[COMMITTEE PRINT]

ENERGY TAX PROVISIONS

2

RESIDENTIAL TAX CREDITS

PREPARED FOR THE

COMMITTEE ON FINANCE
UNITED STATES SENATE

BY THE STAFF OF THE

JOINT COMMITTEE ON TAXATION

SEPTEMBER 15, 1977

U.S. GOVERNMENT PRINTING OFFICE
WASHINGTON : 1977

95-172

JCS 50-77

TABLE OF CONTENTS

I. INTRODUCTION

This pamphlet is the second in a series prepared for use by the Committee on Finance during its consideration of the tax provisions of the House-passed energy bill (title II of H.R. 8444). This pamphlet describes in detail the provisions of the House bill relating to residential energy conservation. This description includes sections on economic and other background information, present law, the House bill, the Administration position, areas for committee consideration, as well as the relevant energy tax proposals considered by the Senate during the 94th Congress and nontax residential provisions under consideration in the 95th Congress.

In the 94th Congress, the major bill considered in connection with energy tax proposals was H.R. 6860. This bill was reported by the Ways and Means Committee and was amended on the House floor. Markup sessions on H.R. 6860 were held by the Finance Committee in July 1975, and tentative decisions were made in many areas, but the bill was not reported at that time. Many of the provisions approved by the Finance Committee were added to H.R. 10612, the Tax Reform Act of 1976, as Title XX, but all of the energy provisions were deleted in conference. In August 1976, the Finance Committee reported the provisions of Title XX (as passed by the Senate) as an amended version of H.R. 6860. This bill was never taken up on the Senate floor and expired with the adjournment of the 94th Congress.

Unless otherwise indicated, references to the Finance Committee bill refer to title XX of the Tax Reform Act (as passed by the Senate) and to the Finance Committee's reported version of H.R. 6860. Amendments on the Senate floor (to title XX of the Tax Reform bill) are specifically noted.

II. HOME INSULATION CREDIT

(Section 2011 of the House Bill)

A. Background

Introduction

Residential energy use varies substantially by region and source of energy. Overall, it is estimated that the household and commercial buildings use 31.6 percent of all energy in the United States.[1] Of the sales of distillate fuel oil in 1974, 46 percent was used for heating; [2] of the sales of natural gas in 1974, 28 percent of the volume was for residential use and 44 percent of the dollar value was for residential use.[3] In view of the substantial share of energy used by the residential sector, measured either by physical volume or value of sales, conservation efforts in this sector could substantially alter the overall rate of energy utilization in the economy.

Types of conservation devices

There are a number of energy conservation techniques available for use in residential structures which can materially alter their energy use. The principal techniques examined by the National Bureau of Standards [4] in 1975 included; (i) attic insulation, (ii) wall insulation, (iii) floor insulation, (iv) duct insulation in unheated areas, (v) storm windows, (vi) storm doors, (vii) weatherstripping, (viii) vapor barriers, (ix) clock thermostats, (x) flue dampers, and (xi) burner modifications. Other techniques have some energy impact, and they may be subject to future technological review.

The economics of residential conservation

For the individual, the decision to modify an existing structure by adding insulation, storm windows, or other conservation devices is very similar to that facing an individual with savings who wants to invest in assets of various maturities and rates of return. Savings from energy conservation investments accrue over time, so that future benefits need to be discounted by an appropriate rate of interest. Thus, the homeowner should be willing to invest in additional energy conservation measures up to the point where the additional cost of the investment in energy conservation is matched by the dollar saving from that investment. In making this investment, it would not be economical to concentrate one's entire energy conservation budget on, say, attic insulation, since modest amounts of other insulation, e.g., weatherstripping, would initially yield rather substantial energy savings.

---

[1] Department of the Interior, Bureau of Mines, *News Release* (March 14, 1977), p. 4.

[2] Minerals Yearbook (1974), p. 1017.

[3] Minerals Yearbook (1974), p. 852.

[4] National Bureau of Standards (1975), "Recommended Criteria for Retrofit Materials and Products Eligible for Tax Credit" (MBSIR 75–795).

The conservation techniques an individual homeowner chooses to apply will depend on the climate he faces, the relative prices and energy efficiencies of each conservation technique, and the price of the type of energy being used. As the price of energy rises, the value of conservation investments increases. Also, the more severe that the climate becomes, the more warranted conservation investments become.

These considerations are displayed in table 1 which contains 3 hypothetical allocations of energy conservation devices for various budget sizes. [5] The house in question is 1,200 square feet (relatively small) in size, single story, with wall insulation and weatherstripping. It is in Washington, D.C. and annually experiences 4,000 degree days and 1,000 cooling hours.[6]

TABLE 1.—*Allocation of limited energy budgets under alternative energy cost assumptions*

Energy prices heating/cooling (per Btu)	Attic insulation	Floor insulation	Storm windows	Total investment
1. $0.15/$0.45	$162 (4″)	$174 (4″)	$125 (5)	$461
2. $0.30/$0.45	162 (4″)	174 (4″)	200 (8)	536
3. $0.45/$0.45	222 (6″)	234 (6″)	275 (11)	731

Thus, in case 1, above, where heating costs are $0.15 per Btu and cooling costs are $0.45 per Btu, the overall energy savings resulting from 4 inches of attic and floor insulation and 5 storm windows would warrant an energy conservation investment of $461. In case 3, above, where heating costs are $0.45 per Btu and cooling costs are $0.45 per Btu, an overall energy conservation investment of $731 would be warranted.

U.S. housing stock

In 1975, there were 77.6 million year-round housing units (of which 72.5 million were occupied) in the United States.[7] Of the total units, 49.5 million units, or 64 percent, were single detached units. Another 3.1 million were single units, but attached (e.g., common wall) to one another.

Another 9.8 million units were attached in 2 to 4 units, and 11.8 million were attached in a structure of 5 or more units. Mobile homes accounted for 3.3 million units, or 4.3 percent of the total housing stock.

Of the 77.6 million units, 46.9 million units, or 60 percent of the total, were owner occupied; the bulk of which (39.8 million) were detached

[5] Example is from: S. R. Peterson (1974), "Retrofitting Existing Housing for Energy Conservation: An Economic Analysis" (National Bureau of Standards, Department of Commerce), p. 28–40.

[6] The number of degree days during a year equals the sum of the degrees by which the mean temperature for each day of the year falls below 65 degrees Fahrenheit. A cooling hour is the number of hours per year in which the temperature exceeds 72 degrees Fahrenheit.

[7] U.S. Bureau of the Census, "Annual Housing Survey: 1975 (Part A, General Housing Characteristics)," April 1977, Table A–1.

single units. Of the remaining 30.7 million rental units, 7.1 million were single, detached units, and the rest were multi-units.

Since 1970, there have been marked shifts in the type of heating sources used and the extent to which air conditioning is being added. (See tables 2 and 3.) Fuel oil was used in 26.0 percent of all heating units in 1970 and 22.5 percent in 1975. Only 9.4 percent of new units constructed in 1975 were heated by fuel oil. Electric heat, by contrast, has experienced a very rapid increase. Electric heat represented 7.7 percent of all units in 1970 and 12.6 percent of all units in 1975. Of units constructed in 1975, 37.6 percent were heated by electricity. Natural gas has experienced a decline recently. In 1975, 56.4 percent of all units were heated by natural gas, but of the new units constructed in 1975, only 44.7 percent of the units were so heated.

