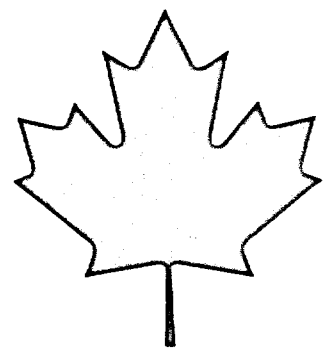

Market Studies of United States

HC-22

An Analysis of Market Opportunities
for Selected Canadian Residential
Heating Equipment in the Northeast U.S.A.



43.262-051

DEPARTMENT OF
EXTERNAL AFFAIRS

UNITED STATES TRADE AND
INVESTMENT DEVELOPMENT
BUREAU

"An Analysis of Market
Opportunities for
Selected Canadian
Residential Heating
Equipment in the
Northeast
United States"

Dept. of External Affairs
Min. des Affaires extérieures

MAR 9 1997

RETURN TO DEPARTMENTAL LIBRARY
RETOURNER A LA BIBLIOTHEQUE DU MINISTERE

HAYES/HILL INCORPORATED

220 EAST 42ND STREET, NEW YORK, NEW YORK 10017-212-573-8750
TELEX 233468

TABLE OF CONTENTS

	<u>Page</u>
EXECUTIVE SUMMARY	i
I. INTRODUCTION	1
A. Objectives	1
B. Project Scope	2
C. Project Approach and Conduct	3
II. THE U.S. RESIDENTIAL HEATING MARKET	7
A. Industry Overview	7
B. Demand Determinants	9
C. U.S. Housing Characteristics	16
D. Residential Heating Equipment	18
E. Home Heating Fuel	20
III. THE NORTHEAST RESIDENTIAL HEATING MARKET	25
A. Regional Summary	25
B. Connecticut	32
C. Maine	33
D. Massachusetts	34
E. New Hampshire	35
F. New Jersey	36
G. New York	37
H. Ohio	38
I. Pennsylvania	39
J. Rhode Island	40
K. Vermont	41
IV. CHANNELS OF DISTRIBUTION	45
A. Overview of Distribution in the U.S. Residential Heating Industry	45
B. Major Types of Participants	47
C. Distribution in the HVAC Industry	53
D. Distribution in the Solid Fuel Appliance Industry	64

TABLE OF CONTENTS. . .

	<u>Page</u>
V. MARKETING SUPPORT REQUIREMENTS	72
A. Product Testing and Approval	72
B. Sales Support Practices	79
C. Promotion	82
D. Pricing and Terms	89
E. Tariffs and Customs	92
F. Transportation and Delivery	97
VI. PRODUCT PROFILES	101
A. Water Heaters (gas, electric)	102
B. Furnaces (oil, gas, electric)	107
C. Boilers (oil, gas)	111
D. Gas Burners	115
E. Wood/Coal Furnaces and Boilers	119
F. Air-to-Air Heat Exchangers	122
G. Prefabricated Chimneys and Liners	125
H. Zero Clearance Fireplaces	127
VII. MARKET PENETRATION	130
A. Receptivity to Canadian Products	130
B. Key Requirements for Participation	132
C. Market Opportunity Attractiveness For Products	134
APPENDIX	

EXECUTIVE SUMMARY

This summary reviews the market opportunities for Canadian manufactured heating equipment in the Northeastern United States. The work summarized here was performed by Hayes/Hill, Inc. for the USA Trade and Investment Bureau of the Department of External Affairs of the Canadian Government. The results are described in full in the main body of the report.

The study covers the ten states Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, and Vermont, and includes residential water heaters, furnaces, boilers, gas conversion burners, wood and coal furnaces and boilers, air-to-air heat exchangers, pre-fabricated chimneys and liners, and zero clearance fireplaces. The main report describes the factors that drive the U.S. market for residential heating equipment, the special characteristics of the Northeastern U.S. market, the distribution channels used for heating equipment, the support required of manufacturers by those channels, and the specifics of the markets for each of the products. It also summarizes the opportunity open to Canadian manufacturers and reviews the most important participation or entry requirements.

Overall, the results of the study are very encouraging for Canadian manufacturers. The U.S. market

perceives Canadian manufactured heating equipment to be the equal of or superior to U.S. manufactured equipment. Frequent positive comments about Canadian product's quality were heard in the course of the work. Certain Canadian products, (air-to-air heat exchangers and chimney liners, for example), are already present in U.S. markets. Canadian solid fuel products were found to be well known in the market; in other sectors very few participants knew of or carried Canadian products.

The general good reception accorded Canadian products means that the most important factors influencing success for Canadian firms entering U.S. markets will be the strength of the particular U.S. market segment, Canadian manufacturer's ability to establish distribution, and Canadian manufacturer's willingness to support their products in ways that are familiar to U.S. distribution and dealer/contractors. The remainder of this summary reviews the findings in these areas.

