $15,000	(3) Estimated % of Units Having Insulation at R-30	(4) Estimated No. of Units Requiring Insulation
Prior to 1940	190,000	106,000	0%	106,000
1940 1949	111,000	70,000	0%	70,000
1950 1959	229,000	178,000	35%	116,000
1960 1969	282,000	242,000	21%	191,000
1970 1974	172,000	163,000	25%	122,000
1975 1976	60,000	57,000	100%	0
Total	1,044,000	816,000		605,000

Source: Columns (1) and (2) are from Table 4.
Column (3) is constructed from Owens-Corning: "Insulation Study," July, 1977.

Column (4) of this table indicates that of the 816,000 single-family, owner-occupied homes worth more than $15,000 in Virginia, there exist 605,000 requiring additional insulation to bring their attic insulation to the R-30 standard. Thus, the range of insulatable Virginia housing would extend from 250,000 units lacking R-11 insulation to 605,000 units worth more than $15,000 and lacking R-30 insulation.

Insulation Retrofitting Costs

The decade during which a housing unit is constructed again serves as a useful guide for developing estimates of insulation retrofitting costs. (See Table 5.) The FHA standards that have been in effect during various periods has been a dominant factor in influencing the insulation levels achieved in housing units constructed during those periods. A study conducted in August, 1976 by Systems Control, Inc. determines average labor and material cost rates for blown fiberglass, fiberglass batts, and cellulose.[5] Table 7 sets forth a summary of the cost rates determined by that study.

Table 7

Average Insulation Cost Rates
Labor and Material
As of December 31, 1975

Material	R-value	Base Cost
Blown-In Fiberglass	R-2.2/inch	4 inches .16/sq. ft. 6 inches .21/sq. ft. 8 inches .28/sq. ft.
Fiberglass Batt	R-3.1/inch	6 1/2 inches = .32/sq.
Cellulose	R-3.7/inch	First inch = $.075 Each add. inch = $.025

Source: Systems Control, Inc., "Analysis of the Impact of Load Management Strategies upon Electric Utility Operating Costs and Fuel Consumption Patterns," August, 1976, p. 119.

Price lists of Richmond area contractors.

[5]Systems Control, Inc., "Analysis of the Impact of Load Management Strategies upon Electric Utility Operating Cost and Fuel Consumption Patterns," August, 1976.

The data presented in Table 7 are adjusted for inflationary cost escalations to determine the current cost of insulating an average home. The cost rates, after having made a 20 percent labor and material cost inflation adjustment, are applied to an average attic insulatable space of 1,550 square feet. A larger number of single story, ranch type housing units were constructed after 1960 and the attic square footage on these units is slightly greater than the average while two story housing units dominated the housing style prior to 1960 and have smaller attic square footage. The average material and installation cost for increasing the insulation R-value to R-30 is set forth in Table 8.

Table 8

Average Cost of
Increasing R-Value to R-30

Prior to 1960		R-6.6 to R-30	$610
1960	1969	R-13 to R-30	500
1970	1974	R-19 to R-30	340

Source: Data in Table 7 adjusted for inflation and applied to average of 1,550 square feet.

Based on the costs indicated in Table 8 and the distribution of Virginia houses by age, the insulation cost for the average insulatable owner-occupied, single-family Virginia housing unit is estimated to be $520. Washington Gas Light Company has had an insulation program in effect in northern Virginia for approximately two years. Their experience indicates that the average cost has been $497. Much of the housing in northern Virginia has been built since 1960. The slightly lower experience average cost rate may be due to that factor. The company has indicated that its current average cost rate is slightly higher than the two year average. Appalachian Power Company has had an experimental program in effect for approximately two months. APCO has indicated that its average cost per job, based on its limited experience, is $536. Thus, both Washington Gas and Appalachian Power experiences are consistent with the cost estimates presented in Table 8.

In Table 9 the estimated cost rates have been applied to the number of owner-occupied, single-family reinsulatable housing units set forth in Table 5, to estimate total cost of achieving R-30 attic insulation in all such homes. The total requirement amounts to $315 million.[6]

Table 9

Virginia
Estimated Cost of Reinsulation of Houses
Single-Family Owner-Occupied

Year Built	Estimate of No. of Units Requiring Insulation	Cost Rate	Total
Prior to 1940	106,000	$610	$64,660,000
1940 1949	70,000	610	42,700,000
1950 1959	116,000	610	70,760,000
1960 1969	191,000	500	95,500,000
1970 1974	122,000	340	41,480,000
1975 1976	- 0 -		- 0 -
Total	605,000		$315,100,000

This represents the cost of bringing all reinsulatable single-family, owner-occupied units to the R-30 standard and is of course a maximum cost. Many units that currently have the R-19 standard actually are not likely to be increased to R-30 because the economic benefits may not outweigh the costs.

[6]A Washington Gas Light Company study estimated the cost of achieving R-30 ceiling and R-19 wall standards for single-family, multi-family, owner, tenant and unoccupied housing to be $609 million. The number of multi-family, tenant-occupied, unoccupied and units with a value of less than $15,000 account for the difference in the results of the Washington Gas Light study and the results of this study.

Insulation Supply

High heating and cooling bills, together with possible tax credit proposals such as those in the House-passed Energy Bill (H.R. 8444) give homeowners strong incentives for both retrofitting existing homes and providing a high degree of insulation in new homes. In the first quarter of 1977, 1.2 million homes underwent retrofitting nationally, compared with 350,000 in the first quarter of 1976. The Federal Energy Administration reports that according to industry figures for 1977, homeowners are reinsulating houses at the rate of 4.8 million a year. Whereas, the average for the previous three years was 2.7 million. In addition, housing starts in the first quarter of 1977 were the highest since 1972 and 1973.[7] With demand at a record high level, the present supply of insulation is inadequate to accomplish retrofitting of reinsulatable housing in a relatively short period of time.

The insulation shortage is being felt particularly in the fiberglass industry, which dominates today's insulation market. The three major fiberglass manufacturers (Owens-Corning, Johns-Manville, and Certainteed) are all expanding their capacities. Owens-Corning, which accounts for approximately 50 percent of the fiberglass production, plans to expand its residential and mobile home insulation production capacity by 35 percent.[8] The result will be an increase in 1979 of about 500 million pounds annually above the company's 1976 capacity level. Johns-Manville, the second largest fiberglass manufacturing firm, plans to invest $200 million to double its current fiberglass output. Also, minor modifications in existing plants have been instituted to increase production. There will be no substantial increase in current capacity, however, until the fourth quarter of 1978.[9] Indeed, producers expect to be allocating limited supplies among dealers for at least three more years.[10]

An alternative to fiberglass is cellulose insulation made primarily from shredded paper treated with a flame retardant, boric acid. Boric acid is currently in short supply and its production cannot be expanded fast enough to keep pace with demand. Cellulose is virtually unavailable to new customers from domestic suppliers and is currently being allocated to established customers.[11] Other substitutes also are being introduced. Ureaformaldehyde foam, which now is quite expensive, will be used more extensively in the future since its price is expected to become lower.

[7]"Owens-Corning Plans to Expand Insulation Plants," The Washington Post, July 9, 1977.

[8]Ibid.

[9]Telephone conversation, Robert Bruntrager, Johns-Manville, October 27, 1977.

[10]"Shortages of Insulation," The Washington Post, November 5, 1977.

[11]"Insulation: High Demand Creates National Shortage," Frances Cerra, Charlottesville Daily Progress, August 28, 1977.

The United States Department of Commerce, in a report on the insulation shortage, estimates that there will be ample supply of insulation to meet the increased demand by 1981 for a standard of R-19 in ceilings. However, higher R levels are in demand now for all forms of new construction and retrofitting. This fact may cause the time interval to be longer than the Commerce Department estimate. A Johns-Manville representative estimates it will be 1984 to 1985 before the supply will be able to complete the proposed nationwide task of insulating.[12] This estimate may be high because it does not account for the introduction of new insulating materials. It is reasonable to believe that the shortage of insulating materials will last for approximately six years, and financing will therefore be experienced over such a time period.

Annual Financing Requirement

The experience of Washington Gas Light Company indicates that financing was required for only 19 percent of their insulation jobs. The average income per household in the northern Virginia area is nearly double that for other sections of Virginia, so financing might be relied on more heavily elsewhere. Average income per household in various SMSA's in Virginia is set forth in Table 10.

Table 10

Virginia
Median Income per Household
1975

Johnson City-Bristol*	$ 7,230
Lynchburg	9,243
Newport News-Hampton	10,278
Norfolk-Portsmouth-Virginia Beach	8,539
Richmond	11,689
Roanoke	10,579
Petersburg-Colonial Heights-Hopewell	8,510
Washington, D. C.*	17,837

*Virginia Portion Only

Source: Tayloe Murphy Institute, "Virginia Family and Household Income Distributions by County and City, 1975 Estimates and 1980 Projections." Charlottesville, Virginia: June, 1977.

[12]Telephone conversation, Robert Bruntrager, Johns-Manville, October 28, 1977.