TABLE 2.—*Sources of heat for residential use: 1970 and 1975*

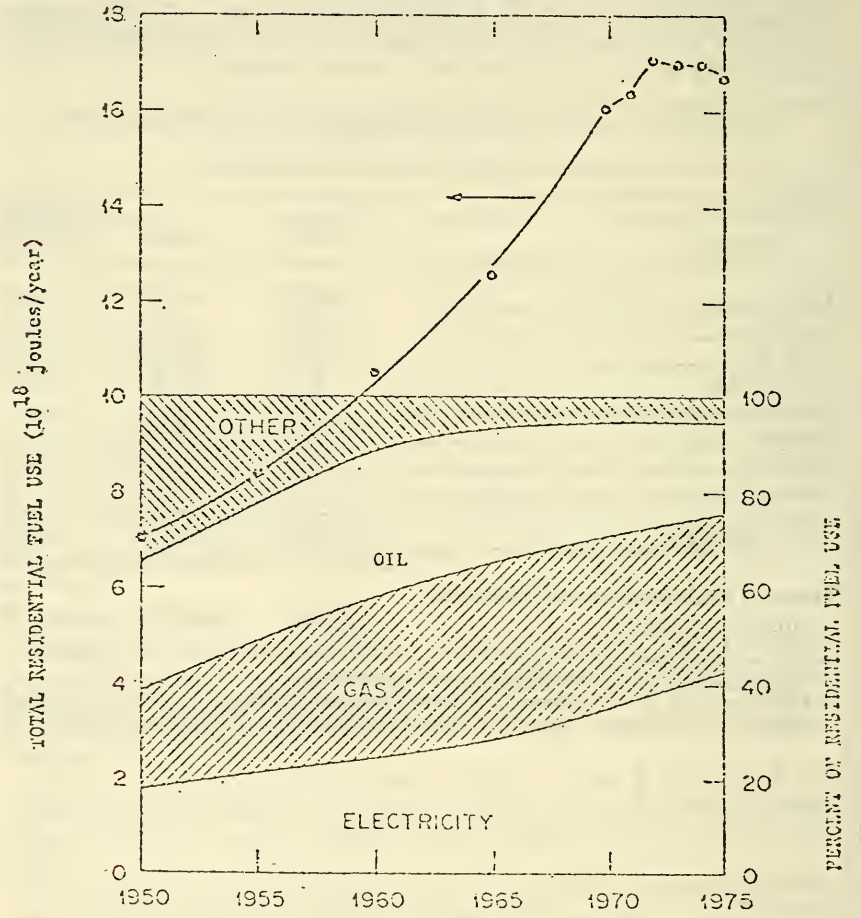
[Percent of units which use various fuels]

Source	1970 [2]	1975 [2]	New units 1975 [1] [3]
Utility gas	55.2	56.4	44.7
Tank gas	6.0	5.7	7.3
Fuel oil	26.0	22.5	9.4
Electricity	7.7	12.6	37.6
Coal	2.9	.8	----------
Wood	1.3	1.2	.5
Other	.3	.2	----------
None	.6	.6	.5
Total	100.0	100.0	100.0
Item: Total number of occupied units (thousands)	63,446	72,522	10,181

[1] Includes multifamily dwellings and apartments.
[2] Source: U.S. Census Bureau, *Annual Housing Survey: 1975*, table A–1, p. 8.
[3] Source: U.S. Census Bureau, *Annual Housing Survey: 1975*, table A–4, p. 26.

Diagram 1 below displays the pattern of residential energy use in terms of the total quantity of energy used and the type of energy used. (This includes both cooling, heating and cooking.) The composition of energy uses follows the pattern in table 2 above, which only relates to the type of heating installed. Also of interest is that reliance on oil has fallen off dramatically.

DIAGRAM 1. LEVEL OF COMPOSITION OF RESIDENTIAL ENERGY USE BY TYPE OF ENERGY



These rather marked shifts in energy sources for heating indicate that recent changes in relative energy prices, as well as expected future price relationships, influence changes in energy source utilization. Cessation of natural gas hookups for residential space heating and cooling and hot water heating in some metropolitan areas accounts for part of the shift from natural gas to electricity. It should be noted, however, that increased reliance on electric heat requires the use of some form of energy—oil, hydro, coal or nuclear power--to generate the electricity for such heat and, therefore, on an overall basis, may be energy inefficient.

There is some evidence which suggests that in the long run (i.e., a sufficient period of time for individuals to adjust their choice of energy use when either retrofitting or putting in an original heating/cooling system) the residential demand for various energy sources is price-sensitive. Estimates for electricity indicate that a 10-percent increase in the price of electricity reduces the demand for electricity by 8.4 percent; estimates for natural gas indicate that a 10-percent increase in the price of natural gas reduces demand by 9.3 percent; and estimates for home heating oil indicate that a 10-percent increase in the price of this oil reduces demand by 16.4 percent.[8]

Public demand for air conditioning has increased markedly. In 1970, 35.2 percent of the housing stock had some form of air conditioning, and by 1975, it had increased to 49.4 percent. In this 5-year period, the percentage of units with central air conditioning nearly doubled from 10.7 percent in 1970 to 20 percent in 1975. Of the new units constructed in 1975, 67.6 percent had some form of air conditioning. Half of all new units constructed in 1975 had central air conditioning. (See table 3.)

TABLE 3.—*Extent of air-conditioning in housing stock*

[In percent]

	1970	1975	New units 1975
Room air-conditioners	25.0	29.4	17.4
Central air	10.7	20.0	50.2
Subtotal	35.7	49.4	67.6
None	64.3	50.6	32.4
Total	100.0	100.0	100.0

Source: U.S. Census Bureau, Annual Housing Survey, 1975, table A–1, A–4.

Conservation devices in housing stock

Systematic information is not available to the public on all the energy conservation devices being used in existing housing. Such information would be significant because it would make it possible to estimate how much additional investment is physically possible and what the potential energy savings could be. Some information from the 1975 Annual Housing Survey is available with respect to single family dwellings. (See table 4.) Occupied single family dwellings numbered 53.1 million in 1975 out of a total housing inventory of 77.6 million, or 71 percent of the total. Of these 53 million units, 56 percent had some or all windows covered with storm windows, 59.5 percent had some or all doors covered with storm doors, and 74 percent had some sort of attic insulation. About 45 percent had some form of all three conservation devices.

[8] E. Hirst, J. Cope, S. Cohen, W. Lin, and R. Hoskins (April 1977), "An Improved Engineering-Economic Model of Residential Energy Use" (Oak Ridge National Laboratory), ORNL/COW–8.

TABLE 4.—*Conservation devices in housing stock: 1975 (occupied single family units)*

[In percent]

	United States	Northeast	North-central	South	West
Storm windows:					
All windows covered	46.0	76.3	80.5	21.7	11.9
Some windows covered	10.0	14.6	10.7	8.5	7.2
Storm doors:					
All doors covered	47.8	77.9	81.9	25.0	11.1
Some doors covered	11.7	12.7	9.2	14.6	8.9
Attic insulation	74.0	78.6	83.9	67.3	67.4
Item: Total number of units (thousands)	53,095	9,600	14,725	18,822	9,948
Item: Region's share of all units (percent)		18.1	27.7	35.4	18.8

Source: U.S. Bureau of the Census, Annual Housing Survey: 1975, table A–1, B–1, C–1, D–1, E–1.

There is substantial regional variation in the extent to which these three devices were used in 1975, which probably reflects regional variations in weather. For example, 76.3 percent of the houses in the Northeast had all windows covered with storm windows, while only 11.9 percent of the houses in the West had such devices. The use of storm doors displays the same regional variation, with the Northeast and Northcentral regions (because of their more severe winters) both having a high percentage of all doors covered (above 77 percent) as compared to the South and West (25 percent or less). Attic insulation appears to be the most prevalent form of conservation, ranging from 67.3 percent in the South to 83.9 percent in the Northcentral region. These figures do not, however, reflect the efficiency of these devices in conserving energy. Since the oil embargo in 1973–74, the heightened concern for conservation has resulted in higher efficiency standards for all types of insulation.

Of related interest is that the extent to which conservation devices are used varies by type of fuel use. About 92 percent of houses which use electricity as a source of heat had at least one type of conservation device, while 85 percent of houses heated by natural gas had at least one type of conservation device.

