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APPLIANCE ENERGY EFFICIENCY IN NEW HOME CONSTRUCTION
Final Report

November 30, 1980

Work Performed Under Contract No. AC01-80CS23999

NAHB Research Foundation, Inc.
Rockville, Maryland

CONFIDENTIAL



U. S. DEPARTMENT OF ENERGY

Division of Buildings and Community Systems

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Final Report

Appliance Energy Efficiency
In
New Home Construction

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Submitted To

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Submitted By

NAHB Research Foundation, Inc.
P. O. Box 1627
Rockville, Maryland 20850

Dated

November 30, 1980

CR-7140

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ABSTRACT

A survey of 224 builders was conducted to which 160 builders responded. Each respondent completed between one and seven separate questionnaires. Each of the seven questionnaires were designed to collect information about one type of equipment or major appliance:

- Heat pump
- Heating system
- Air conditioner
- Domestic water heater
- Dish washer
- Range
- Refrigerator

Analysis of the resulting 406 questionnaires indicated that builders were primarily responsible for brand selection. These choices were made primarily without regard for the energy efficiency of the product. A similar apparent lack of consideration of energy efficiency during brand and model selection was found among home buyers and specialized subcontractors.

INTRODUCTION

The NAHB Research Foundation, Inc., conducts a variety of surveys annually of builders of single-family attached and detached homes and multifamily low-rise buildings. Included in these routine surveys are several questions regarding the major appliances; heating, ventilating and air conditioning (HVAC); and domestic water heating (DWH) equipment.

The Appliance Programs Office of the Department of Energy called upon the Research Foundation to conduct a study of the energy efficiency of these appliances and equipments being installed by builders of new homes. This work was performed under contract DE-AC01-80CS23999 between January and November 1980.

This was designed to draw upon data previously collected by routine Research Foundation surveys supplemented by additional information as needed. The objective of the study was to document the role played by the builder, home buyer and specialized subcontractor in the choice of brand and model of appliance and/or equipment installed in new homes. A second objective was to determine the relative priority of the energy efficiency of the appliance/equipment in the brand/model selection process. The final objective was to determine the extent to which builders could identify the energy efficiency rating value of the appliance or equipment installed in their newly constructed homes.

Approach

A review of existing data from the routine survey activity of the Research Foundation made it clear that a limited amount of additional information would be required.

The procedure developed was to select builders who had responded to the Foundation's mid-year (1979) survey of builder opinion and practices. The respondents chosen represented a random sample by region of the U.S. and by size of builder measured by number of homes completed.

A sample size was established at 225 which would represent approximately 25 builders from each of the nine regions. It was recognized that the actual sample size would vary approximately equal to the actual number of builders in each region who had responded to the mid-year survey.

The sample drawn for each region was further subdivided into categories of builder size as measured by the numbers of homes completed in a one year period. The size categories were set at 1-10 homes, 11-30 homes and 31 or more homes.

The final sample was distributed as shown in Appendix A. As may be seen, the total sample size was 224 builders. The sample size in each region ranged from 19 to 29. The total sample size in each size category was 100, 67 and 57 which corresponds to 44%, 30% and 25%, respectively. This distribution among the size categories is quite close to the 42%, 36% and 22% distribution for the 2,627 respondents to the mid-year survey.

Questionnaire

Considerable attention was devoted to the content and format of the questionnaire both to insure that the necessary information was gathered and to minimize the burden on the respondent.

Several problems had to be treated by the questionnaire that were peculiar to the home building industry:

- (1) The size of a home builder's business affects the organization, extent and completeness of records on the homes he builds.
- (2) Appliance model selection and installation may or may not be done by the builder (general contractor).
- (3) HVAC model selection is commonly done by a subcontractor rather than the builder.
- (4) The role of energy efficiency of appliances and HVAC equipment in model selection will vary widely from builder-to-builder.
- (5) Builders are busy people who characteristically do not like paper work, thus, requiring the questionnaire to be as brief and to the point as possible.

Considering these factors, a series of one-page questionnaires were developed. Each page represented questions on one appliance or HVAC equipment type. Samples of the questionnaire pages are included in Appendix A.

Each questionnaire page was personalized to the builder being asked to respond. This was accomplished by noting at the top of the page in the space provided:

- (1) Number
- (2) Brand
- (3) Description

of either the appliance or HVAC equipment he had already reported installing. This personalizing technique served to focus the respondent's attention on the specific item or items of interest. It also served to avoid asking the builder about items he did not utilize.