The average cost per job for increasing the single family unit to the R-30 standard is estimated to be $520. The income data for the balance of the State indicate that probably less than half of the insulation jobs will require financing. Those homeowners undertaking the smaller insulating projects, those in the $300 and $400 range, would not want to incur the cost and trouble of entering into financing contracts. So perhaps only about 20 percent, as experienced in northern Virginia, to 50 percent of the projects elsewhere in the state would have to be financed. Since the task of raising the insulation condition of Virginia houses will be spread over a period of about six years, the annual financing burden will obviously be less than the total amount.

Table 11 indicates the millions of dollars needed to meet the annual financing requirement that would result from reinsulating completely to the R-30 standard over six, seven, or eight years when the proportion of expenditures financed ranges from 20 to 50 percent. Table 11 suggests an annual loan volume from $7.9 to $26.3 million in insulation loans, centering on $18 million. This estimate is based on an underlying aim of raising homes to the R-30 standard. This may not be economically justified for all homes in Virginia. Therefore, this estimate may be regarded as high rather than low.

Table 11

Annual Amount of Financing Required
Single-Family Owner-Occupied Housing
(Millions)

Years to Achieve	Percent Financed 20%	35%	50%
6	$10.5	$18.4	$26.3
7	9.0	15.8	22.5
8	7.9	13.7	19.7

Source: See Table 9.

CONCLUSION

The total number of housing units in Virginia is 1,717,000 when considering both multi-family units and single-family units, both owner and tenant occupied. However, multi-family units and tenant single-family units are less likely to be insulated. There are about 1,044,000 single-family, owner-occupied homes in Virginia, of which about 250,000 lack R-11 ceiling insulation and 605,000 lack R-30 ceiling insulation. If all of this latter group of structures are raised to the R-30 level, the task would probably take at least six years, given supply shortages, and would require financing that would range from $8 to $26 million annually. This study now considers conventional financial sources to evaluate their adequacy for supplying this amount of loanable funds.

II. EXISTING SOURCES FOR FINANCING INSULATION

This section describes the various institutions that lend funds to consumers for the purpose of financing insulation. Conventional financial sources are discussed from the standpoints of the overall availability of funds, the terms, rates, and maximum amounts of loans. Financing for home improvements is available through commercial banks, savings and loan associations, consumer credit companies, sales finance companies and credit unions. In addition, there exist specific insulation financing programs through the Farmers Home Administration, HUD/FHA, and the Virginia Housing Development Authority. This section considers first the conventional sources of financing and second, the specific government programs for financing insulation. The proposed National Energy Act is described following the review of the existing sources of funds.

Home Insulation Loans

Home insulating loans are generally classified as home improvement loans. Included in this category are loans for remodeling, redecorating, insulating and other improvements. Home improvement borrowers normally have an equity interest in the homes and have established credit. These loans are frequently collateralized and are considered to be less risky. Therefore, this category of loans generally has a lower interest rate than that charged for other consumer loans. Some insulation loans may also be classified in the consumer installment loan category. These loans normally have a higher interest charge than home improvement loans but also have relatively low risk. The delinquency rate for consumer installment loans has averaged 2 to 3 percent during the past ten years.[13]

Outstanding consumer installment credit in the United States is set forth in Table 12. As indicated in this table, the principal sources of consumer credit are commercial banks, finance companies, credit unions and retailers. Consumer credit outstanding from these sources increased by $34 billion from $165 billion to $199 billion over the 17 month period. Since repayments continuously occur, new credit extended would exceed the $34 billion increase in outstanding loans.

[13]U. S. Bureau of Census, Statistical Abstract of the United States: 1976 (97th edition), Washington, D. C., 1976.

Table 12

Consumer Installment Credit Outstanding in United States
(Millions)

	Dec. 31 1975	Dec. 31 1976	July 31 1977
Commercial Banks	$ 78,667	$ 89,511	$ 96,797
Credit Unions	25,666	30,546	34,122
Retailers	18,002	19,052	18,137
Others	6,626	7,741	8,520
Total	$164,955	$185,489	$198,973

Source: "Consumer Installment Credit," Table 1.55, Federal Reserve Bulletin, Volume 63, Number 9, September, 1977, p. A42.

Table 13 presents consumer installment credit extended for the years 1975, 1976, and for the month of July, 1977. During 1975, gross new consumer credit extended averaged $13.7 billion per month. This compares to $16.1 billion per month for 1976 and $18.1 billion average for the first seven months of 1977. On average, new consumer credit extensions increased at the rate of 20 percent per year during this three year period.

Table 13

Consumer Installment Credit Extended in United States
Type of Holder
(Millions)

	Year 1975	Year 1976	July 1977
Commercial Banks	$ 77,312	$ 94,220	$ 8,928
Finance Companies	31,173	36,028	3,335
Credit Unions	24,096	28,587	2,663
Retailers	27,049	29,188	2,951
Other[1]	4,539	5,305	540
Total	$164,169	$193,328	$18,416

[1]Mutual Savings Banks, Savings and Loan Associations and Auto Dealers.

Source: "Consumer Installment Credit," Table 1.56, Federal Reserve Bulletin, Volume 63, Number 9, September, 1977, p. A43.

Automobile loans account for the majority of these dollar flows. Table 14 indicates the dollar amount by chief loan type of consumer credit extended in the United States in recent periods. The latter three categories; home improvement, bank credit cards, and others, are sources of funds for insulation retrofitting. Approximately 65 percent of consumer credit extended falls into these categories. Bank credit cards, which contribute nearly 50 percent to consumer installment credit,

Table 14

Consumer Installment Credit Extended in the United States
Type of Credit
(Millions)

		1977	
	1976	Jan.	Jul.
Automobile	$ 62,988	$ 5,440	$ 5,877
Mobile Homes	4,841	352	440
Home Improvement	6,736	558	661
Bank Credit Cards	25,862	2,166	2,525
All Others	92,900	8,566	8,913
Total	$193,328	$17,072	$18,416

Source: "Consumer Installment Credit-Extension," Federal Reserve Bulletin, September, 1977.

are significant credit sources for both the purchase of insulation and installation materials, particularly for the "do-it-yourself" market.

An approximation of total amount outstanding for home improvement loans in Virginia may be found by combining the amount in commercial banks and savings and loan associations. There were $187 million in home improvement loans outstanding at the end of 1976. This represents 1.7 percent of total home improvement loans outstanding in the United States. Applying this percent to United States credit extension data indicates that approximately $10 million in new home improvement loans are granted on an average per month in Virginia.

In the previous section of this study, it is estimated that the maximum financing requirement is $26 million annually, or $2.2 million monthly. This amount would bring Virginia single-family, owner-occupied homes up to the R-30 ceiling insulation standard. Therefore, the average monthly loan extensions in the home improvement category are 4.5 times the amount of funds required to accommodate the demand for loans to insulate homes. Consumer credit is also available through mortgage companies, finance companies, credit unions, and bank revolving credit plans. The insulation contractors may also finance installation. The inclusion of these loan categories in the total would substantially increase the $10 million amount of monthly extensions of funds available for home improvement type loans.

Major Conventional Sources for Financing Insulation

Commercial Banks. In Virginia's commercial banks home improvement loans outstanding at the end of 1976 were $160 million. This represents about 2.8 percent of total home improvement loans held by commercial banks in the United States. This percentage may be applied to U. S. monthly average extensions. Thereby, $7 million per month is determined as the average amount of extensions in the home improvement category by commercial banks in Virginia. The amount of consumer installment loans outstanding in Virginia at the end of 1976 was $8 billion. Although this is principally automobile paper, some home improvement type loans are included in this category. This increases the estimated $7 million available for home improvement type loans each month at Virginia's commercial banks. It must be noted that banks generally cannot cover the loan initiation and administration costs on loans of less than $500 and hesitate lending in amounts of less than $1,000. Thus, in insulation financing, banks would be involved principally in the more expensive jobs. It is likely that these would be the ones requiring financing.

Two of the larger bank holding companies in Virginia, First and Merchants National Bank and United Virginia Bank, have provided data on their firms' current involvement in home improvement lending. These companies each have approximately 5,000 home improvement loans outstanding that are worth more than $10 million. The average annual percentage rate on unsecured loans in September, 1977 at these banks fluctuated between 11 1/2 percent and 12 percent. Qualification for a loan requires a credit position that gives evidence of the ability to repay the loan. The fact that the borrower is a homeowner adds stability. Normally only about 25 percent of home improvement loans issued require security.

Delinquency and loss ratios are small for home improvement loans issued by commercial banks. For Virginia (second quarter, 1977) delinquent loans as a percentage of total number outstanding fluctuated from 1.70 percent to 1.53 percent.[14] For one of the larger bank holding companies the rate is lower, approximately 0.75 percent. The loss ratio for repair and modernization loans in 1976 was net 0.13 percent of outstanding loans for the entire state. Again a large bank holding company would experience a lower, .02 percent loss ratio.[15] Delinquency and loss figures for second mortgage loans by consumer banks are also small. From a survey of 140 banks throughout the country it is found that in 1977 the average delinquency rate on these loans was 1.80 percent and average loss (as a percent of outstanding second mortgage loans) was only 0.22 percent.[16]

Savings and Loan Associations. Savings and loan associations historically have not carried a large amount of home improvement loans in their portfolios. The nature and regulatory constraints of their business require the associations to prefer larger and longer term loans than those typically granted for home insulation. At the end of 1976 the amount outstanding in Virginia in the home improvement loan category at savings and loan associations was $27 million. Assuming a three-year repayment period, the annual flow of funds for the installment loans would be approximately $9 million. Terms of the loans issued by savings and loan associations generally are at 6 percent add-on annual interest, or approximately a 12 percent annual percentage rate. Collateralization is normally required for any loan in excess of $2,000.