There is a marked difference in the extent to which rental houses and owner-occupied houses are insulated. Whereas 90 percent of owner-occupied homes have at least one form of conservation device, only 60 percent of the rental houses had at least one form.[9] Since rentors tend to pay their own utility bills and also tend to be transient, this differential is understandable. Rental houses are, however, a small fraction (15 percent) of the single unit housing market.

Extent of new residential conservation investments

The rapid increase in the price of home heating oil and other energy sources has prompted many homeowners and some rentors to add various residential conservation devices. At noted earlier, as the price of energy rises, the value of energy savings increases, and additional conservation measures become economical.

In 1975, 9.1 million or 22 percent of the occupied, single family detached houses added some form of insulation (storm doors, storm windows, attic insulation, wall insulation or weatherstripping). About 14 percent of such homes only added storm doors, storm windows or attic insulation in 1975. Table 5 displays the numbers of units which added four of these types of insulation, and reflects increases over 1974 of 5.6 percent and 11.1 percent in attic insulation and storm windows, respectively.

TABLE 5.—*Home insulation added in 1975*

Insulation device:	*Total*
Storm doors added (thousands)	2,477.7
Increase over 1974 (percent)	9.5
Storm windows added (thousands)	2,657.4
Increase over 1974 (percent)	11.1
Attic insulation added:	
Total (thousands)	2,003.4
Under 3 in. (percent)	6.4
3 to 6 in. (percent)	58.5
6 in. plus (percent)	32.6
Increase over 1974 (percent)	5.6
Wall insulation added	1,549.8

Source: Unpublished tabulations from 1975 Annual Housing Survey.

The dollar amounts of these expenditures are displayed in Table 6. The bulk of these expenditures (61.4 percent) were under $100. Approximately 14 percent were between $100 and $200. Only 8.4 percent of the additions were more than $400.

[9] Unpublished tabulations from the 1975 Annual Housing Survey.

TABLE 6.—*Size distribution of outlays for new insulation*[1] *in 1975*

Total cost of insulation	Number	Percent
Up to $100	5, 739. 8	61. 4
$101 to $199	1, 304. 8	13. 9
$200 to $399	730. 1	7. 8
$400 plus	784. 0	8. 4
None or no change	152. 5	1. 6
Don't know cost	407. 1	4. 4
No response	236. 0	2. 5
Total	9, 354. 3	100. 0

[1] Insulation is defined as storm windows, storm doors or other insulation.

Source: Unpublished tabulations from *1975 Annual Housing Survey.*

Conservation and income class

The extent to which insulation devices are used varies significantly by income class. (See table 7.) In 1975, only 39.6 percent of the families in single homes with income of less than $2,000 had storm windows; 49.9 percent of the families with income under $2,000 had attic insulation. On the other hand, 88.7 percent of families in single homes with income of $25,000–$35,000 had attic insulation; 62.7 percent of these families had storm windows. The pattern of new insulation added by income class is roughly the same, with attic insulation being the most income sensitive. Only 1.6 percent of the families in single homes with income under $2,000 added attic insulation in 1975, while 6.3 percent of the families in single homes with income of $25,000–$35,000 added attic insulation; 9.6 percent of families in single homes with income between $12,500 and $15,000 added attic insulation in 1975.

TABLE 7.—*Insulation of homes and family income class in 1975*

Census money income class of families in single-family units	Percent with all or some storm windows in 1975	Percent with all or some storm doors in 1975	Percent with attic insulation in 1975	Single-family detached units		
				Percent adding storm windows in 1975	Percent adding storm doors in 1975	Percent adding attic insulation in 1975
Under $2,000	39.6	43.6	49.9	3.8	2.6	1.6
$2,000 to $3,000	44.0	49.5	47.3	4.5	3.0	1.7
$3,000 to $4,000	47.6	51.0	56.3	4.9	3.4	2.1
$4,000 to $5,000	50.2	55.9	56.7	4.4	3.3	2.7
$5,000 to $6,000	49.3	53.2	61.8	5.7	4.5	2.6
$6,000 to $7,000	49.1	54.6	64.5	5.6	4.1	2.9
$7,000 to $8,000	52.3	56.8	65.3	4.9	4.0	6.6
$8,000 to $10,000	52.7	58.3	70.0	5.4	4.7	6.6
$10,000 to $12,500	58.3	63.8	78.1	6.2	5.4	5.2
$12,500 to $15,000	59.0	65.8	80.0	5.8	6.7	9.6
$15,000 to $25,000	62.8	66.8	85.5	6.5	6.6	6.2
$25,000 to $35,000	62.7	64.4	88.7	5.4	5.8	6.3
$35,000 and over	61.6	60.4	89.5	5.5	5.0	6.6

Source: U.S. Bureau of the Census, 1975 Annual Housing Survey, unpublished tabulations (May 1977).

Insulation demand and capacity

There is a question whether increases in the demand for insulation, which a tax credit would encourage, would result in greater amounts of insulation at current prices, greater amounts at higher prices, or actual shortages of insulation. The market for insulation is composed of three sectors: the market in new housing units, the market for reinsulation of existing housing units, and the market for industrial insulation. There are a variety of materials which serve to insulate: fiberglass, cellulose, rock wool, and certain new forms (formaldehyde and polyurethane).

Overall, fiberglass [10] accounts for approximately 90 percent of the insulation of newly constructed homes, 65 percent of the insulation of newly constructed commercial and industrial buildings, and 65 percent of all retrofit insulations. There are three firms which dominate the fiberglass part of the market: Owens-Corning, Johns-Manville, and Certain-teed account for more than 80 percent of all fiberglass produced in the United States. The cellulose part of the market is quite competitive in terms of the number of firms producing cellulose for insulation (there are more than 200); however, virtually all of these firms must treat the cellulose with boric acid to provide the cellulose with adequate flame retardent qualities, and one firm in the United States accounts for more than 70 percent of all the boric acid produced in the United States.

Whether a tax credit would create excessive demand depends on production trends in the insulation industry, and what demand for insulation will be with and without a credit. Owens-Corning [11] estimates that as of early 1977 there are about 20 to 25 million attics in existing homes which are accessible and would benefit from additional insulation. As noted earlier, about 2 million attics were reinsulated in 1975, and Owens-Corning estimates about 2.5 million homes added insulation in 1976. This suggests a base case demand for reinsulation of attics of about 2.25 million per year.

The remaining issue on the demand side of the reinsulation market involves the extent to which a tax credit will induce additional reinsulation activity. Unfortunately, there are no reliable estimates of how much additional demand there will be as a result of a tax incentive. Informed guesses range from a 1 to 3 percent increase in demand for each 1 percent reduction in cost as a result of a credit.

The second aspect of the demand for insulation involves that demand resulting from new construction activity. Generally, a new home uses more than twice the insulation needed to retrofit an existing home. If housing starts are relatively low (e.g. 1 to 1.5 million per year), then production of insulation material can meet the retrofit portion of the market. If on the other hand, new housing starts are relatively high (e.g. 1.9 to 2.5 million per year) then there will be less insulation available for the retrofit market. New housing starts are currently at a 2.0 million-units-per-year rate, reflecting the rapid pace of economic activity in the first half of 1977.

---

[10] Fiberglass is produced from silicone (sand) after the application of heat, which creates molten glass. The molten glass is made into glass strands under pressure and then spun to create a fiber which will trap air.

[11] Owens-Corning. "Potential for Energy Conservation in Residential Construction," (Feb. 25, 1977), mimeo.

The third aspect of the demand for insulation involves industrial uses of insulation. Higher energy prices have induced industry to take conservation measures as well. One study estimates that 29 percent of fiberglass is used for industrial equipment and pipes, 15 percent for commercial and industrial buildings, and 35 percent for new residential construction.