The final questionnaire packet for each builder in the sample was, therefore, somewhat different from all others. A given builder would receive a cover letter accompanied by from one to six questionnaire pages as appropriate. It should be noted that questionnaire for Air Conditioners was utilized for builders who installed Heat Pumps.

The following sections of this report address the interpretation of the results of the supplemental survey. The final section entitled, "Conclusions", summarizes the results of the activity.

BRAND AND MODEL SELECTION

The responses to questions dealing with brand and model selection responsibility were analyzed on 406 questionnaires submitted by 224 respondents. Presented in Table 1 are the summarized counts and relative frequencies of selection of brand and model by either the builder, the buyer or the subcontractor.

The relative frequency of brand selection and model selection for all products included in the survey are presented graphically in Figure 1. As may be seen, 70 percent of the brands of all products were selected by the builder while the subcontractor selected the product brand in 24 percent of the cases surveyed. This left brand selection to the home buyer in only 6 percent of the cases. The builder also selected 52 percent of the models offered by a given brand and subcontractors selected 37 percent of the models. In only 11 percent of the cases surveyed were the buyers responsible for model selection.

Breaking the sample down into product groupings reveals that this pattern of responsibility for brand and model selection varies.

The relative frequency of brand selection responsibility listed in Table 1 is shown graphically in Figure 2 by product. As may be seen, the builders surveyed are the primary decision makers for the brand of heat pump, dish washer, range and refrigerator. However, the subcontractor and builder share in the heating system brand selection in 43 percent and 57 percent, respectively, of the cases surveyed. Further, the subcontractor was found to be the primary decision maker for air

conditioners and water heaters in over half of the cases surveyed. The home buyer's role in brand selection is almost nonexistent in the category of HVAC and DWH equipment. In the dish washer and range product groups, the survey credited the buyer with less than 10 percent of the brand selections. It was only in the refrigerator product group that the home buyer played a substantial role in brand selection representing 32 percent of the cases surveyed.

The pattern of model selection responsibility is presented graphically in Figure 3 by product. As may be seen, the pattern of relative frequencies differs from the pattern for brand selection shown in Figure 2. The subcontractor was reported as the most frequent selector of model for HVAC and DWH equipment. The builder was reported as having the model selection responsibility for the dish washer and range appliances. Finally, the buyer was reported as the model selector in just over half (53%) of the responses for the refrigerator with the builder accounting for the rest of the refrigerator model choices.

In summary, the survey data indicates that the builder is most frequently responsible for brand selection for heat pumps and the dish washer, range and refrigerator appliances. The subcontractor was reported to be responsible for brand selection in the case of air conditioners and water heaters. In the case of the central heating system, the survey indicated the brand selection is about equally split between the builder and the subcontractor. The role of the builder diminishes in the selection of the model within the brand for the HVAC and DWH equipment and is taken over by the subcontractor. The model of dish washer and range is also selected by the builder but the home buyer selects over half of the refrigerator models.

Table 1
 BRAND and MODEL Selection Responsibility

<u>Product</u>		<u>BRAND</u>			<u>MODEL</u>		
		<u>Builder</u>	<u>Buyer</u>	<u>Subcontractor</u>	<u>Builder</u>	<u>Buyer</u>	<u>Subcontractor</u>
Heat Pump	#	48	4	7	18	4	37
	%	81	7	12	30	7	63
Heating System	#	34	0	26	16	0	44
	%	57	0	43	27	0	73
Air Conditioner	#	17	0	22	10	2	27
	%	44	0	56	26	5	69
Water Heater	#	17	0	40	12	3	42
	%	30	0	70	21	5	74
Dish Washer	#	74	6	1	71	10	0
	%	91	7	1	88	12	0
Range	#	78	4	0	72	10	0
	%	95	5	0	88	12	0
Refrigerator	#	19	9	0	13	15	0
	%	68	32	0	47	53	0
Totals	#	287	23	96	212	44	150
	%	70	6	24	52	11	37