Credit Unions. Credit unions are cooperative associations whose members are linked by a common bond, such as employment. Funds are derived almost entirely from membership accounts. Loans are issued usually in the maximum amount of $5,000 at 12 percent annual percentage rate, over a three-year term. Extension of credit for home improvement purposes has increased statewide and particularly for insulation jobs.[17]

[14]"Delinquency Rates on Bank Installment Loans," American Bankers Association, Second Quarter, 1977.

[15]"Installment Credit Survey," American Bankers Association, 1976.

[16]The Consumer Bankers Association, Second Mortgage Financing Survey Results, 1977.

[17]Telephone interview, Virginia Credit Union League, November 4, 1977.

Mortgage Companies. Mortgage companies issue home improvement loans with the security of a second mortgage on the existing structure. With this collateral the firm processes the loan for a higher risk customer than a commercial bank. However, the resulting interest rate is normally as high as 8 percent add-on interest (approximately 16 percent annual percentage rate). The loans also tend to be larger ones, to justify the added processing costs that tend to be associated with them.

Finance Companies. Automobile and personal loans constitute the majority of finance company holdings on the national level. However, credit that may be used for the installation of insulation is available through these companies. Approximately 3 to 4 percent of finance company loans are for purposes of home improvement.[18]

By the Small Loan Act, Virginia statute places a loan ceiling of $1,500 and maximum charges of 2 1/2 percent per month for a loan less than $500, and 1 1/2 percent for loans exceeding $500.[19] Normally the companies charge the maximum allowable rate. For the smaller jobs of insulation that commercial banks do not handle, one may obtain a loan through a finance company but at an annual interest rate of 18 to 25 percent.

Bank Credit Cards. Bank credit cards are a source of credit for the purpose of installing home insulation. The general policy involves a service charge imposed on the unpaid balance following a specified payment period. This charge is 1 1/2 percent per month (approximately 18 percent annual percentage rate), and a minimum amount of the balance must be paid each month. Qualification for a bank credit card normally requires employment and other standard credit references.

Seller Financing. It is possible that the contractor or supplier of insulation offers to finance the sale and installation of insulation. The seller of consumer goods (goods ". . . used and bought for use primarily for personal, family or household purposes . . ."[20]) who

[18]National Consumer Finance Association, Finance Facts Yearbook: 1976.

[19]Case No. 19401, September 10, 1974, Section 1. The larger finance companies such as Ford Motor Credit, General Electric Credit Corporation, and General Motors Acceptance Corporation, would not be categorized as small loan companies. However, these would also not be the firms where one would find financing for home insulation.

[20]Code of Virginia, §8.9-10.9(11).

extends credit under a closed-end installment credit plan can impose a service charge of up to 2 percent per month (more than 24 percent annual percentage rate) on the balance at the end of the billing period next preceding each successive payment period.[21] It is noted that queries of Richmond-area contractors of insulation indicate that this means of financing is not extensively used.

Government Supported Sources for Financing Insulation

Three government supported financial sources are described in this section: Weatherization Programs, HUD/FHA Insured Lending Program, and the Virginia Housing Authority's Energy Conservation and Rehabilitation Loans Program. Each one is discussed as a source of potential financing. The details of each program are presented to reveal both the terms and the availability of loans.

Weatherization Programs. At least three federal programs now exist which are designed to assist low-income families in weatherizing their homes.[22] The three programs provide grants for the purpose of buying insulation supplies and are sponsored by: (1) Federal Energy Administration, (2) Community Services Administration, and (3) the Farmers Home Administration. The House-passed Energy Bill (H.R. 8444) would act to make all of the programs consistent by requiring the same eligibility criteria, energy conservation standards, and available level of financial assistance. The House proposal also seeks to strengthen the programs by increasing the level of funds permitted to be expended on any one home and by expanding the permissible use of these funds.

Section 201, Title II, of the House Energy Bill (H.R. 8444) sets requirements for the Weatherization Program. To be eligible a family must not have an income above 125 percent of the poverty line, and preference is given to the elderly and the handicapped. Uniform standards for conservation measures must be used in weatherizing the dwelling unit to cover the cost of weatherization material, of which 5 percent is provided for state administrative costs, 5 percent for local administrative costs and $100 is allowed for incidental repairs in order to ensure that the installation will be effective. Authorized appropriations are $55 million for fiscal year 1977, $130 million for fiscal year 1978, and $200 million for each of fiscal years 1979 and 1980.

[21]Code of Virginia, §6.1-330.21, 1976 Cum. Supp.

[22]See "Weatherization Program: A Policy Perspective," Syracuse, N. Y.: Syracuse Research Corporation, April, 1977, for a description of these programs.

The Virginia Weatherization Program is sponsored by the Virginia Association of Community Action Agencies, Inc. (VACAA). VACAA is not a state office but works in close contact with state agencies, particularly the Office of Intergovernment Affairs' Human Resources Division and the Office of Housing. The most recent grant to the Virginia office was $1.7 million which is expected to last until March, 1978. Three previous grants amounted to just under $1 million. The House Energy Bill would allocate approximately $3 million to Virginia as part of the authorized appropriations for 1978. Of course this grant depends on the outcome of the Energy Program pending in Congress.

The cost allowed per home is now $200 but is expected to rise soon to $350. From the initiation of the program in February, 1976 until the end of 1976, the Virginia effort resulted in the weatherization of 637 homes, and by the end of September, 1977, 2,981 homes were weatherized. The VACAA program estimates the need for insulation based on the total number of substandard homes in Virginia, approximately 224,000.[23] (This figure is quite close to the number of home estimated in Section I to lack R-11 insulation.) The completion of 2,200 homes amounts to little more than 1 percent of this need. The VACAA completion rate has been averaging 300 per month but may fall below that level with supply shortages. Although the Weatherization Program does not involve direct lending, it still can preempt any need for financing because it is a source of available insulation for low-income families.

HUD/FHA Insured Lending Program. As provided under Title I of the National Housing Act, as amended, government insured home improvement loans may be obtained from HUD/FHA approved lending institutions. These institutions may be qualifying banks, savings and loan associations, etc. A dealer or contractor may also finance the sale under the FHA Property Improvement Program but to do so must have approval from an HUD/FHA approved lending institution. In order for the home improvement loan to qualify for FHA insurance it must increase the basic livability or utility of the property. Under these terms installation of insulation would qualify (excluding the materials; foam or cellulosic fibers impregnate with aluminum sulfate). In addition, the house on which the improvements are to be made may not be new. Luxury items such as swimming pools or barbecue pits are ineligible for the loans.

[23]Substandard housing is defined as lacking one or more plumbing facilities, or plumbing is complete, but the unit may also be regarded as substandard according to a number of other criteria - e.g., the unit may be overcrowded (more than one person per room).

The major provisions of the loan are: (a) the loan maximum is $15,000 per individual home or $5,000 per year for multi-family units up to $25,000 (§201.3(a), (b), Code of Federal Regulations); (b) the repayment period is a maximum of 15 years plus 32 days from the date of the note (§201.2-2(ii), Code of Federal Regulations); (c) the maximum interest to be charged is 12 percent annual percentage rate (§201.4(a), Code of Federal Regulations); and (d) the note is payable in equal installments falling due either monthly or every 2 weeks (§201.2(c), Code of Federal Regulations). For loans of more than $7,500 some security, such as a second mortgage, is required. In order to qualify for a loan greater than $600 the applicant must have resided for longer than 90 days in the home on which the improvements are to be made.

The credit procedures are handled by the lending institutions themselves. Basically, the requirements are the same as for any loan. The lender must be assured of the customer's ability to repay the loan before any loan is issued. In the event that an insured loan falls delinquent, the lender is to inform the local HUD/FHA office. Federal regulations include an acceleration clause that calls for full payment in the event of default. If this fails to bring forth a repayment of the loan the lender files a claim for reimbursement of cost with the HUD/FHA office.

Energy Conservation and Rehabilitation Loans. The Virginia Housing Development Authority has devised a program to make low interest loans to finance energy conservation and rehabilitation measures for qualified single family residential housing units.[24] The units must be owned and occupied by persons and families of low or moderate incomes. Loans to borrowers are channeled through mortgage lenders who have entered into an agreement with the Authority as well as some Authority personnel. All loans made under this program are to be insured under Title I of the National Housing Act, as amended, in accordance with the HUD/FHA regulations just reviewed, and any additional rules and regulations adopted by the Authority.

To be eligible for such a loan the homeowner-occupant must have an adjusted income of no more than $16,000 in the case of a family residing in a high income jurisdiction or $14,000 in a low income jurisdiction. (A high income jurisdiction is a city or county in which the estimated median family income exceeds 70 percent of the estimated median family income for Virginia.) Energy conservation and rehabilitation loans may be made in any amount from a minimum of $1,000 to the maximum amount authorized by FHA regulations, which is currently $15,000 per unit. The

[24]See "Program Description: Energy Conservation and Rehabilitation Loan Program," Virginia Housing and Development Authority, September 14, 1977.

maximum time of the loan shall also be that authorized by FHA regulations under Title I of the National Housing Act, which is currently 12 years, and the monthly payment of principal and interest cannot be less than $10.00 per month. The interest rate maximum established by FHA regulation is 12 percent annual percentage rate, but the Housing Authority loans may have an interest rate as low as 8 percent simple interest.