There have been a number of studies [12] which examine whether or not there will be a problem of inadequate fiberglass supply. Table 8 displays the projected demand and capacity for fiberglass insulation from a study of ICF, Inc. On the basis that it takes 350 to 400 pounds of fiberglass to retrofit an attic, there may be sufficient fiberglass insulation for 1.25 million homes in 1977 and 2.15 million homes in 1978. Even with cellulose and rockwool serving as viable substitutes for fiberglass, it would appear that there will be a tight market in 1977, but thereafter the situation should improve. Also to the extent the economy proceeds at a more moderate pace with a decrease in the rate of new housing starts in the second half of this year, fiberglass otherwise used for new homes may become available for retrofitting.

TABLE 8.—*Projected demand and capacity for fiberglass insulation, 1977–1980*

	Billion pounds			
	1977	1978	1979	1980
Industrial equipment	0.680	0.760	0.820	0.880
Commercial/industrial building	.354	.346	.395	.450
New residential construction [1]	1.266	1.234	1.411	1.608
Estimated capacity	2.800	3.200	3.650	4.000
Remainder for retrofit	.500	.860	1.024	1.062
Remainder converted to millions of attics at 400 lbs. per attic	1.25	2.15	2.56	2.655

Source: ICF, Inc., "Supply Response to Residential Retrofit Demand" (June 1977), table 10.

[12] Office of Business Research and Analysis, U.S. Commerce Department, "U.S. Residential Insulation: Study of U.S. Insulation Capacity and Time Required to Retrofit U.S. Housing Inventory." Pre-Report (July 8, 1977); ICF, Inc., "Supply Response to Residential Insulation Retrofit Demand" (for FEA) (June 17, 1977); Council on Wage and Price Stability, Executive Office of the President, "Council Fears Price Increase in Fiberglass Insultion" (news reelase, June 14, 1977).

B. Present Law

No special tax credit or deduction is presently allowed for expenditures in relation to a taxpayer's residence to install insulation, more efficient heating systems, or other energy saving components. However, these capital expenditures are added to the taxpayer's basis in a residence which he owns and will decrease any gain on its sale or exchange.

The Energy Conservation and Production Act of 1976 (P.L. 94–385) included a number of measures designed to encourage the weatherization of dwellings. The act authorized appropriations for insulation, caulking, weatherstripping, storm windows and doors, and energy saving mechanical equipment (up to $50 in value) for dwellings of low-income persons. In general, the amount of this assistance per residence was limited to $400. In addition, the act established energy performance standards for new residential, commercial, and public buildings, authorized funds for State plans providing information on energy-conservation modifications for buildings and industrial plants, directed the Secretary of Housing and Urban Development to test financial incentives for conserving energy in existing dwellings, and authorized the FEA to guarantee loans for installations of energy conservation measures in existing buildings (including State and local governmental buildings and residential buildings containing more than two dwelling units) and industrial facilities.

C. House Bill—Residential Insulation Tax Credit Provisions

(Section 2011 of the Bill and Section 44C of the Code)

Nature, amount, and period of credit

A credit is allowed to individuals for 20 percent of the first $2,000 of qualified energy conservation expenditures (a maximum credit of $400) made in the tax year.

To qualify for the credit, installations of insulation and other energy-conserving components must be in or on an individual's (owner or renter) principal residence, and that residence must be located in the United States. The credit is available only for installations in or on residences the construction of which was substantially completed before April 20, 1977.

The maximum expenditure amount is to be reduced by earlier expenditures which were taken into account in computing a credit for an earlier tax year in the credit period. Therefore, the maximum credit may be taken only once for each succeeding principal residence of the taxpayer. However, an individual will be eligible for the maximum credit each time he changes his principal residence, regardless of expenditures he made for a prior principal residence, and regardless of expenditures made by prior residents of his present principal residence.

For any credit to be allowed, a minimum credit amount of $10 is required with respect to each return (joint or separate). This minimum credit amount is for the combination of insulation and other energy-conserving component expenditures and for all solar and wind energy expenditures made in the taxable year.

The credit is nonrefundable, i.e., it cannot exceed the individual's tax liability in the year for which the credit is claimed.

Qualifying property

Qualifying insulation is an item specifically and primarily designed to reduce, when installed in or on a dwelling or water heater, the heat loss or gain of the dwelling or water heater. A qualifying energy-conserving component is any item (other than insulation) which is:

(1) a furnace replacement burner designed to achieve a reduction in the amount of fuel consumed as a result of increased combustion efficiency;

(2) a device for modifying flue openings designed to increase the efficiency of operation of the heating system;

(3) an electrical or mechanical furnace ignition system which replaces a gas pilot light;

(4) a storm or thermal window or door for the exterior of the dwelling;

(5) a clock thermostat;

(6) caulking or weatherstripping of an exterior door or window; or

(7) an item of a kind which the Secretary of the Treasury specifies by regulations as increasing the energy efficiency of the dwelling.

In the case of both insulation and other energy-conserving components, the original use of the property must commence with the taxpayer. Both must also be reasonably expected to remain in operation for at least three years and to meet performance and quality standards prescribed by the Secretary of the Treasury after consultation with the Secretary of Energy, Secretary of Housing and Urban Development, and other appropriate Federal agencies. These standards are not to apply to property purchased prior to the promulgation of the standards.

The Secretary of the Treasury may issue regulations specifying property which qualifies as insulation or as an energy-conserving component.

Qualifying expenditures

To qualify for the credit, expenditures for insulation or other energy-conserving components must be "made" during the credit period. Under this provision, these expenditures are treated as "made" when the original installation of the insulation or other energy-conserving component is completed.

The entire cost of qualifying property is allowed toward the credit only if at least 80 percent of the property's use is for personal residential purposes. If less than 80 percent of the use of the property is for personal residential purposes, the amount of the expenditure which is allowable toward the credit is reduced proportionately. For purposes of this provision, use for a swimming pool is not treated as a personal residential purpose.

Under this provision, a dwelling is considered to be a taxpayer's principal residence during the 30-day period prior to the time it would otherwise be considered the taxpayer's principal dwelling. As a result, qualifying expenditures made by a taxpayer on a residence within 30 days of occupation of that residence as a principal residence will qualify for the credit.

Expenditures by joint occupants

Qualifying expenditures by individuals jointly occupying a dwelling as their principal residence are apportioned toward the credit among those individuals as if they were one taxpayer. As a result, a total of $2,000 of qualifying expenditures may be made for their residence, rather than $2,000 for each of the occupants. The amount of the credit allowed to each occupant is to be apportioned according to the same ratio as the amount of qualifying expenditures made by that occupant bears to the total amount of qualifying expenditures made by all the occupants.

Expenditures by cooperatives and condominiums

Cooperative housing association stockholders and condominium management association members (as well as owners and renters) will be eligible to claim the credit. The cooperative stockholder's allocable share of the qualifying expenditures is to be the same as his proportionate share of the cooperative's total outstanding stock. The condominimum management association's member's allocable share is to be the amount he is assessed by the association as a result of the insulation and other energy-conserving component expenditures.

Effect on tax basis of residence

In order to avoid a double tax benefit (the credit plus a reduced gain on a subsequent sale of the residence), the otherwise allowable increase in the tax basis of the residence because of qualifying expenditures is to be reduced by the amount of the credit allowed for these expenditures.

Effective date

These amendments apply to taxable years ending on or after April 20, 1977, for expenditures considered made on or after that date and before 1985.

Revenue effect

This provision is estimated to reduce receipts by $361 million for fiscal year 1978, $466 million for fiscal year 1979, and $541 million for fiscal year 1985.

Energy savings estimate

It is estimated that as a result of the tax credit provisions for residential insulation, the consumption of natural gas and oil will be reduced by the equivalent of from 245,000 to 295,000 barrels of oil per day in 1985.