Figure 1

BRAND and MODEL Selection Responsibility for All Products

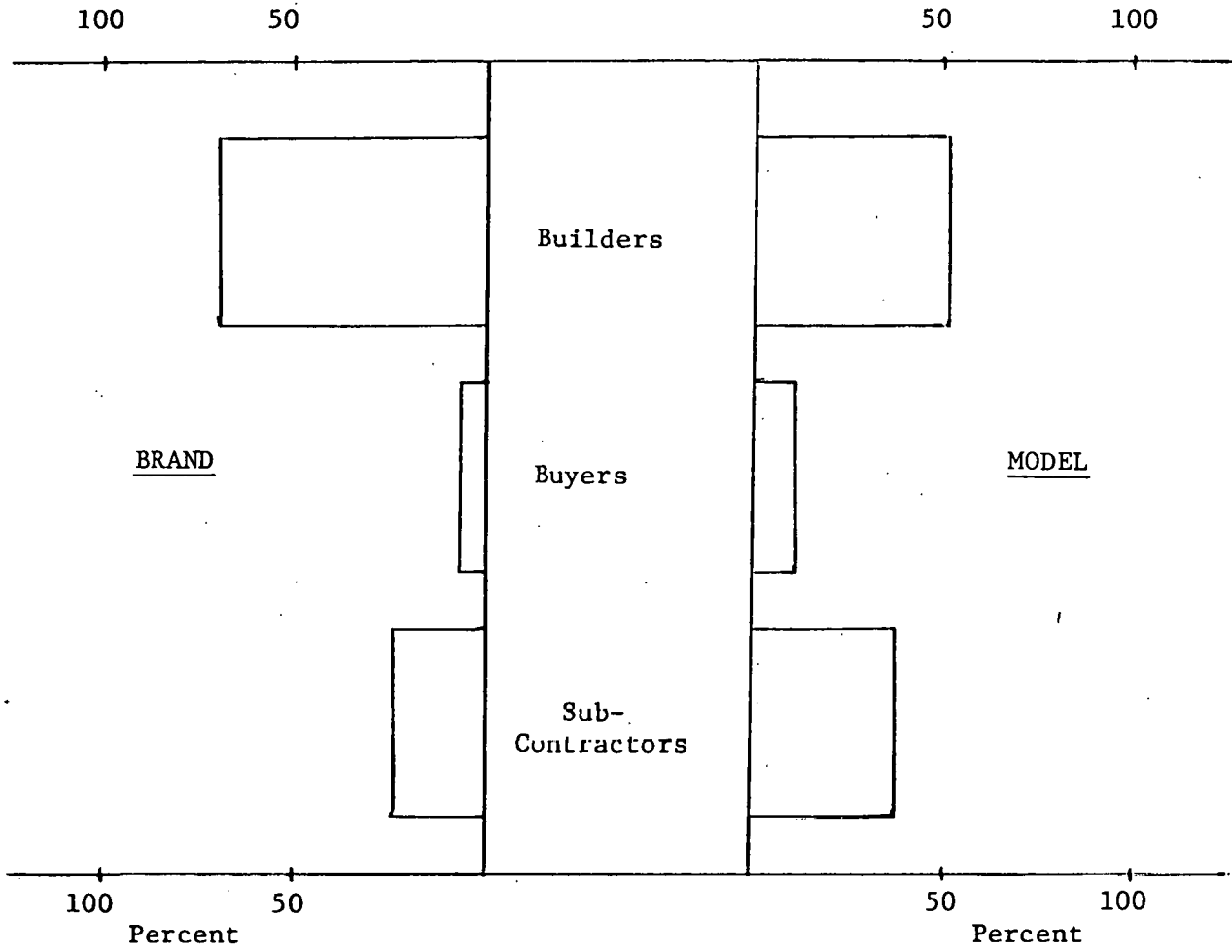


Figure 2