All Housing Authority loans must be secured by mortgages on the real property with respect to which the loans are made. Proceeds of the loans may be used for repairs or improvements which increase thermal efficiency, improvements on the performance of heating, cooling, and hot water systems, structural alterations which substantially protect or improve the basic livability or utility of the structure, conversion of nonresidential structures into a qualifying housing structure, and any other expenditures which are necessary to bring a housing structure into compliance with state, county, or municipal health, housing, building or other standards applicable to housing. Loan proceeds may only be used to finance new improvements to existing structures and may not be used to finance already existing mortgage or debt.

All loans are to be originated for the Authority by mortgage lenders, who apply for approval to the Authority. Eligible mortgage lenders are required to hold a valid Title I Property Improvement Loan Contract of Insurance from HUD/FHA prior to originating any loans. The qualified mortgage lender determines credit eligibility of the applicant, closes any loan, and disburses the funds. Once the note has been executed, with the use of the loan clearly specified, the lender reports to and the Authority which in turn applies to HUD/FHA for insurance. If the loan does not meet the requirements of FHA and is, thus, not insurable, the Authority will return the loan to the mortgage lender. However, if the loan is approved and insured, the Authority acts as servicing agent. If payments are delinquent and reasonable effort is made to correct the delinquency, the Authority's staff demands immediate full payment. In the event of default the Authority may foreclose on the mortgage securing the loan, or require the lender to file a claim for reimbursements of cost with HUD/FHA.

The initial bond issue requested for the program was $5 million. The decision on this bond amount is still pending and there is consideration of splitting it into two issues, $3 million and $2 million bonds. Yet, it is reasonable to expect that eventually $5 million will go to Energy Conservation and Rehabilitation Loans. This entire amount will not go towards energy conservation because some funds can be used to rehabilitate or improve the basic livability of structures.

Proposed National Energy Program

The discussion here focuses on the House version Federal energy legislation, which gives much attention to insulation financing. Of course, a final Bill is still being debated in Conference Committee. The House Bill mandates each state regulatory authority to submit a residential energy conservation plan to the Federal Energy Administration for approval. The plan must include a clause whereby each utility assists each residential customer in securing a loan for the purpose of installing energy conservation measures. This assistance may be in the form of information or arrangements for loans by existing financial sources, as well as through an internal lending program.

If the state regulatory authority's plan includes a procedure whereby utilities are to offer financing, certain requirements are outlined by the House Bill. The state plan must include adequate procedures to assure the rates charged by the utilities are competitive with prevailing rates of interest charged by conventional sources for similar loans. The principal and interest for such loans may be repaid over a period of three years as part of the customer's monthly bill. A lump sum payment of outstanding principal and interest may be made due in the event of default on any payment, but termination of the utility service for default on the loan is prohibited. All amounts expended for any utility conservation loan program are to be accounted separately from the accounts of the utility's service. Thus, lending activities are to be conducted on a break-even basis with the cost of the program to be recovered through the interest payments of the customers who participate in the lending program.

Summary

Conventional finance sources could easily provide the $7.9 to $26.3 million estimated at the end of Section I as the annual financing needed to raise all single-family, owner occupied Virginia homes to the R-30 standard of insulation. Moreover, there are several federal programs designed especially for lower income families to finance home improvements like insulation. Thus, no insulation financing inadequacy is evident.

III. FINANCING INSULATION THROUGH ENERGY DISTRIBUTION COMPANIES

The task of insulating single-family, owner-occupied homes in Virginia to an R-30 standard has been shown to require perhaps $16 million per year in financing, a sum that is small in relation to the total financing provided as consumer loans from conventional sources in the United States, and even in this State. We turn now to consider the additional possibility of financing by energy distribution companies. First the legal issues raised by such financing are reviewed. Then experiences under current programs are described and assessed.

Legal Implications of Energy Distribution Company Financing

Three broad legal issues, and several minor ones, are raised by the question whether energy distribution companies should finance insulation to be installed in Virginia homes. The three main issues concern the function of public utilities as defined by corporate charters, antitrust laws, and laws affecting lending rates and procedures. Minor legal issues arise if financing actually is undertaken. These issues follow from truth-in-lending, fair-credit-reporting, and equal-opportunity laws. Each of the three main issues are discussed first, and the fourth subsection reviews the recourse an energy distribution company may have in the event a loan is not repaid.

The Public Service Function. Public service companies are required by statute to ". . . furnish reasonably adequate service facilities" (Code of Virginia, §56-234, see definition in §56-1). The statute is general enough to be interpreted to include conservation efforts (Michigan Consolidated Gas Company, M.P.S.C. 1973, 1 PUR 4th 229, 234; Oklahoma v. Oklahoma Gas and Electric Co., 9 PUR 4th 369, 536 P. 2nd 887, 1975). In states such as New Jersey that have adopted public utility statutes relating explicitly to environmental factors and conservation (N.J.S.A. 48, 2-23), a program intended to conserve energy seems easily capable of being included. There remains the question, of course, whether financing specifically should be a public utility function if it is already provided through a well-functioning market process. We shall treat this point in the next subsection on antitrust implications.

If energy distribution companies are to provide insulation financing they typically have to amend their corporate charters. Energy distribution companies are ordinarily classified as public service companies by Virginia statute (§56-1), and are subject according to §12.1-12 (enacted pursuant to Article IX, §2 of the Constitution of Virginia) to regulation by the State Corporation Commission:

> " . . the Commission shall have the power and be charged with the duty of regulating the rates, charges, services, and facilities of all public service companies as defined in §56-1 of this Code."

If any financing effort is seen as a public service company function it would also seem to fall under State Corporation Commission jurisdiction for regulation (Michigan Public Service Commission decisions in Case No. U-4404, Oct. 5, 1973; Case No. U-4484, Oct. 21, 1974; and Case No. U-5174, Dec. 6, 1976; and Public Utilities Commission of Ohio Case No. 77-501-EL-UNC, April 13, 1977). This is particularly true if costs of such a program are included in the company's operating expenses. On the other hand, it may be possible for energy distribution companies to enter the lending business as a separate functional entity such that the activity would have no effect on its energy service, costs or revenue. In this instance, the lending function would be subject to lending regulatory authority, but not utility regulatory authority.

Antitrust. Antitrust laws have increasingly been applied to regulated industries in recent years (McLean Trucking v. United States, 321 U.S. 67 (1944); FCC v. RCA Communications, Inc., 346 U.S. 86 (1953); California v. FPC, 369 U.S. 482 (1962); Federal Maritime Commission v. Svenska Amerika Linien, 390 U.S. 238 (1968)). A clear statement of the applicability of federal antitrust laws to electric utilities came in the Otter Tail case (Otter Tail Power Co. v. United States, 410 U.S. 366 (1973)), where the Supreme Court denied that Federal Power Commission authority over interconnections could immunize Otter Tail from prosecution under antitrust law for its refusal to interconnect.

Entry by a public utility into a competitive industry usually requires the utility to comply in that industry with all antitrust laws (Cantor v. Detroit Edison Co., U.S. 49 L. Ed. 2d 1, 141 (1976)). Even though the Michigan Public Service Commission approved rates which included giving away free light bulbs in the Cantor case, that did not warrant antitrust immunity because the public (Commission) and private (utility) responsibility was mixed, and the private utility therefore had responsibility to ensure compliance with antitrust laws. The Federal Power Commission was required to consider antitrust "price squeeze" contentions of wholesale consumers in one rate case (FPC v. Conway Corporation, U.S. 48 L. Ed. 2nd 626 (1976)), and also to consider antitrust issues in evaluating whether a securities issue was in the public interest (Gulf States Utilities v. FPC, 411 U.S. 747 (1973)). Any participation by a public utility in a competitive lending market appears also to be governed by federal antitrust laws.

The boundary between regulated and unregulated industries for purposes of antitrust is still being defined. Of special importance in this general question is the case of Parker v. Brown (317 U.S. 341, 1943), which held the Sherman Act inapplicable to any activity in which a state, purporting to act as sovereign, virtually instructs a regulated firm to perform the activity. The so-called Parker v. Brown doctrine was referred to in Goldfarb (Goldfarb v. Virginia State Bar, 421 U.S. 733 (1975)), where the [Virginia] Supreme Court's ethical codes could have accommodated fee schedules. They were found not to compel the price floors that resulted and therefore were not taken to be express instructions. The state may not merely allow action by the firm to undertake an activity and expect it to receive antitrust immunity (Cantor, supra; Continental Ore Co. v. Union Carbide & Carbon Corp., 370 U.S. 690 (1962). Indeed, if its provisions violate federal law the state provisions may even be overturned (Schwegmann Bros. v. Calvert Distillers Corp., 341 U.S. 384 (1951)). Generally, federal antitrust laws are applicable to electric utilities operating in competitive markets as the cases cited above show. Energy distributing companies may be exposed to complaint under antitrust laws if subsidization by the energy business permits financing of insulation at rates below those established in the financial markets.