D. Administration Position on Residential Insulation Tax Credit Provisions of House Bill

The Administration supports the residential insulation tax credit provisions of the House bill.

E. Nontax Residential Conservation Provisions—House (H.R. 8444) and Senate (S. 2057) bills

Utility program

Under the Utility program in the House bill, the occupants of existing residential buildings will be encouraged to install energy conservation measures in their homes. These measures include weatherstripping, installation of storm windows and doors, heating system improvements, insulation of ceilings, walls, floors and attics, devices to use solar and wind power, and other measures identified by the Administrator of the Federal Energy Administration.

The House bill directs the Administrator to issue rules on the content and implementation of residential energy conservation plans. Upon notification to the FEA Administrator by the Governor of any State, the State, department or agency receiving funds under the Energy Policy and Conservation Act may submit a proposed residential energy conservation plan to FEA for public utilities in that State. Otherwise, State utility regulatory agencies and nonregulated utilities will prepare energy conservation plans.

Under these plans, local gas and electric utilities will provide residential customers with information no later than January 1, 1980 on (1) energy conservation measures suitable for their climatic region and type of building, (2) the availability of an inspection by the utility to estimate the cost of purchasing and installing residential energy conservation measures and the resulting savings in energy costs likely to be obtained, (3) the availability of loans to purchase and install the measures, and (4) the availability of arrangements to install the conservation measures. Participation in the program by consumers is voluntary.

The State Governor, or his designee, may compile lists of suppliers, contractors, and lending institutions for residential energy conservation measures. If the State Governor fails to compile these lists, the FEA Administrator shall do so. The lists will be prepared in a fair, open, and nondiscriminatory manner. To the extent practicable, utilities will supply these lists to their customers. A public utility will be permitted to choose whether or not to finance the purchase and installation of residential energy conservation measures. A utility may be prohibited from financing if the FEA Administrator determines that utility financing has a substantial adverse effect upon competition or that utility loans are being made at unreasonable rates or on unreasonable terms and conditions.

Under the House bill, 2 years after the date of enactment, public utilities will be required to offer to have the suggested measures installed if the FEA Administrator determines that the supplying or installing would not have a substantial anticompetitive effect, a substantial increase in the number of customers likely to have the measures installed is likely to result, and excessive prices would not result. In making this determination, the Administrator must take into account a report the Federal Trade Commission is required to submit to the FEA within 18 months after enactment of this legislation. However, a utility which has supplied or installed any energy conservation measure prior to April 20, 1977, may continue to do so unless the determination is made that the supplying or installing would have a substantial anticompetitive effect. If certain findings are made, State

regulatory authorities can, in effect, prohibit utilities from installing suggested measures.

The FEA Administrator can order a utility to implement a residential energy conservation plan if he determines that the utility's plan is not being adequately implemented or if the utility does not have an approved plan. If a utility does not comply with this order, the FEA Administrator can seek an injunction to force the utility to comply. Any public utility which violates a requirement of the energy conservation plan or fails to comply with an order by the FEA Administrator may be subject to a civil penalty of not more than $25,000 for each violation.

To assist the FEA in carrying out this program, the House bill authorizes appropriations of $5 million for each of the first 3 fiscal years beginning after the date of enactment of this legislation.

The Administrator is required to undertake a study and submit recommendations, including legislative recomendations, to the President and Congress, no later than 18 months after enactment, respecting the application of energy conservation standards to existing residential buildings.

On September 13, 1977, the Senate passed a bill (S. 2057) that contains a utility program similar to that in the House bill. The Senate bill differs from the House bill in two major respects. Under the Senate bill, the program would extend to home heating fuel suppliers, as well as utilities (although no fuel supplier would be required to participate). After enactment, there could be no new utility program that included installation and financing of energy conservation measures by a utility itself.

Weatherization grant assistance for low-income families

The House bill establishes a new income eligibility level at 125 percent of the poverty level established by the Office of Management and Budget. It extends and makes uniform the definition of weatherization materials that may be purchased and installed for the purposes of weatherizing structures among the various regions of the Nation. Accordingly, it increases the maximum amount of weatherization materials that are eligible under present law from $400 to $800 per dwelling unit. Volunteer or CETA labor will be used for installing weatherization materials in the homes of families assisted through these programs. The Senate bill contains provisions for uniform standards in low-income weatherization programs, requiring the Secretary of Labor to assure that CETA workers are available for weatherization work, and also requiring the FEA to conduct a study of Federal weatherization efforts.

Under the House bill, the allowable grant may be increased to $1,500 to cover both the cost of materials and labor in the event that volunteer or CETA labor is not available in rural areas. The Senate Committee bill does not contain any comparable provisions.

The House bill increases the authorizations for the FEA low-income weatherization grant program from $65 million to $130 million for fiscal year 1978, from $80 million to $200 million for fiscal year 1979, and with an additional $200 million for fiscal year 1980. The Senate bill contains the same authorizations.

Financing of weatherization improvements

Under the House bill, to assist low- and moderate-income homeowners who are traditionally excluded from credit markets, a low-cost loan program has been created. This program, utilizing the facilities of the Government National Mortgage Association, would require the Government to purchase up to $2 billion (outstanding at any one time) worth of weatherization loans from lenders made to homeowners with incomes of less than 90 percent of median area income. The interest rate on the loans could be lowered by the Secretary of HUD from the applicable rate for FHA Title I insured loans to as low as the Treasury borrowing rate if he finds it necessary.

The House bill provides that the Federal Housing Administration would be permitted to coinsure loans made to any multifamily property owner for the purpose of weatherizing his property or the conversion from master meters to single meters. The terms of the loans would have to meet the requirements of the Secretary of HUD. Provisions are also included to assure that the benefits of improvements financed by an insured loan would primarily accrue to the tenants of the property.

To assure the general availability of credit for financing weatherization improvements, a standby secondary market in FHA Title I insured weatherization loans would be developed under the House bill. The Secretary of HUD, after finding that insufficient credit exists for weatherization loans, would require the Government National Mortgage Association to purchase such loans from traditional lenders. The GNMA could purchase up to $3 billion of such loans (outstanding at any one time) as approved in the appropriations act. This would be a market rate program.

The Senate bill contains similar financing provisions, but differs principally from the House bill in that its program is not limited to loans to low- and moderate-income families, but is limited to loans made in connection with certain utility conservation programs under the National Energy Act.

Miscellaneous

The House bill authorizes $10,000,000 for energy conservation improvements for low-income public housing projects. The Senate bill does not contain a similar authorization.

The House bill would authorize the Federal Home Loan Mortgage Corporation and the Federal National Mortgage Association to deal in insured and uninsured residential energy conservation and solar energy loans in their secondary market operations. The Senate bill would authorize them to deal in residential energy conservation loans, though not solar energy loans.

The House and Senate bills provide for a study to be undertaken by the Secretary of HUD in consultation with other appropriate agencies and organizations to determine the need for and feasibility of requiring, by mandatory Federal action, that all residential dwelling units meet applicable energy efficiency standards. This study, which would be submitted to Congress within 1 year of enactment, would also consider such lesser Federal requirements as mandatory disclosure of the energy efficiency of each existing residential structure upon its sale or transfer.

F. Senate Action in the 94th Congress

The Finance Committee bill provided a refundable income tax credit for 30 percent of the first $750 of insulation expenditures, for a maximum credit of $225. The credit was to be available for the cost of insulating all the taxpayer's residences, whether owned or rented. The residence was required to have been in existence on May 25, 1976. The credit was to be allowed for the period July 1, 1976, through December 31, 1978. The limitation on the amount of qualifying expenditures was to have been reduced by prior expenditures of any taxpayer on the same residence if the credit for those expenditures was allowed.