 BRAND Selection Responsibility by Product

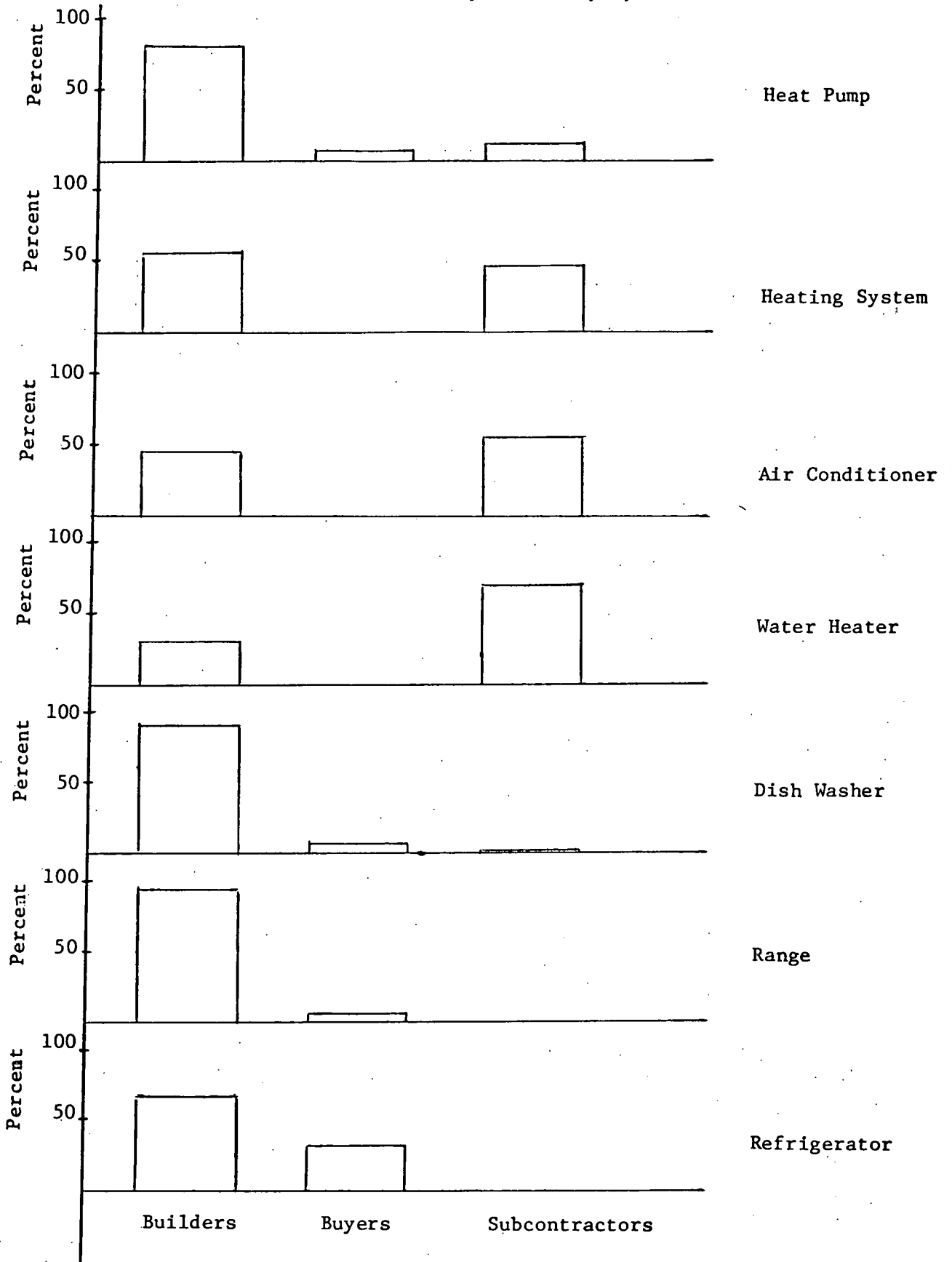
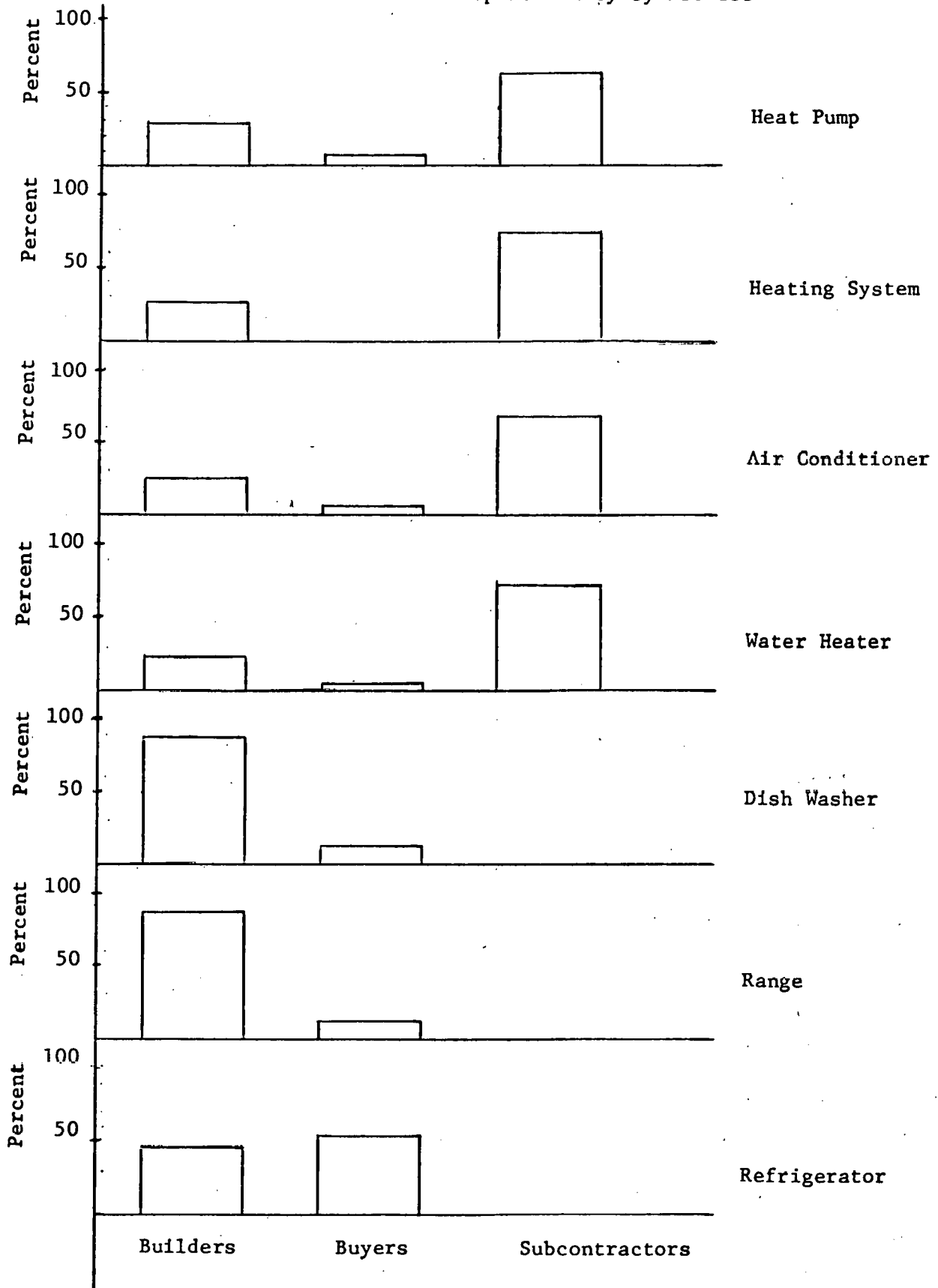