Restraints of trade that follow from valid governmental action may be excluded from the scope of federal antitrust laws. A so-called Noerr-Pennington doctrine has emerged to guide behavior of those who might seek to influence government action perhaps in order, in that way, to secure monopoly advantages. The mere effort to win passage of legislation favorable to one interest is not unlawful (Eastern Railroad Presidents' Conference v. Noerr Motor Freight, Inc., 365 U.S. 127 (1961)) as long as the effort is serious and not a sham instituted to obstruct others. The same arguments are also held to apply to efforts to persuade public officials (United Mine Workers of America v. Pennington, 381 U.S. 657 (1956)).

Limitations on Lending Rates. The maximum enforceable rate of interest which may now be set by contract in Virginia under usury laws is 8 percent per annum simple interest (Code of Virginia, §6.1-330.11, 1976 Cum. Supp.). Without any contract the maximum rate is only 6 percent (Code of Virginia, §6.1-330.9, 1976 Cum. Supp.). A seller of consumer goods (goods ". . . used or bought for use primarily for personal, family or household purposes . . .", Code of Virginia, §8.9-109(11)) who extends credit under a closed-end installment credit plan

or arrangement may impose a service charge of up to 2 percent per month (about 24 percent annual rate) on the balance at the end of the billing period next preceding each successive payment (Code of Virginia, §6.1-330.21, 1976 Cum. Supp.). If a contractor extends such an installment credit plan the resulting commercial paper may be purchased by energy distribution companies, thereby achieving a market rate of interest on loan financing. Yet, if an energy distribution company provides financing directly it appears to be bound by usury law, which allows a maximum rate of 8 percent per annum simple interest.

The usury interest rate limit of 8 percent per annum is below current market lending rates for the types of loans that would support insulation investments by consumers. As a result direct financing by energy distribution companies that comply with the 8 percent limit tends to result in a subsidy to those who borrow. This fact adds to the attractiveness of the program for consumers but it also makes it prima facie in violation of antitrust laws against price discrimination (Robinson Patman Act, 49 Stat. 1526 (1936), 15 U.S.C.A. §13).

If energy distribution companies lend for home insulation they must comply with the Truth in Lending Act (15 U.S.C.A. §§1601 to 1666; (1974 and Supp. 1977)) and with Regulation Z, the latter a more operational guideline promulgated under the Act by the Federal Reserve Board. The Act requires detailed disclosure of the actual cost of credit and of other charges of a lender. Some exceptions are allowed regulated public utilities but the exemptions do not apply to an insulation financing program according to Public Information letters issued by the Federal Reserve Board (FRB Letter No. 629, reprinted in part in Munson v. Orrin E. Thompson Homes, Inc., 395 F. Supp. 152, 156 (D. Minn. 1974). See also 1 CCH Consumer Credit Guide ¶1007 at 3023 and 3024). If an energy distribution company finances indirectly by purchasing commercial paper of insulation installers they, themselves, are probably not subject to truth-in-lending requirements.

Energy distribution companies that already use consumer credit information are subject to the Fair Credit Reporting Act (15 U.S.C.A. §§1681 to 1681t (1974 and Supp. 1977)), but their obligations under it increase if they provide financing for insulation. Whenever a company, in making an adverse credit decision, relies on information from a consumer reporting agency (defined at 15 U.S.C.A. §1681a(f)), the source of the information must be reported to the consumer. When information from a different source leads to an adverse decision the nature of the information on which the decision was based must be made available to the consumer if he requests it within 60 days after learning of the adverse decision. Also, consumers must be notified of their rights under this Act.

The Equal Credit Opportunity Act (15 U.S.C.A. §§1691a to 1691e (1977 Cum. Supp.)) prohibits discrimination against applicants for credit on the basis of race, color, religion, national origin, sex or marital status, age, participation in any public assistance program, or use of rights under this Act. Its provisions also would apply to an energy distribution company making insulation loans.

Recourse in Event of Default on Loan. One major question is whether an energy distribution company that has loaned money to an energy customer for insulation may withhold energy from the customer when he or she does not meet loan payments. The law clearly establishes a right to disconnect customers for nonpayment of a service (e.g., Southwestern Telegraph and Telephone Co. v. Danaher, 238 U.S. 482 (1915)). The termination of service for failure to pay for a different obligation is not as clear, however (See: Rules and Regulations Concerning the Disconnection of Utility Service, 2 PUR 4th 209 (Vt.P.S.Bd. 1973); and Guaranty and Deposit Rules and Disconnect Procedures, 11 PUR (N.S.) 439 (Wis.P.S.C. 1935). It has been found "that a public utility corporation cannot refuse to render the service which it is authorized by its charter (or by law) to furnish, because of some collateral matter not related to that service" (Owens v. Beresford, 201 N.W. 2d 890 (S.D. 1972)), although in this case the collateral service was garbage collection to all consumers and the use of the disconnection weapon against electric and telephone service users was seen as discriminatory. Voluntarily agreed upon insulation loans to customers do not lead to such discrimination.

Recourse is an important issue. It may seem a ruthless lending scheme that allows the lender to terminate electric or gas service to a delinquent customer. At the same time, such strong recourse enhances the attractiveness of loans for the lender, allowing lower interest charges and loans to persons whose circumstances otherwise would not warrant them. So to the extent that energy distribution companies have available and may rely on disconnection in the event of default, they may be more willing to expand the loan program to those most in need of it.

Energy Distribution Company Insulation Programs

At the present time in Virginia one energy distribution company, Washington Gas Light Company, has had approximately two years experience selling and financing insulation. Another, Appalachian Power Company has had approximately three months experience with an experimental insulation financing program, and a third, Columbia Gas of Virginia, Inc., has planned a program but has delayed its implementation pending

the outcome of the President's National Energy Program. In addition, an Edison Electric Institute survey taken in February, 1977, indicates that 13 companies in states other than Virginia have some form of insulation financing program. This review examines the costs, rates, loan ceilings, and loan terms of selected utility insulation financing programs. In an Appendix the responses of Virginia's energy distribution companies to an inquiry concerning an insulation program are presented.

The purpose of this examination is to determine the approximate interest rates that must be charged if the programs are to be conducted on a break-even basis. Following this review is a brief presentation of insulation financing plans by other companies.

Washington Gas Light Company. Washington Gas Light Company has offered direct sale of thermal insulation to residential customers since 1975. At the current time 12 people are directly involved in the insulation sales program. A Washington Gas Light representative inspects the home and offers an estimate of the cost of an insulation installation. The company provides the marketing function for insulation applicators and, in turn, relies on them as subcontractors to install the insulation. Such installations are inspected by the company to assure customer satisfaction. The number of applicators working with the company has been limited by a severe shortage of insulation materials. The company has indicated that it intends to increase the number of applicators when the severity of the product shortage is diminished. On September 2, 1977 Washington Gas Light announced the purchase of Davenport Insulation, Inc. to acquire the capability of manufacturing insulation and improve the availability of reliable product.

Washington Gas Light Company provides financing to support its insulation sales program. This plan allows 36-month terms, and the rate of interest charged is 8 percent add-on or about 14.55 annual percentage rate, when financed over the full 36-month period. A company official stated that this rate is slightly above their break-even cost rate.[25] Approximately 20 percent of the insulation customers have utilized the financing plan. Of these, the average length of loan is about 21.5 months.

Company officials have indicated that they have not aggressively promoted the program due to the insulation shortage, but have relied on a personal sales effort, word of mouth, and bill stuffers. During the two years that the insulation program has been conducted the company has insulated over 5,000 homes, or 2,500 homes per year. A total of 1,800 installations were completed in the Virginia jurisdictional portion of the company's service area. Table 15 below provides a summary of Washington Gas Light Company's Virginia insulation business activity by payment terms.

[25]Washington Gas Light Company, interview: Richard C. Vierbuchen, Vice President, Consumer Services and Public Affairs, August 30, 1977.

Table 15

Washington Gas Light Insulation Contracts in Virginia
October, 1975 through June, 1977

Term of Loan	Number of Contracts	Approximate Dollar Value of Contracts
Cash (Payment within 90 days)	1,241	$616,400
Four to Six Months	8	4,000
Seven Months to One Year	74	36,800
Thirteen Months to Two Years	56	27,800
Twenty-five Months to Three Years	148	73,500
Subtotal: Four Months to Three Years	286	142,100
Total: All Contracts		$758,500

Average Value per Contract ----------$497

Source: Washington Gas Light Company, Received August 30, 1977.

Eighty-one percent of the installations were carried out either on a cash basis or with full payment within 90 days or less. Of the 19 percent of the customers that have utilized Washington Gas Light's finance program, half repaid in two years or less.

The data indicate that an aggressive marketing effort is necessary to achieve a large volume of installation and lending activity. This, however, is impractical at the present time because of the current critical shortage of insulation materials and the severe imbalance between consumer demand and available supply.

Appalachian Power Company. On February 28, 1977, Appalachian Power Company (APCO) filed with the State Corporation Commission an application for authority to implement a residential insulation financing program. APCO was authorized by the State Corporation Commission to undertake its proposed insulation financing program on a limited basis in May, 1977.[26]

[26]Appalachian Power Company, Application, Order Giving Limited Approval, Case No. 19865, State Corporation Commission, Commonwealth of Virginia, February, 1977; May, 1977.