Qualifying insulation included regular insulation, clock thermostats, storm or thermal windows and doors, or similar items such as weatherstripping and caulking designed primarily to reduce heat loss or gain of a building. A useful life of at least 3 years was required and the materials and equipment had to meet certain performance standards prescribed by the Treasury Department (after consultation with the Federal Energy Administration and the Department of Housing and Urban Development). Used property did not qualify. The increase in basis for qualifying expenditures was to have been reduced by the amount of credit allowed.

Three amendments to this provision were made on the Senate floor. First, the credit was extended to retention head burners, or comparably efficient new burners, and to certain electronic or mechanical ignition devices. Second, the credit was extended to the insulation of furnaces, boilers, ducts, and steam or hot water pipes. Third, clock thermostats were deleted from the definition of the term "insulation."

G. Areas for Committee Consideration

The House bill and the history of the energy tax provisions in the 94th Congress indicate that the basic decisions to be made with regard to a tax incentive, if any, for insulating residences include the following:

(1) the amount of the credit;
(2) the period during which the credit would be available;
(3) whether the types of equipment and materials specified in the the House bill should qualify for the credit;
(4) whether any types of equipment and materials not specified in House bill should qualify for the credit;
(5) whether the credit should be confined to insulation of principal residences (owned and rented); and
(6) whether the credit should be refundable or nonrefundable.

III. SOLAR AND WIND ENERGY EQUIPMENT TAX CREDIT

A. Background

Solar energy equipment

Increases in the prices of fuels have led to the consideration of alternative energy sources. One source, solar energy, involves the transformation of sunlight into heat or electricity. Solar energy has been used to generate electricity for space satellites (photovoltaic cells), and a significant amount of research is under way to create efficient solar energy systems for residential use.

To heat a house with solar energy, a device installed on the roof (a "collector") absorbs sunlight and thereby creates hot air. The hot air is then circulated through a rock bed which holds the heat and, in effect, stores it. Thermostats inside the home activate a fan which circulates the hot air generated by the collector and/or hot air around the rocks. Residential solar energy systems usually include a heat exchanger which utilizes the hot air created by the collector to heat water. The hot water may then be used as the sole source of hot water or to warm water which is subsequently heated by a conventional gas or electric hot water heater. Alternatively, the collectors may have water tubing imbedded in them; the resulting hot water can then be used directly for water heating. Both systems usually have a conventional backup heating system to provide heat when the sunlight is insufficient or when it is extremely cold.

The feasibility of installing solar energy systems into new or existing homes is affected by a number of factors: the amount and intensity of sunlight available over the year, the heating needs of the particular area, and the relative cost of a solar system as compared to a conventional system. While the initial outlay is considerably higher, the operating cost of a solar system is very low as compared to conventional gas and electric heated systems. Presumably, a large increase in the use of residential solar heating systems should develop the market and gradually lower the price for these systems. Also, improved technology may make collectors more efficient in Btu's collected per dollar invested.

Most solar space heating and hot water systems installed in new homes in 1977 will cost $7,500 to $10,000. A solar hot water system installed in a new home will cost $1,600 to $2,000. These are national averages; actual costs vary by region. Retrofitting is at least 15 to 20 percent more expensive, not including the higher financing cost involved (home improvement rate compared to mortgage rate).

A recent National Bureau of Standards study[1] costed out a solar system for a 1,500-sq.-ft. (relatively small) house at $7,000. Such a

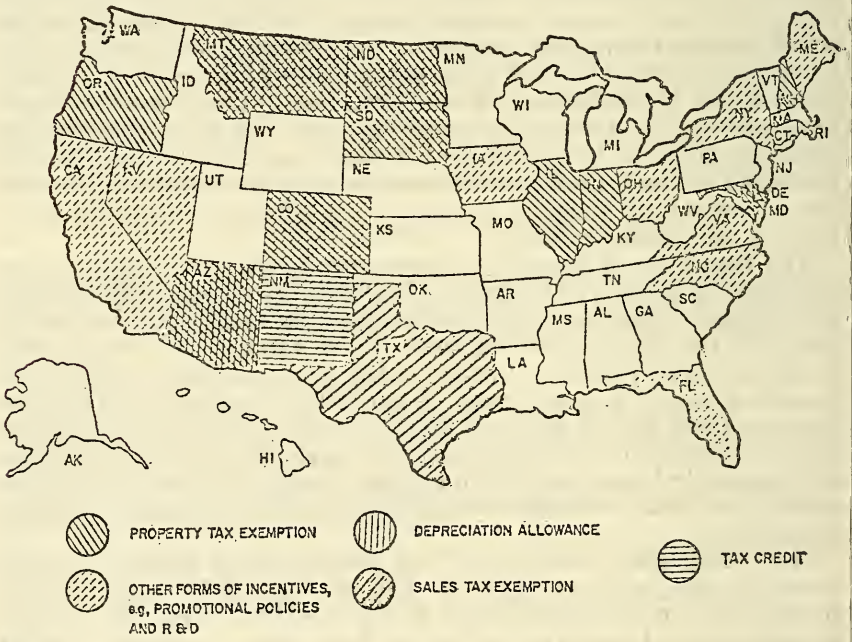
[1] Rosalie Ruegg, *Evaluating Incentives for Solar Heating* (National Bureau of Standards, September 1976, NBSR 76–1127).

system would provide 47 percent of the necessary heat for such a home in Wisconsin and 75 percent for a house in New Mexico. Because total heating requirements are larger in Wisconsin than in New Mexico, such a system would become more economical (at higher fuel prices) in Wisconsin than New Mexico. However, in both cases, a backup system is necessary to provide the balance of required heat (53 percent, in the case of Wisconsin, and 25 percent, in the case of New Mexico).

A number of States have provided incentives for the use of residential solar heating. New Mexico currently provides a tax credit of the lesser of $1,000 or 25 percent of the equipment cost of a solar system. At least seventeen States[2] allow a property tax exclusion of all or part of the value of a solar system for a period of time (from 5 years to the life of the system). Texas exempts from State sales tax the receipts from selling, leasing, or renting solar energy devices. Arizona allows a write-off of the value of a solar device in 5 years. Diagram 2 displays the various State incentives being provided as of 1976.

DIAGRAM 2.

STATE SOLAR LEGISLATION INCENTIVES



Heat pumps

Heat pumps were introduced on a pilot basis in 1932, but did not become commercially available until the mid-1960's. From the mid-1960's until 1973, an average of 380,000 units have been sold each year. Since 1973, sales of heat pumps have grown to an estimated 450,000

[2] Indiana, Arizona, Colorado, Illinois, Maryland, Delaware, Montana, New Hampshire, North Dakota, Oregon, South Dakota, Connecticut, Georgia, Hawaii, Massachusetts, Michigan, and Vermont.

units in 1977. This increase in demand for heat pumps reflects the curtailment of residential use of natural gas since 1973 and the higher price of heating oil.

Essentially, the heat pump extracts heat from the air outside a home and pumps the heat into the home. The heat pump is powered by electrical energy and uses a compressor which heats gasified freon which has already been subjected to and heated by the heat absorbed from the outside air. Substantial amounts of heat can still be extracted from the outside air even at very low temperatures; there is very little reduction in the heat in the outdoor air notwithstanding substantial reductions in temperature.

An air conditioner is a type of heat pump where the process described above is reversed, i.e., the heat from the inside of the house is pumped outside. Another form of heat pump is a refrigerator, where the heat from inside the refrigerator is absorbed and pumped out.

The term "heat pump" is, perhaps, misleading, in that it is used for heating purposes in the winter and, with a reversal of the process, as an air conditioner in the summer.

While the heat pump makes use of the heat in the outside or inside air, which is an essentially costless source of energy, it is powered by electricity. There is a substantial amount of inefficiency in the generation and transmission of electricity from the generating plant to the equipment, such as the heat pump, using the electricity.