Figure 3
MODEL Selection Responsibility by Product



SIZING HVAC AND DWH EQUIPMENT

The questionnaires for heat pumps, air conditioners, heating system and domestic water heaters included a question about the responsibility for estimating the size or capacity of the equipment installed. A summary of the 215 responses is presented in Table 2. As may be seen,

Table 2
HVAC and DWH Sizing Responsibility

<u>Category</u>	<u>Number</u>	<u>Percent</u>
Sized by builder	41	19
Sized by subcontractor	172	80
Not sized	2	1
Total	215	100

99 percent of all HVAC and DWH equipment were reported in the survey to have been subjected to some form of analysis regarding necessary capacity prior to installation. It is interesting to note that 80 percent of these calculations were performed by subcontractors who specialize in HVAC or DWH rather than the builder. Only 20 percent of these calculations were performed by the builder.

These results are comparable to the analyses related to brand and model selection where it was observed that builders are responsible for brand selection in HVAC and DWH equipment but the subcontractor carries primary responsibility for model selection within brand. The implication is that the subcontractor is directed by the builder to

install a specific brand, however, the sizing calculations by the subcontractor lead to the model choice.

ROLE OF ENERGY EFFICIENCY IN BRAND/MODEL
SELECTION

It was possible to combine responses to the questions regarding brand and model selection with responses to the questions regarding the role of energy efficiency in the choice. The results of this comparison are shown in Table 3. As may be seen, about 60 percent of all such brand/model choices are made without consideration for the energy efficiency of the appliance or HVAC equipment. Of the remaining 40 percent, about three quarters give secondary consideration to energy efficiency and the remaining quarter rate energy efficiency as a primary consideration.