Markets

Heating equipment markets in the U.S. are influenced by the mix of new construction and replacement sales, by climate, by fuel sources available, and by the level of the general economy.

1. Across the U.S., 35-45% of heating equipment sales are to new construction, and 55-65% are to

replacement markets. In the Northeast, replacement sales have a larger share because there is less new construction. Replacement sales are more stable than new construction sales, and are more predictable because they are influenced by existing heating equipment. Details of in-place heating equipment appear in sections II and III of the main report.

2. The climate of the Northeast United States makes it primarily a market for heating equipment. Mild summers and lower levels of new construction since central air conditioning became very popular have lessened the importance of air conditioning. This, in turn, allows hydronic heating systems to be more popular than elsewhere in the U.S. Central warm-air furnaces also exist. Lower incidence of central air conditioning is important to Canadian manufacturers because it reduces the need to offer an integrated (heating and air conditioning) product line.
3. Fuel oil is the traditional heating fuel in the Northeast U.S., with gas second. Electricity is a distant third. Wood and coal are used in Maine, New Hampshire and Vermont, but less elsewhere. Dislocations in the price of fuel oil and low availability of gas have led to some replacement sales to change fuel source in the past ten years. Markets are expected to be more stable in the future.

All of the products included in this study have markets in the Northeast U.S. Manufacturers can use the detail of equipment and fuel characteristics in sections II and III, and the estimates of equipment sales in section VI to understand demand more precisely. In general, products that have replacement demand (furnaces, boilers, and water-heaters), have sizeable and attractive markets in the Northeast. Add-on equipment (chimneys, and perhaps zero-clearance fireplaces) has smaller, but active markets. Those that rely on fuel conversion (gas burners) require new

construction (zero-clearance fireplaces and perhaps air-to-air heat exchangers ¹), or depend upon less-used fuels (wood and coal equipment), also may find smaller markets.

Distribution

The usual channels for distribution of heating equipment in the U.S. are two or three steps, involving a distributor, a dealer/contractor, and sometimes a manufacturer's representative. HVAC equipment, plumbing equipment, and solid fuel appliances go through three different systems, but the structure and characteristics of each of these channels is similar.

The larger U.S. heating equipment manufacturers have very strong relationships (including at times factory ownership) with their distributors. Smaller manufacturers, of size similar to most Canadian firms, usually sell through independent distributors. Manufacturers representatives are often used to bridge the gap between manufacturers and distributors. Detailed descriptions of the functions different participants perform, and lists of distributors, manufacturer's representatives, builders, and hardware merchandisers appear in the main report section IV and in the appendix.

¹ The add-on market for air-to-air heat exchangers is in an early stage. If it develops strongly, heat exchangers will rely less on new construction.

1. Distributors are the most important link in the distribution channel. End customers rely on dealer/contractors for purchase advice; dealer/contractors rely on distributors. Products that distributors support sell, products that they don't support don't sell. A good sales force or a good manufacturer's rep who can support a distributor is important.
2. Manufacturer's representatives can be a very important link for Canadian manufacturers. They replace, at reasonable cost, a field sales force, and they have valuable knowledge of local market conditions and customs. Manufacturer's representatives were found to be very receptive to Canadian manufactured heating equipment.
3. Other participants in the heating equipment market, such as dealer/contractors, builders, homeowners, and retail outlets are of secondary importance to manufacturers. Contact with them is usually limited, and usually involves either distributors or manufacturer's reps.
4. It is difficult for distributors to exercise control in their markets. There are many competing products available, and most offer similar features. Consequently, competition often reduces to price competition.
5. The similarity of most equipment available in the market means that distributors are very interested in any products that have different or unique features. Manufacturers able to offer such features should use them to build stronger distributor ties.

Product and Market Support

Product and market support includes all of the aspects of product qualification, sales support, customs clearance and transportation, product promotion, and pricing that go into making products available and attractive in U.S. markets. Field interviews with distributors and manufacturers representatives were unequivocal in reporting that the key to success is to conform to practices familiar

to U.S. customers in pricing, terms, sales promotion, and the like, and to arrange the details of transportation and customs clearance so that U.S. customers are insulated from anything that might be unfamiliar.

These are generally simple requirements for Canadian manufacturers because the operation of Canadian markets is roughly similar to that of U.S. markets. Reports about Canadian products heard during the field research suggest that pricing, terms, customer relations, and the like offered by Canadians (when respondents were familiar with Canadian products) were usually in keeping with U.S. expectations. The following is a brief summary of important reminders; complete discussion is in the main report section V.