The limitations of the program restrict APCO to financing no more than 1,000 units. APCO promotes the program through lobby displays, local radio, newspaper and television informational advertising, personal contact and group meetings. As of September 30, 1977, the company had 517 inquiries requesting details about the program. APCO has received 161 applications requesting credit under the program and has approved 141 of them. A total of 68 installations have been financed at an average cost of $540 each. At this juncture, the data are not sufficient to make inferences concerning the volume and scope of this program.

A brief sketch of APCO's insulation financing program follows:

(1) The program is administered by APCO customer service representatives who are responsible for personally contacting customers who have made inquiries concerning the program. In addition to explaining the program, the customer service representatives maintain a list of the local insulating companies and contractors whom the customers may contact for the installation work. The representatives are responsible for providing approved customers with a written commitment concerning the details of the credit arrangement and personally confirming the completion of a particular insulation job. However, no determination is made by the representative concerning the quality of the work that was performed.

(2) The individual residential insulation financing loans are limited to $750 with maximum repayment terms of 36 months. The annual percentage rate that is charged is 8 percent.

(3) Loans are made available to all existing residential customers without regard to home heating sources but are limited to customer-owned and occupied single family houses, duplexes, triplexes, or four-family residences.

(4) Payment of the loan is accounted for through a coupon repayment booklet specifically issued to the customer. The loan billing and repayment is independent of the regular electric billing mechanism. The credit histories of loan applicants are evaluated through the use of company records. In the event an applicant has been a customer of APCO for less than one year, the company utilizes retail credit records to make a credit decision.

(5) Costs of the program are treated as normal utility operating expenses for rate making purposes.

Below in Table 16 is APCO's detailed budget proposal for the residential insulation financing program:

Table 16

Proposed Program Budget: Appalachian Power Company 1,000 Loans

4.5 Employees	$ 66,150
Supervision	7,050
G.O. Labor (Administration-Computer Program)	2,350
Associated Labor (Accounting-1,000 Jobs)	7,650
Advertising	15,200
Automobiles	9,175
Materials (Accounting)	1,500
Office Displays	1,000
Literature (Bill Stuffers)	1,800
Insulation Handbooks	1,250
Handout Literature	1,000
Losses (First Year)	0
Training Materials	150
Computer Time	600
Legal Fee (1,000 Jobs)	3,000
Total	$117,875

Source: Memorandum to: Commissioner Preston C. Shannon, Re: Appalachian Power Company, Proposed Residential Insulation Program, State Corporation Commission, Commonwealth of Virginia, March 28, 1977.

The total administrative overhead cost budgeted for this program is $117.87 per customer for 1,000 customers. Assuming the average insulation installation loan is $500, the operating cost of this program will be approximately 23.5 percent of the average loan.[27] If the average loan is outstanding three years, roughly 8 percent of the total loan must be recovered each year to meet this administrative cost. If loans were repaid in 21.5 months, as they were on average in the Washington Gas Light experience, almost 11 percent must be recovered each year to meet this cost. Since these are add-on rates, the annual percentage rate to recover the overhead cost is higher; over a three-year period it is approximately 16 percent, and over two years approximately 22 percent. To this administrative cost percentage rate must be added the actual cost of funds that are invested in the residential insulation loans.

[27]The assumption of $500 for an average loan is based on historical experiences of both the Washington Gas Light and Appalachian Power Company programs.

Testimony in a recent rate case indicates that APCO's cost of funds is within a range of 8.9 to 9.75 percent.[28] Using 9 percent as a cost rate, the interest charge must be 25 percent for a three year loan if the experimental program is to be conducted on a break-even basis.

The volume of only 1,000 installations under the APCO program is a factor that causes the cost rate to appear so high. Many of the budgeted items do not increase in proportion to the number of loans. Table 17 below presents the same budget for higher numbers of loans with all items being treated as fixed cost except for associated labor and materials. These items are assumed to increase proportionately with the number of loans.

Table 17

Hypothetical Program Budget: Appalachian Power Company
5,000 and 10,000 Loans

	5,000 Loans	10,000 Loans
4.5 Employees	$ 66,150	$ 66,150
Supervision	7,050	7,050
G. O. Labor	2,350	2,350
Associated Labor*	38,250*	76,500*
Advertising	15,200	15,200
Automobiles	9,175	9,175
Materials (Accounting)*	7,500*	15,000*
Office Displays	1,000	1,000
Literature (Bill Stuffers)	1,800	1,800
Insulation Handbooks	1,250	1,250
Handout Literature	1,000	1,000
Losses (First Year)		
Training Materials	150	150
Computer Time	600	600
Legal Fee*	3,000*	3,000*
	$154,475	$200,225

*Variable cost items.

[28]Evidence was presented in a recent Appalachian Power Company rate case (Case No. 19723).

This hypothetical budget cost on a per job basis amounts to $30.90 for 5,000 loans and $20.02 for 10,000 loans. Again assuming that the average loan is $500 and is outstanding a full three years, the company charges 13 or 14 percent as an annual rate of interest to cover these administrative costs and also pay for the cost of funds at 9 percent. Since the assumptions used to derive this cost rate are conservative, there exists a relatively strong likelihood that the true break-even cost rate may exceed the 14 percent rate. If the administrative costs must be recovered faster, for instance, because loans are repaid in two years, the annual percentage rate would have to be 14 to 16 percent. This analysis indicates that a relatively large volume of financing must be achieved, and that the loans must be outstanding a full three years, if the break-even cost rate is to be competitive with conventional finance sources.

It should be noted, however, that many of the budgeted expenses associated with this program are more closely related to the insulation selling function than the financing function. These selling costs are normally incurred by the selling and installing contractor who recovers the cost through markup on materials and labor. It is the incidence of these costs being borne by the party providing the financing function that causes this and other energy distribution company financing programs to have a relatively high break-even cost.

Although the Federal Energy Program is not settled at this writing, the Energy Bill approved by the House of Representatives (H.R. 8444) requires that utilities provide energy conservation advisory services. This Bill would require the utility to perform some of the services included in APCO's proposed budget even if no insulation financing program was offered. Appalachian Power does indeed have a customer-oriented energy management program that does not directly involve financing. If the residential financing program did not exist, APCO customer representatives would still be making insulation recommendations. Advice to consumers requires about $75,000 of the APCO budget, and if these expenses are not considered part of the administrative cost of the financing program, loans may be offered at lower interest rates. Even without these expenses of advising consumers charged to the financing program, interest rates would still be quite high, however. A comparison of annual percentage interest rates with and without expenses for consumer advice is shown in Table 18 for various loan volumes and repayment periods.

Table 18

Hypothetical Appalachian Power Company Interest Rates

	1,000 Loans		5,000 Loans		10,000 Loans	
	2 yr. Repay	3 yr. Repay	2 yr. Repay	3 yr. Repay	2 yr. Repay	3 yr. Repay
Advice and Financing	31%	25%	16%	14%	14%	13%
Financing Program Only	18%	15%	13%	12%	12%	11%

Columbia Gas of Virginia, Inc. Columbia Gas Company of Virginia has a financing plan for attic insulation but implementation of the plan has been delayed pending the decision on a Federal Energy Program. The Residential Attic Insulation Financing Program which Columbia proposes will offer up to $750 for each home attic insulation installation and provide terms for up to three years for repayment. The plan requires a 10 percent downpayment and there is no interest charge if total repayment is made within 90 days. The simple annual percentage rate proposed for a three-year loan is 11.08 percent. Credit evaluation is to be based on the customer's history of bill payments. All insulation sales must be made through insulation contractors or dealers who have agreements with Columbia to participate in the plan.

Columbia Gas has requested financing authorization of $150,000 from the Securities and Exchange Commission. Internally generated funds and short term bank loans will serve as the source of funds to support the residential ceiling insulation financing program. Expenses for the program have been estimated at $1,000 for administration, $5,000 for advertising and promotion, and $2,000 for bad debt expense over a two- to three-year period. All revenue and expense associated with the program will be recorded "below the line" as a non-utility operation and not included as a regulated portion of the company's business.[29] The State Corporation Commission of the Commonwealth of Virginia gave approval for the Columbia Gas program on July 20, 1977.

[29]Columbia Gas of Virginia, Inc., Application For Approval, State Corporation Commission of the Commonwealth of Virginia, June, 1977.

On September 27, 1977, Columbia wrote the Chairman of the State Corporation Commission stating it believed it prudent and necessary to evaluate and compare the National Energy Act requirements and guidelines in terms of its own program before implementing that program. This insures compliance with all applicable laws.

Pacific Gas and Electric Company. Approval for a residential insulation financing program that is similar in many respects to that presented by Appalachian Power Company has been sought by Pacific Gas and Electric Company from the California Public Utilities Commission. This financing program provides for loans to residents of single-family and multi-family homes in an amount up to $800 for bringing thermal insulation up to state standards. No interest is charged on loans repaid within 60 days. Loans extending beyond 60 days are to be repaid in equal monthly payments at 1 percent per month interest rate (about 13 percent annual percentage rate) and the allowed maximum term is 36 months. Past utility-bill payment histories are used for credit evaluations. The company is prepared to make available up to $10 million for the insulation financing program. Accounting is done through the ordinary utility accounts so if interest payments do not cover the cost of funds plus administrative costs and bad debt expenses, they are recovered through general rate adjustments charged to all ratepayers.