Table 3

Energy Efficiency As A Factor in Brand/Model
Choice

<u>Selection Made By:</u>	<u>BRAND</u>						<u>MODEL</u>					
	<u>Not Considered</u>		<u>Secondary</u>		<u>Primary</u>		<u>Not Considered</u>		<u>Secondary</u>		<u>Primary</u>	
	<u>#</u>	<u>%</u>	<u>#</u>	<u>%</u>	<u>#</u>	<u>%</u>	<u>#</u>	<u>%</u>	<u>#</u>	<u>%</u>	<u>#</u>	<u>%</u>
Builder	160	61	72	27	29	11	125	61	57	28	24	11
Buyer	4	40	5	50	1	10	14	56	9	36	2	8
Subcontractor	24	51	14	30	9	19	34	41	32	38	17	21
Total	188	59	91	29	39	12	173	55	98	31	43	14

Although these results appear consistent among builders, buyers and subcontractors, a Chi-squared test of the percentage distributions reveals a significant difference does exist at the 95 percent level of confidence. In the case of brand selection, the buyers differ significantly from the distribution of the totals. In the case of model selection, the subcontractors differ significantly from the distribution of the totals. Unfortunately, these significant differences should only be indicative of the need for further study rather than the basis for a firm conclusion. This caution is based on the fact that the questionnaires in the survey were answered by "builders" who could only use their best judgment about the priorities assigned to energy efficiency by their buyers and subcontractors.

ENERGY EFFICIENCY AWARENESS

Three questions were asked of the builders to determine the extent to which the builders' records could aid in defining the energy efficiency of equipment and appliances. The first question asked if the respondent could identify the "category" into which a given item of HVAC, DWH or appliance equipment fell. The second question asked for a specific numeric value for the product that was the energy efficiency rating. The final question simply asked the respondent to specify the product model number and other particular identifying information which could be used to establish the energy efficiency value.

Of the 406 responses, only 14 specific energy efficiency rating values were specified. Half of these were given for heat pumps. The rest were given for air conditioners, heating systems and one refrigerator.

The responses to the question regarding the category of energy efficiency was successfully completed only 22 times.

The most successful response was received for the question regarding the model number. A total of 144 or 35 percent of the responses could specify the model number or name of the equipment or the appliance.

CONCLUSIONS

The results of the survey indicate that the builder is the party primarily responsible for the brand of HVAC/DWH equipment but the specialized subcontractor carries primary responsibility for the model of the equipment. In the case of the three major appliances considered by the survey, the builder is the primary party responsible for both brand selection and model selection. The home buyer, however, was reported to influence the model selection in the case of refrigerators.

The survey data indicated that the subcontractor was primarily responsible for calculating the required size of HVAC and DWH equipment. These results are compatible with the brand/model choice data wherein it was noted that the subcontractor has prime responsibility for model selection within a given brand.

The data collected in the survey indicates that in about 60 percent of the brand/model choices made by either the builder, buyer or subcontractor, the energy efficiency of the major appliance and the HVAC/DWH equipment is not considered. Limited statistical evidence exists that the priority of energy efficiency in brand/model choice is not uniform among the three parties.

Three questions on the questionnaire for each appliance or equipment were focused on determining if the builder knew either the specific energy efficiency rating value or the model number of

the item. Only 3 percent of the responses could provide a specific energy efficiency rating value. Five percent could identify the range into which the energy efficiency might fall. However, 35 percent of the responses provided the model number or name of the item installed.

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Appendix A

QUESTIONNAIRES AND SAMPLE DISTRIBUTION

SURVEY SAMPLE DISTRIBUTION
(Number of Builders)

<u>Region</u>	<u>Builder Size Category</u>			<u>Total</u>
	<u>1-10</u>	<u>11-30</u>	<u>31 or More</u>	
New England	11	8	0	19
Mid-Atlantic	15	6	5	26
East North Central	15	3	11	29
West North Central	10	6	11	27
South Atlantic	6	12	6	24
East South Central	9	10	0	19
West South Central	11	8	5	24
Mountain	11	8	9	28
Pacific	<u>12</u>	<u>6</u>	<u>10</u>	<u>28</u>
TOTAL	100	67	57	224

(Excludes: Alaska, Hawaii, District of Columbia)

NAHB RESEARCH FOUNDATION, INC.

A Wholly Owned Subsidiary of the National Association of Home Builders

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627 SOUTHLAWN LANE

MAILING ADDRESS
P.O. BOX 1627
ROCKVILLE, MARYLAND 20850
(301) 762-4200

Dear Home Builder:

The NAHB Research Foundation is beginning a study of the energy efficiency of the major appliances and HVAC equipment installed in new homes. Your name has been selected to help us figure out the best way to accomplish our goal without burdening builders with too many questions.

We have used your response to the 1979 Annual Builder Opinion and Practice Survey to tailor the enclosed question sheets to you. Each sheet is for a different appliance or equipment.