The heat pump's efficiency in extracting heat from the outdoors depends on the outdoor temperature in comparison to the desired indoor temperature. When the disparity is quite large (e.g., 32° F. outdoors and 68° F. indoors), it is difficult to extract heat from the outdoors, and efficiency in terms of the number of Btu's used per Btu created decreases. At this point, standby electric resistance heating is usually used. When the disparity is more moderate (e.g., 50° F. outdoors and 68° F. indoors), the efficiency of a heat pump becomes much more favorable. Because of a heat pump's dual use as a central air conditioner and its superior efficiency in moderate climates, they have been primarily installed in the South and Southwest, where standby electric resistance heating is seldom needed.

ERDA recently evaluated [3] various types of electric and other [4] heat pumps and compared their average operating cost to conventional heating and cooling sources. The heating and cooling needs of a standard size home in Ohio were carefully measured over a substantial period of time, and the performance of various combinations of heating and cooling systems detailed. The climate for other locations was then simulated on a computer model of the house to evaluate the different heating and cooling needs. Capital and energy price data were then used to calculate the life-cycle annual cost in different locations of various heating-cooling systems for the house.

---

[3] ERDA, "Heat Pump Technology: A Survey of Technical Developments and Market Prospects" (July 1977), Cons/2127–d, draft.

[4] Two types of improvements to the basic technology are under development: improvements in the operating efficiency of the electrically driven pump in terms of the pump, valves and coils, and utilization of onsite sources of power to drive the pump in lieu of the electricity (from a central power station) to drive the heat pump. Examples of the latter include an onsite natural gas turbine with heat recovery modifications.

The results of the life-cycle cost analysis are displayed in table 1 and indicate that conventional [5] heat pumps (i.e., those now commercially available) are roughly competitive in terms of cost with all electric systems, and more expensive than natural gas and oil systems. As can be seen from table 9, the projected annual average heating and cooling costs vary dramatically by region; heat pump costs were: $977 in Houston, $674 in Seattle, and $1,764 in Concord, N.H. Only in Seattle, which has a very mild climate year-round was the heat pump more cost effective than the other three systems analyzed.

While natural gas is clearly the cheapest system to operate, curtailments and the elimination of new hookups in some parts of the country may preclude it from being a viable option. Another consideration which may make heat pumps more attractive involves a possible restructuring of the relative prices of energy. The analysis freezes current relative prices of natural gas, oil, electricity, etc., and inflates them at 8 percent per year. If oil and natural gas prices rise more rapidly than the price of electricity, electric heat pumps could become more attractive.

Heat pumps are rather sophisticated mechanical devices. The cooling coils and valves operate under significantly varying conditions of temperature and pressure, depending on whether they are in the heating or cooling cycle. Failure rates can be above those for conventional systems, especially if the installation is not within engineering tolerances. Three firms (General Electric, Westinghouse, and Carrier) currently produce 85 percent of all the residential electric heat pumps.

[5] Costs for advanced technology heat pumps (now in the developmental stage), earlier described, were above those for conventional units due to higher capital costs.

TABLE 9.—*Life cycle cost at annual rate of alternative heating and cooling systems for selected cities* [1]

System	Houston	Birmingham	Atlanta	Tulsa	Philadelphia	Seattle	Columbus	Cleveland	Concord
Electric heat pump—Standard [2]	$977	$1,158	$1,057	$1,216	$1,275	$674	$1,309	$1,561	$1,764
Gas hot air and electric central air (insulated ducts)	822	858	813	923	1,010	733	926	996	1,187
Oil hot air and electric central air (insulated ducts)	981	1,097	1,041	1,204	1,254	921	1,222	1,393	1,171
Central electric furnace with electric central air	867	1,141	1,003	1,214	1,334	647	1,380	1,732	1,909

[1] Assumes annual inflation rate in energy prices of 8 percent and inflation rate of maintenance of 6 percent.
[2] Standby electric resistance heating.

Source: ERDA, "Heat Pump Technology: A Survey of Technological Developments and Market Prospects" (July 1977) Cons/2127-d, draft, p. 226.

Wind energy

Energy extracted from the wind is initially in the form of mechanical motion. This motion can be used to pump fluids or can be converted to electricity, heat, or fuel.

Since the mid-19th century, several million small windmills of less than 1 horsepower each have been built and used primarily in the midwestern section of the United States. Most of those still in operation by the 1930's were displaced after the Rural Electrification Administration helped provide cooperative utilities for most rural communities. In recent years, interest in wind machines has revived, however, as a result of increased fuel prices.

The potential market, if any, for small wind machines is likely to be located in rural and suburban environments, in elevated and northern areas, in coastal locations, and on islands.

B. Present Law

No special Federal tax credit or deduction is presently allowed for expenditures for solar or other types of energy conserving or creating equipment for a taxpayer's residence. However, these capital expenditures are added to the taxpayer's basis in a residence which he owns and will decrease any gain on its sale or exchange.

Presently, the Federal Government is directly involved in the demonstration of solar technologies of selected solar installations through the Solar Heating and Cooling Demonstration Act (Public Law 93–409). Under this Act, selected projects are partially funded to demonstrate the technological and economic viability of solar heating and cooling technologies. Thus far (as of June 1, 1977), 326 projects, embracing 5,022 residential installations and 186 commercial demonstrations, have been announced, commenced, or completed.

C. House Bill—Residential Solar and Wind Energy Equipment Tax Credit Provisions

(Section 2011 of the Bill and Section 44C of the Code)

Nature, amount, and period of credit

A credit is allowed to individuals for qualified solar and wind energy expenditures.

The amount of qualified solar and wind energy expenditures for which the credit may be allowed is 30 percent of the first $1,500 of expenditures and 20 percent of the next $8,500 of expenditures (a maximum credit of $2,150).

To qualify for the credit, installations of solar and wind energy property must be in connection with an individual's (owner or renter) principal residence, and that residence must be located in the United States. The credit is available for both existing and newly constructed dwellings.

The maximum expenditure amount is to be reduced by earlier expenditures which were taken into account in computing a credit for an earlier tax year in the credit period. Therefore, the maximum credit may be taken only once for each succeeding principal residence of the taxpayer. However, an individual will be eligible for the maximum credit each time he changes his principal residence, regardless of expenditures he made for a prior principal residence, and regardless

of expenditures made by prior residents of his present principal residence.

For any credit to be allowed, a minimum credit amount of $10 is required with respect to each return (joint or separate). This minimum credit amount is for the combination of all solar and wind energy expenditures and for all insulation and other energy-conserving component expenditures made in the taxable year.

The credit is nonrefundable, i.e., it cannot exceed the individual's tax liability in the year for which the credit is claimed.

Qualifying property

Qualifying solar property is equipment which uses solar energy to heat or cool the dwelling or to provide hot water for use within the dwelling. Qualifying wind energy property is equipment which uses wind energy for personal residential purposes. Qualifying property does not include any swimming pool used as an energy storage medium, nor does it include any other energy storage medium which serves a dual purpose.

In the case of both solar and wind energy property, the original use of the property must commence with the taxpayer. Both solar and wind energy property must also be reasonably expected to remain in operation for at least five years and to meet performance and quality standards prescribed by the Secretary of the Treasury after consultation with the Secretary of Energy, the Secretary of Housing and Urban Development, and other appropriate Federal agencies. These standards will not apply to equipment purchased prior to the promulgation of the standards.

Qualifying expenditures

Qualifying expenditures include not only the cost of the solar or wind energy property itself, but also the costs of the onsite preparation, assembly, and installation of the property.

To qualify for the credit, solar and wind energy expenditures must be made within the credit period. These expenditures are generally treated as made when the original installation of the property is completed. However, in the case of solar and wind energy expenditures in connection with the construction or reconstruction of a dwelling, these expenditures are treated as made when the taxpayer commences original use of the dwelling as his principal residence.