For planning purposes, it is estimated that up to 15,000 insulation loans would be made in the first year. Presented in Table 19 below is the budget proposed for Pacific Gas and Electric Company's insulation financing program:

Table 19

Annual Program Budget: Pacific Gas and Electric
15,000 Insulation Loans

Expense	Electric	Gas	Total
Labor	$ 29,000	$ 88,000	$117,000
Credit/Collection	15,000	45,000	60,000
Bill Processing	25,000	75,000	100,000
Uncollectable Accounts	25,000	75,000	100,000
Advertising	12,000	38,000	50,000
Material/Misc. Expense	11,000	32,000	43,000
Total	$117,000	$353,000	$470,000

Source: Pacific Gas and Electric Insulation Financing - Supplemental Programs (Extract from Amended Application 56845), Case No. 10032, California Public Utilities Commission, April 15, 1977.

The administrative and overhead costs for the proposed program averages $31.33 per loan. Using the assumptions that the cost of funds is 9 percent and loans are repaid in three years, the annual percentage rate that would cover costs is approximately 14 percent. This rate which has to be charged if the program is operated on a break-even basis is in the range estimated for Appalachian Power Company. Again, it should be noted that a significant portion of these expenses are costs normally incurred by the selling function. Further, passage of the House version of the proposed National Energy Act would cause a portion of the labor and advertising expenses to be incurred whether or not the financing program is implemented. Since these costs are not attributable to the financing program, the administrative and overhead costs attributable solely to the financing program are less. It should be noted, however, that this is merely a cost assignment distortion because the total cost resulting from the combined effect of the National Energy Program and an insulation financing program would be greater.

Review of Other Programs

Detroit Edison. Detroit Edison's plan has four parts. The first three parts consist primarily of promotion, information and advice. The financing portion of the plan offers a maximum loan of $750, requires a 15 percent down payment on the total contract price, and allows a maximum repayment period of 48 months.[30] The interest rate charged on such loans is 6 percent per annum.

Michigan Consolidated Gas Company. Michigan Consolidated has had a program underway since 1973. The company promotes and finances both a do-it-yourself and a contractor installation program. Michigan Consolidated's program provides funds to finance up to 80 percent of the cost or $300, whichever is smaller. The customer may repay in three equal monthly payments with no interest charge, or in equal monthly installments over a period of 36 months at the interest rate of 1 percent per month (about 13 percent annual percentage rate).[31]

Michigan Power Company. Michigan Power Company devised a program along similar guidelines as the Michigan Consolidated insulation program. The financing procedure is identical.[32]

[30]Michigan Public Service Commission, Opinion and Order, Detroit Edison Company, Case No. U-5174, December, 1976.

[31]Michigan Public Service Commission, Opinion and Order, Michigan Consolidated Gas Company, Case No. U-4404, October, 1973.

[32]Michigan Public Service Commission, Opinion and Order, Michigan Power Company, Case No. U-4484, October, 1974.

Ohio Power Company. On April 12, 1977, Ohio Power Company presented a proposal for financing the installation of home insulation to the Ohio Public Utilities Commission. The proposed program is similar to APCO's Residential Insulation Financing Plan. The maximum loan is $750, at an average percentage rate of 8 percent per year for a maximum term of 36 months. Repayment within 90 days avoids finance charges. The company provides advice concerning alternative types of insulation but does not perform any arrangements for the purchase and installation of the insulation on behalf of the customers. An Ohio Power Company representative inspects to establish completion of the installation to trigger the transfer of the loaned funds from the company to the customer but no evaluation is performed concerning the quality of the job.[33]

California Public Utility Commission Proposal. The Energy Conservation Team of the California Public Utility Commission proposes that utilities provide financing for up to $400 for attic insulation at a 7 percent annual percentage interest rate, with terms up to 60 months. The proposal provides for repayment of the loan with monthly utility bills. For rental property, the tenant and landlord share the monthly obligations through separate billing. The proposal suggests that $50 be deducted from the total cost of the installation to provide an incentive to potential program participants. The cost of this incentive is proposed to be paid by the utility, or, essentially by all other ratepayers. All reasonable costs associated with the program (incentives, financing, and administrative) are to be included as normal operating expenses of the utilities for rate case purposes.[34]

Michigan Public Service Commission Proposal. The following plan was proposed by the staff of the Michigan Public Service Commission in a hearing held March 1 and 2, 1977. The plan, as proposed, provides that the utilities make arrangements to pay for the costs of materials and installation of natural gas conservation measures in homes. To obtain the financing, the customer signs a commitment to repay the cost of conservation materials and labor over a specified period. The customer makes payments in the form of a level "gas conservation service charge" added to the monthly utility bill. Failure to pay the service charge may result in termination of gas service. The gas utility's annual administrative costs of the program including bad debt and financing expenses are recouped by a uniform charge rolled into the cost of each unit of gas sold to all residential, industrial and commercial customers.[35]

[33]Public Utilities Commission of Ohio, Entry and Order, Ohio Power Company for Approval of the Residential Insulation Financing Program, Case No. 77-501-EL-UNC, April, 1977.

[34]California Public Utility Commission - Energy Conservation Team, "Retrofit Ceiling Insulation for State of California," San Francisco, California: July, 1977.

[35]Michigan Public Service Commission, Summary and Staff Report to the Commission, Case No. U-5272, 1977, pp. 40-41.

Summary of United States Energy Distribution Companies. A recent survey by the Edison Electric Institute shows that near the end of last year 13 out of 192 member companies responding have some sort of insulation financing plan. Many of these plans have maximum loan amounts between $500 and $800, and call for annual percentage interest rates between 9 percent and 14 percent usually over three years. Survey results are presented in Table 20.

Table 20

Summary of Electric Utility
Insulation Finance Plans
February, 1977

Company Name	Maximum Amount Financed	Maximum Term (Months)	Average Percentage Rate
Cheyenne Light, Fuel & Power Co.	NS*	30	9.5
Consolidated Edison Company	$800	36	12
Consumers Power Company	NS	36	12
Detroit Edison Co.	$750	NS	11.13
Gulf State Utilities	NS	NS	12
Iowa Electric Light Power Co.[1]	NS	NS	12-14
Iowa Power Co.	$500	36	9
Kansas Power & Light Co.	NS	NS	12-14
Portland General Electric Co.	$500	NS	10
Public Service of Colorado	NS	30	9.5
S. California Edison Co.	NS	36	18
Union Electric Co.	NS	36	14
Wisconsin Electric Power Co. Plan A	$700	24	11
-- Plan B	NS	36	11

*NS = Not Stated

[1]Iowa Electric Light & Power Co.: Not directly involved in financing but offers referral service to two approved lending institutions.

Source: Survey "Insulation Financing Plans," Edison Electric Institute, February, 1977.

Summary

In order for energy distribution companies to enter the lending business their corporate charters may require revision, as they are subject to a number of lending laws, and they must be prepared to comply with federal antitrust laws which may prevent subsidization of loans. A number of companies are providing financing now under a variety of arrangements. However, there is no evidence that lending costs will be lower than from conventional sources. Energy distribution companies have advantages in reaching customers but, of course, they may use those advantages to advance conservation without entering the lending business.

IV. ADVANTAGES AND DISADVANTAGES OF FINANCING INSULATION THROUGH ENERGY DISTRIBUTION COMPANIES

Energy distribution companies have data on individual dwelling energy consumption and the technical expertise to evaluate this data. These factors cause energy distribution companies to be in a position to determine which customer groups may derive the maximum benefit from insulation. In addition, as long as the companies are not directly involved in the insulation business, the energy companies may be trusted by customers as sources of expert information concerning the benefits of insulation. The Energy Bill as proposed by the House of Representatives (H.R. 8444) recognizes the advantage of the utilities offering technical assistance to the customer. It decrees that by 1980 the public utilities must be able to inspect the residence of each customer to determine the estimated cost of purchasing and installing appropriate insulation. Further, the utilities must provide lists of suppliers and financing institutions. At this writing the proposed House Bill and the differing Senate proposals are still in joint conference committee.

It is misleading to think that the energy use information which energy distribution companies possess can be analyzed for individual customers without considerable cost. A personal-contact marketing program is generally the most expensive selling method, and this type of conservation effort requiring personal contact is costly to administer. Ordinarily, marketing costs are borne by the seller and are recouped through the sales price and installation fees, rather than by the party who provides the financing. Requiring energy distribution companies to perform and incur the costs of the marketing functions that are normally conducted by other business activities may allow abnormal profit opportunities to those other businesses. Thus, although the knowledge and ability to provide insulation advice may reside in energy distribution companies, it cannot be brought to consumers without cost. Insulation contractors are apt to benefit, at least in the short term, if such a service is provided.