The answers you provide will be very important in helping us decide how to proceed. Please take the time to fill out the questionnaire and return it to us in the enclosed, postage-paid envelope. We need your response by February 22, 1980.

Keep in mind that responding to this survey is voluntary. If you choose not to answer the questions, please return the questionnaire in the enclosed envelope. A note saying why you did not respond would be very useful to us.

Give me a call if you have any questions.

Sincerely,



Robert C. Stroh
Director
Special Studies

RCS/tee
Enclosure

DISH WASHERS

Your response to the 1979 Annual Builder Opinion and Practice Survey indicated that:

were installed in the homes you built during the 12 months ending June 30, 1979.

1. Who normally selected the Brand of dish washer installed?
 - I did
 - Home buyer
 - Subcontractor

2. Who normally selected the Model of dish washer installed?
 - I did
 - Home buyer
 - Subcontractor

3. Did the Energy Efficiency Rating (EER) normally play a role in the selection of the Brand of dish washer installed?
 - Not considered
 - Secondary consideration
 - Primary consideration
 - I don't know

4. Did the Energy Efficiency Rating (EER) normally play a role in the selection of the Model of dish washer installed?
 - Not considered
 - Secondary consideration
 - Primary consideration
 - I don't know

5. What was the lowest Energy Efficient Rating (EER) of all dish washers installed?
 - _____ EER
 - I don't know

6. Of the dish washers installed, how many fell in each of the EER categories shown?
 - _____ < 5.0
 - _____ 5.0 to 7.5
 - _____ > 7.5
 - Information not available

7. If possible, list the Model Numbers of the dish washers and how many of each model that were installed in the homes you built during the 12 months ending June 30, 1979.

<u>How Many</u>	<u>Model Number</u>
_____	_____
_____	_____
_____	_____
_____	_____

 - Information not available

CENTRAL AIR CONDITIONERS

Your response to the 1979 Annual Builder Opinion and Practice Survey indicated that:

were installed in the homes you built during the 12 months ending June 30, 1979.

1. Who normally selected the Brand of central air conditioner installed?
 - I did
 - Home buyer
 - Subcontractor

2. Who estimated the required capacity of the central air conditioner?
 - I did
 - Subcontractor
 - No one did
 - I don't know

3. Who normally selected the Model of the central air conditioner installed?
 - I did
 - Home buyer
 - Subcontractor

4. Did the Seasonal Energy Efficiency Ratio (SEER) normally play a role in the selection of the Brand of central air conditioner?
 - Not considered
 - Secondary consideration
 - Primary consideration
 - I don't know

5. Did the Seasonal Energy Efficiency Ratio (SEER) normally play a role in the selection of the Model of central air conditioner?
 - Not considered
 - Secondary consideration
 - Primary consideration
 - I don't know

6. What was the lowest Seasonal Energy Efficiency Ratio (SEER) of all central air conditioners installed?
 - _____ SEER
 - I don't know

7. Of the central air conditioners installed, how many fell in each of the SEER categories shown?
 - _____ < 6.0
 - _____ 6.0 to 9.0
 - _____ > 9.0
 - Information not available

8. If possible, list the Model Numbers of the central air conditioners and how many of each model were installed in the homes you built in the 12 months ending June 30, 1979.

How Many	Model Number	Gas	Elec.
_____	_____	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	<input type="checkbox"/>	<input type="checkbox"/>

 - Information not available

CENTRAL HEATING SYSTEMS

Your response to the 1979 Annual Builder Opinion and Practice Survey indicated that:

were installed in the homes you built during the 12 months ending June 30, 1979.

1. Who normally selected the Brand of central heating system installed?
 - I did
 - Home buyer
 - Subcontractor

2. Who normally estimated the required capacity of the central heating system?
 - I did
 - Subcontractor
 - No one did
 - I don't know

3. Who normally selected the Model of the central heating system installed?
 - I did
 - Home buyer
 - Subcontractor

4. Did the Annual Fuel Utilization Efficiency (AFUE) normally play a role in the selection of the Brand of central heating system?
 - Not considered
 - Secondary consideration
 - Primary consideration
 - I don't know

5. Did the Annual Fuel Utilization Efficiency (AFUE) normally play a role in the selection of the Model of central heating system?
 - Not considered
 - Secondary consideration
 - Primary consideration
 - I don't know

6. What was the lowest Annual Fuel Utilization Efficiency (AFUE) of all central heating systems installed?
 - _____ AFUE
 - I don't know

7. Of the central heating systems installed, how many fell in each of the AFUE categories shown?
 - _____ < 60
 - _____ 60 to 75
 - _____ > 75
 - Information not available

8. If possible, list the Model Numbers of the central heating systems and how many of each model were installed in the homes you built in the 12 months ending June 30, 1979.