The entire cost of a qualifying property is allowed toward the credit only if at least 80 percent of the property's use is for personal residential purposes. If less than 80 percent of the use of the property is for personal residential purposes, the amount of the expenditure which is allowable toward the credit is reduced proportionately. Use for a swimming pool is not treated as a personal residential purpose.

Under this provision, a dwelling is to be considered a taxpayer's principal residence during the 30-day period prior to the time it would otherwise start being considered the taxpayer's principal dwelling. As a result, qualifying expenditures made by a taxpayer on a residence within 30 days of occupation of that residence as a principal residence will qualify for the credit.

Expenditures by joint occupants

Qualifying expenditures by individuals jointly occupying a dwelling as their principal residence are apportioned toward the credit

among those individuals as if they were one taxpayer. As a result, a total of $10,000 of qualifying expenditures may be made for their residence, rather than $10,000 for each of the occupants. The amount of the credit allowed to each occupant is to be apportioned according to the same ratio as the amount of qualifying expenditures made by that occupant bears to the total amount of qualifying expenditures made by all the occupants.

Expenditures by cooperatives and condominiums

Cooperative housing association stockholders and condominium management association members (as well as owners and renters) will also be eligible to claim the credit. The cooperative stockholder's allocable share of the qualifying expenditures is to be the same as his proportionate share of the cooperative's total outstanding stock. The condominium management association's member's allocable share is to be the amount he is assessed by the association as a result of the solar and wind energy expenditures.

Effects on tax basis of residence

In order to avoid a double tax benefit (the credit plus a reduced gain on a subsequent sale of the residence), the otherwise allowable increase in the tax basis of the residence because of qualifying expenditures is to be reduced by the amount of the credit allowed for these expenditures.

Effective date

These provisions are to apply to taxable years ending on or after April 20, 1977, for expenditures considered made on or after that date and before 1985.

Revenue effect

These provisions are estimated to reduce receipts by $26 million for fiscal year 1978, $54 million for fiscal year 1979, and $169 million for fiscal year 1985.

Energy savings estimate

It is estimated that as a result of the provisions for residential solar and wind tax credits, the consumption of natural gas and oil will be reduced by the equivalent of from 25,000 to 35,000 barrels of oil per day in 1985.

D. Administration Position on Residential Solar and Wind Energy Equipment Tax Credit Provisions of House Bill

The Administration supports the residential solar and wind energy equipment tax credit provisions of the House bill.

E. Nontax Residential Solar and Wind Energy Provisions—House and Senate Bills

House bill

Devices to use solar energy or wind power for residential purposes are included as "residential energy conservation measures" within the Utility Program.

The National Housing Act would be amended to make clear that title I home improvement loans may include improvements designed to use

wind energy as well as solar energy. The otherwise applicable maximum insurable mortgage amounts under the National Housing Act would be increased by 20 percent to take account of the added cost of solar energy systems. A similar increase would be made with respect to the corresponding Farmers Home Administration rural housing program.

The Federal Home Loan Mortgage Corporation and the Federal National Mortgage Association would be authorized to deal in insured and uninsured residential solar energy loans in their secondary market operations.

Electrical utility rates would be required to track costs of services, and, thus, punitive rates for back-up electrical power for users of solar energy would be prohibited.

Senate bill

This bill (S. 2057) would establish a $100 million fund for making 4-percent loans for residential installation of solar energy systems. The loan program would be administered by HUD. No individual or family could be eligible for both a loan under this program and a tax credit for the same improvement. The Senate bill also establishes a HUD loan insurance program for energy conserving improvements and installation of solar energy systems and utility meters in multifamily housing.

F. Senate Action in the 94th Congress

The Finance Committee bill provided for a refundable tax credit to renters as well as owners for 40 percent of the first $1,000 of solar and geothermal energy equipment expenditures and 25 percent of the second $6,400, for a maximum credit of $2,000. Qualifying geothermal equipment was equipment which was necessary to distribute or use geothermal steam and associated geothermal resources (as defined in sec. 2(c) of the Geothermal Steam Act of 1970—30 U.S.C. 1001(c)).

It also provided this credit for 20 percent of the first $1,000 and 12½ percent of the next $6,400, for a maximum credit of $1,000, for qualifying heat pump expenditures. This credit was half the amount of the credit for solar or geothermal equipment expenditures. The credit was to be allowed for the cost and installation of the heat pump and the equipment necessary to permit a heat pump to function in a residence.

The credit was to be available for the period July 1, 1976, through December 31, 1980, for expenditures for the purchase and installation of qualifying equipment in or on all existing and newly constructed residences (rather than only for principal residences). However, the heat pump credit was to be available only for residences occupied or habitable on May 25, 1976. Use of the full allowable amount of credit for one residence would not have prevented a taxpayer from claiming the credit for equipment installed on a new residence.

The dollar limitations used in computing the credit for solar equipment were to include expenditures by the taxpayer for any residence for heat pumps and geothermal energy equipment. The credit for solar equipment (as opposed to heat pumps and geothermal energy equipment) was not to be allowed if its value was included in the valuation of the residence for property tax purposes.

Used equipment was not to qualify. The increase in basis for qualifying expenditures was to be reduced by the amount of the credit allowed.

The Tax Reform Bill, as passed by the Senate, provided a tax credit for wind-related energy equipment (such as a windmill) equal in amount to the credit it provided for solar and geothermal energy equipment; that is, 40 percent of the first $1,000 of qualified expenditures, plus 25 percent of the next $6,400, for a maximum credit of $2,000. The Tax Reform Bill, as originally reported by the Finance Committee, did not include a tax incentive for wind-related energy equipment. The wind-related credit provision was added to the Tax Reform Bill by the Senate Finance Committee in a floor amendment. Qualifying equipment for which the credit could have been claimed was equipment which uses wind-related energy to generate electricity to heat or cool a residence (or residences) or to provide hot water for use inside it. Otherwise, the same rules applicable to the solar energy equipment credit for residential installations were also to apply to the credit for wind-related energy equipment. However, the rule disallowing the solar equipment credit if its value was taken into account for property tax purposes was not applied to wind-related energy equipment.

The amount of expenditures which could be taken into account in determining the credit would be reduced by the aggregate of previous solar, geothermal, heat pump, or wind-related energy equipment expenditures by the taxpayer which had been allowed for a credit on account of installations on the same residence.

G. Other Proposals

(1) The insulation and solar credits would be consolidated into one cumulative credit equal to 25 percent of the first $10,000 of qualifying expenditures, for a maximum credit of $2,500. Alternatively, the credit would not be cumulative and would equal 25 percent of the first $2,000 of qualifying expenditures, with provision for carrybacks and carryforwards.

(2) The termination date would be December 31, 1990;

(3) Certain categories of property would be added to the list of qualifying property:

(a) property modifications made with the principal purpose of increasing the energy efficiency of the principal residence of the taxpayer;

(b) the allocable portion of the cost of property which, while not having the principal purpose of increasing energy efficiency, has some identifiable contribution to increasing energy efficiency;

(c) heat pumps;

(d) home electric and gas meters which show the dollar cost of energy consumed, in addition to the quantity of energy consumed;

(e) residential geothermal equipment;

(f) initial storage transmission systems;

(g) attic fans, glass fireplace screens, and fireplace jets;

(h) any other equipment which utilizes alternate substances as a fuel; and

(i) expenses incurred for the maintenance and repair of qualifying equipment.

H. Areas for Committee Consideration

The House bill and the history of the energy tax provisions in in the 94th Congress indicate that the basic decisions to be made with regard to a tax incentive for residential solar and wind energy equipment include the following:

(1) the amount of the credit;

(2) the period during which the credit is to be available;

(3) whether the types of equipment specified in the House bill should qualify for the credit;

(4) whether any types of equipment not specified in the House bill (such as heat pumps and geothermal energy equipment) should qualify for the credit;

(5) whether the credit should be confined to installations on principal residences (owned and rented); and

(6) whether the credit should be refundable or nonrefundable.

○