Through their specialized knowledge, energy distribution companies are considered to be in an advantageous position to promote conservation. We have acknowledged that being in the energy business, energy distribution companies no doubt have much knowledge and experience about the characteristics of the energy they sell. This knowledge naturally carries over into the conservation area. However, energy distribution companies possess no strong economic incentive for promoting conservation. The conservation programs reviewed in the preparation of this report indicate

that many energy distribution companies would not break-even on the financing of insulation. Financing programs would therefore tend to lower the rate of return earned by energy distribution companies and make more frequent rate relief a necessity. In addition, the goal of the conservation program has a negative incentive because the program also asks the energy distribution companies to sell less energy. Asking energy distribution companies to encourage, promote and enforce conservation of energy is analogous to asking distilleries to support prohibition or asking diet soft drink manufacturers to support the ban on saccharine. The energy distribution companies simply have no economic incentive to provide such support unless they are in a position to sell all the energy they can acquire or produce. In this latter instance, the conservation effort will not reduce the return because the energy saved through conservation can be sold to other parties. In this case, if the insulation program were then conducted on a break-even basis, there is no incentive or disincentive. If the program were conducted on a profitable basis, then a positive economic incentive would exist.

Energy distribution companies are in an advantageous position to evaluate the credit of loan applicants from customer bill payment histories, but the extent to which this constitutes a real advantage is uncertain. Banks, major retail sales outlets, retail merchants associations, credit card companies, and private credit information companies have developed efficient credit information exchange systems. The majority of the prospective insulation credit applicants are property owners and, as such, already have established credit at conventional finance sources. It is doubtful that the possession of a bill payment history for such customers constitutes a significant advantage in evaluating credit worthiness.

Energy distribution companies actually have less experience in lending activities than traditional sources and without other companion services they may not achieve a scale of lending operations efficient enough to allow low costs. In addition, the financial intermediaries that perform lending functions have access to low cost funds. For example, consumer finance companies normally acquire their funds through the sale of commercial paper at a cost that is below the prime rate of interest charged by commercial banks. Commercial banks acquire their funds from the various demand and time deposit accounts which they service and from the sale of stock and notes in the capital market. Demand deposit accounts carry no interest rate and time deposit accounts bear a relatively low interest charge. Energy distribution companies do not have access to these low-cost sources of capital.

If the insulation finance programs are conducted by the energy distribution companies on a break-even basis, evidence suggests that the annual interest rates which the companies must charge would at least be in a range above 14 percent. These rates are not competitive with the rates that many customers may obtain from home improvement loans at commercial banks, but they do appear to be competitive with rates charged by sales finance companies and consumer credit companies. The small fraction of customers (about 20 percent) actually availing themselves of Washington Gas Light's financing suggests that the terms are not attractive to most customers.

There may be some homeowners who want insulation but cannot obtain credit through traditional sources of financing. This minority of prospective insulation customers who do not have established credit would for the most part be in higher risk categories. Because of the potentially small number of loan candidates in this class, providing credit to the group would not significantly increase the number of insulation jobs. Further, if energy distribution companies promote financing to these higher-risk groups, the loan losses would tend to be higher and the cost of the program would be greater. This cost must either be borne by the loan applicants or by the ratepayers of the energy distribution companies. Since federally sponsored programs exist for these higher risk groups, further subsidization by energy customers in general appears unwarranted.

Energy conservation financing should cause savings resulting from a reduction in the growth of peak loads. Heating and cooling energy use comes at peak times, so an insulation program would contribute to better load management as the load curves of the energy distribution companies become more level as a result of the energy savings. The idea that energy conservation is desirable is not questioned by this report. Conventional finance sources are available at a cost that is at least equal to or lower than that of the energy distribution companies for the majority of insulation customers.

Insulation financing through energy distribution companies raises some potential legal problems. Since energy distribution companies are regulated, expansion into the lending area may complicate somewhat the exercise of the regulatory process in the setting of rates. The lending business itself is also regulated, and its regulations may be particularly onerous for a firm that is not primarily a lending institution. There are also some antitrust problems that might arise if insulation financing is subsidized and in part because of that it becomes so successful that other lending agencies lose business.

Thus, the study concludes that there is no need for the energy distribution companies to enter the insulation financing business. There exist sufficient funds at conventional lending sources. Energy distribution companies are not able to make loans at less cost than such existing conventional sources. Also, the legal tangles inhibit the desirability of utility financing programs. In essence, there is no compelling justification for relying on energy distribution company insulation finance programs as a means of improving the aggregate level of home and business insulation in Virginia.

APPENDIX

SUMMARY OF VIRGINIA ENERGY DISTRIBUTION COMPANIES

Survey - 17 Virginia Firms Contacted by Standard Inquiry

13 Responses (1 Inquiry Not Relevant)

4 Virginia Firms Contacted by Individual Correspondence or Interview

Insulation Programs

Financing Plan

	Company Name	
1.	Appalachian Power Company	Will finance up to $750 for periods up to three years at 8% simple interest.
2.	Washington Gas Light Company and Shenandoah Gas Company	Financing offered as part of the sales installment of insulation on sub-contract basis. Inspection of individual customer home is provided. Will finance at 8% add-on interest for 36-month period.
3.	Columbia Gas of Virginia, Inc.	Will finance up to $750 for period of 3 years at 11.08% simple interest. Program planned but not implemented.
4.	United Cities Gas Company	Financing offered as part of the program of sales and installation of insulation (on a contract basis). Inspection of individual customer home is provided. Will finance at 8% add-on interest up to 24 months. No maximum on loan amount but minimum is $100.
5.	Commonwealth Gas Distribution Company	Financing offered to its customers at 18% annual percentage rate for maximum of 2 years. Credit eligibility granted on report from Retail Merchants Credit Bureau. Technical inspection of home is provided.

Customer Representative Program[1]

	Company Name	Program
1.	Delmarva Power and Light Co. of Virginia	Offer technical inspection for individual customer.
2.	Potomac Edison Company	Provide recommendations, and lists of lending institutions, suppliers, and available contractors.
3.	Suffolk Gas Corporation	Small scale operation of insulation recommendations.
4.	Potomac Electric Company	Provide brochures to assist customer in making an "energy audit" on home. Company representative, for a fee will perform the audit if requested. The data gained will be analyzed by computer to devise an individual recommendation of improvements. The costs and benefits of the improvements will be provided along with a list of approved contractors.

Consideration of an Insulation Plan

1. Potomac Edison Company.
2. Virginia Electric and Power Company.
3. Delmarva Power and Light Company of Virginia.
4. Colonial Natural Gas Company.

Miscellaneous

	Company Name	Program
1.	Virginia Electric and Power Co.	Conducted extensive analysis of alternative insulation financing programs. No definite plan has been derived but various programs have been considered.
2.	Old Dominion Power Company	Conducts education program for customers and advertises for insulation installation.

[1]A customer service entailing either individual consultation or generalized advice on recommendation of insulation. Appalachian Power, Washington Gas Light, Columbia Gas, United Cities Gas Company, and Commonwealth Gas Distribution have customer representatives within thier financing programs.

List of Firms Contacted by Standard Inquiry

Delmarva Power and Light Company of Virginia
Old Dominion Power Company
Potomac Edison Company
Potomac Electric Power Company

Colonial Natural Gas Company
Commonwealth Gas Distribution Corporation
Commonwealth Public Service Corporation
Eastern Shore Gas Company of Virginia
Citizens Gas Company
Lynchburg Gas Company
Virginia Pipe Line Company
Portsmouth Gas Company
Roanoke Gas Company
Southwestern Virginia Gas Company
Suffolk Gas Corporation
United Cities Gas Company

List of Firms Contacted on Individual Basis

Virginia Electric and Power Company
Appalachian Power Company

Washington Gas Light Company
(Shenandoah Gas Company)
Columbia Gas of Virginia, Inc.

Circle or fill in blank where appropriate

Yes No 1. Does your company actually have a program concerning in some manner the installment of insulation (i.e., financing, sub-contracting, inspection, etc.)?

Yes No If No, have any programs of this manner been planned or considered?

Yes No 2. Has your company considered, specifically, financing installment of insulation:

If yes:

A. At what rate of interest?
Specify if possible how the rate is determined:

B. Maximum term length of loan.

C. Maximum and/or minimum amount of loan.

Yes No D. Is customer bill payment history used as criteria for credit eligibility?
Other factors to be considered:

Yes No E. Does the type of heating equipment in the home affect eligibility for the loan?
Explain _____

Yes No F. Will expenses and revenues incurred by the program be treated as a part of the State Corporation Commission regulated activities of your company? (i.e., an "above the line" item.)

Yes No 3. Has your company considered the selling of insulation on a sub-contract basis to existing contractors?

If yes:

A. Number of salespersons you intend to employ.

Yes No B. Will you offer a technical inspection for the individual customer?

Yes No C. Will these inspectors (B above) make actual estimates for the job?

Yes No 4. Has your company considered or is it presently participating in a customer representative program entailing inspection of homes and recommendation of insulation?

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1. American Bankers Association. "Delinquency Rates on Bank Installment Loans." Second Quarter, 1977.

2. "Installment Credit Survey." 1976.

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4. Interview: Lawson Bailey, Charles Wagner, Owen Hawkins, T. C. Smith. Roanoke, Virginia: August 23, 1977.

5. Atlantic Permanent Savings and Loan. Telephone interview: Hugh L. Dougherty. Norfolk, Virginia: September 1, 1977.

6. Brown, William R. "Appalachian Power Company's Residential Insulation Financing Plan." Memorandum to Richard D. Rogers, Jr., Case No. 19865, State Corporation Commission: June 21, 1977.

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