How Many	Model Number	Check Fuel Type		
		Elec.	Gas	Oil
_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

 - Information not available

RANGES

Your response to the 1979 Annual Builder Opinion and Practice Survey indicated that:

were installed in the homes you built during the 12 months ending June 30, 1979.

1. Who normally selected the Brand of range installed?
 - I did
 - Home buyer
 - Subcontractor

2. Who normally selected the Model of range installed?
 - I did
 - Home buyer
 - Subcontractor

3. Did the Energy Factor (EF) normally play a role in the selection of the Brand of stove/range installed?
 - Not considered
 - Secondary consideration
 - Primary consideration
 - I don't know

4. Did the Energy Factor (EF) normally play a role in the selection of the Model of stove/range installed?
 - Not considered
 - Secondary consideration
 - Primary consideration
 - I don't know

5. What was the lowest Energy Factor (EF) of all stoves/ranges installed?
 - _____ EF
 - I don't know

6. Of the stoves/ranges installed, how many fell in each of the EF categories shown?
 - _____ < 30
 - _____ 30 to 70
 - _____ > 70
 - Information not available

7. If possible, list the Model Numbers of the stoves/ranges and how many of each model that were installed in the homes you built during the 12 months ending June 30, 1979.

How Many	Model Number	<u>Gas</u>	<u>Elec.</u>
_____	_____	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	<input type="checkbox"/>	<input type="checkbox"/>

 - Information not available

REFRIGERATORS

Your response to the 1979 Annual Builder Opinion and Practice Survey indicated that:

were installed in the homes you built during the 12 months ending June 30, 1979.

1. Who normally selected the Brand of refrigerator installed?
 - I did
 - Home buyer
 - Subcontractor

2. Who normally selected the Model of refrigerator installed?
 - I did
 - Home buyer
 - Subcontractor

3. Did the Energy Factor (EF) normally play a role in the selection of the Brand of refrigerator installed?
 - Not considered
 - Secondary consideration
 - Primary consideration
 - I don't know

4. Did the Energy Factor (EF) normally play a role in the selection of the Model of refrigerator installed?
 - Not considered
 - Secondary consideration
 - Primary consideration
 - I don't know

5. What was the lowest Energy Factor (EF) of all refrigerators installed?
 - _____ EF
 - I don't know

6. Of the refrigerators installed, how many fell in each of the EF categories shown?
 - _____ < 4.0
 - _____ 4.0 to 8.0
 - _____ > 8.0
 - Information not available

7. If possible, list the Model Numbers of the refrigerators and how many of each model that were installed in the homes you built during the 12 months ending June 30, 1979.

How Many	Model Number	Cu.Ft. Capacity
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

 - Information not available

WATER HEATING SYSTEMS

Your response to the 1979 Annual Builder Opinion and Practice Survey indicated that:

were installed in the homes you built during the 12 months ending June 30, 1979.

1. Who normally selected the Brand of water heaters installed?
 - I did
 - Home buyer
 - Subcontractor

2. Who normally estimated the required capacity of the water heaters?
 - I did
 - Subcontractor
 - No one did
 - I don't know

3. Who normally selected the Model of the water heater installed?
 - I did
 - Home buyer
 - Subcontractor

4. Did the Energy Factor (EF) normally play a role in the selection of the Brand of water heater?
 - Not considered
 - Secondary consideration
 - Primary consideration
 - I don't know

5. Did the Energy Factor (EF) normally play a role in the selection of the Model of water heater?
 - Not considered
 - Secondary consideration
 - Primary consideration
 - I don't know

6. What was the lowest Energy Factor (EF) of all water heaters installed?
 - _____ EF
 - I don't know

7. Of the water heaters installed, how many fell in each of the EF categories shown?
 - _____ < 0.50
 - _____ 0.50 to 0.85
 - _____ > 0.85
 - Information not available

8. If possible, list the Model Numbers of the water heaters and how many of each model were installed in the homes you built in the 12 months ending June 30, 1979.

How Many	Model Number	Capacity (Gal.)	Gas	Oil	Elec.
_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

 - Information not available