1. Product Testing and Certification. Product labeling stating country of manufacture and certain efficiency information is the only legal requirement for heating products sold in the U.S. Products obtain efficiency ratings by being tested to standards set by industry groups; testing is generally performed by independent laboratories. Most products are also subject to safety testing and certification. This is generally not a legal requirement, but products without certification do not sell well, and most reputable distributors will not handle them. There are also installation and building codes in states and localities in the U.S. that may affect the marketability of heating products of unusual or unapproved design. Details of product approval and testing requirements and practices appear in the main report.
2. Sales Support includes all aspects of customer (distributor and manufacturer's representative, usually) relations. Most customers expect long-term relationships, and look for indications, (such as agreements, contracts, exclusive or partially exclusive territories), that manufacturers are making a commitment to them. Customers

require some mechanism, usually a toll free ("800") telephone number, to solve technical and other problems, and hope for sales training and assistance.

3. Product Promotion and product support is expected of manufacturers of heating equipment. Typical practices in U.S. markets combine:
 - Active advertising campaigns -- often directed at the trade.
 - Attendance at trade shows, particularly the ASHRAE-ARI Exposition, the ASA Trade Show, the WHA Trade Show, and the Mid-Atlantic Plumbing, Heating, and Cooling Exposition.
 - Membership in industry trade associations such as the American Society of Heating Refrigeration, and Air-conditioning Engineers (ASHRAE), Gas Appliance Manufacturers Association (GAMA), Wood Heating Alliance (WHA), American Gas Association (AGA), Gas Research Institute (GRI), North-American Heating and Air Conditioning Wholesalers Association (NHAW), and Hydronics Institute (MI).
4. Terms and Pricing are expected to conform to U.S. practices, discount structures, and overall price levels. U.S. terms often allow for 30 days of credit extension, and generally make allowance for freight. Discount structures are similar to those in Canada, with distributors and dealer/contractors receiving discounts of 40-45% and 5-15% off published trade prices, respectively, and additional discounts for volume or other special purchases. Exact price levels are difficult to determine because of the many product configurations, styles, and options available, and because U.S. manufacturers attempt to disguise pricing, but they appear to correspond to Canadian levels for most products. (Comparisons may be made with the price level estimates in the main report's section VI).
5. Customs and Transportation are the two areas where Canadian products can appear the most different from their U.S. manufactured counterparts. Distributors and manufacturer's representatives interviewed expressed very strong opinions that these differences be minimized by Canadian manufacturers by including tariffs in quoted prices, arranging for products to clear customs

without customer involvement, and allowing for freight rebates or adjusting for freight differences in some manner.

Details of customs requirements and procedures, and methods of finding common-carriers for transportation appear in the main report, Section V.

Product Markets and Product Acceptance

The overall reaction to Canadian manufactured heating products in U.S. markets is very favorable. Canadian manufactured equipment is perceived to be the equal of, or even superior to, its U.S. counterpart. Assuming Canadian manufacturers conform to practices familiar to U.S. customers, (as reviewed above and discussed in the main report) their products will find acceptance in the U.S.

It remains for Canadian manufacturers to decide whether U.S. markets for their products are large enough and attractive enough to warrant entry. We believe that the markets for most of the products included in this study in the Northeast United States are attractive. In some, particularly prefabricated chimneys and liners, air-to-air heat exchangers, and wood and coal furnaces and boilers, Canadian manufacturers are already participants. The markets for oil, electric, and gas furnace and boilers, and the market for gas and electric water heaters are quite large and stable. Canadian products should find no serious obstacles to entry. Canadian firms are also well positioned with products for the zero-clearance fireplace and the related prefabricated chimney market, although these markets

in the Northeast U.S. are not as large as those for conventional furnaces, boilers, and water heaters. The air-to-air heat exchanger market has grown rapidly in the past few years, and will be quite attractive to Canadians if growth continues. That may depend upon new construction levels as well as on product acceptance. The market for wood and coal furnaces and boilers is much smaller than the market for oil, gas, and electric products, and already has a number of Canadian participants. The market for gas conversion burners is both small and declining. U.S. participants believe it to be less attractive than other markets.

Conclusions

Canadian heating products are well thought of in the U.S. and can expect to be well received if Canadian manufacturers choose to enter U.S. markets with them. Most markets for heating products in the Northeast U.S. are reasonably attractive, and deserve the serious consideration of Canadian manufacturers. Those that choose to participate should remember to:

1. Plan an organized approach to the market, including identifying customers and potential sales volumes.
2. Arrange for logistics, including transportation, customs clearing, and product testing and labeling. Arrange (with a manufacturer's representative if necessary) for distribution.
3. Conform to U.S. practices in quoting prices and terms, promoting and supporting products, communicating in English, and handling customs and tariffs so that they are "invisible" to U.S. customers.

I. INTRODUCTION

A. Objectives. Hayes/Hill Incorporated was commissioned by the USA Trade and Investment Development Bureau Department of External Affairs, Government of Canada, to conduct an "Analysis of Market Opportunities for Selected Canadian Residential Heating Equipment in the Northeast United States".

1. The purpose of this investigation was to assist a select group of Canadian companies, which manufacture a variety of residential heating equipment, to identify and capitalize on potential export opportunities.
2. Specifically, the objectives of this engagement were:
 - o To give an overview of selected segments of the United States Residential Heating Industry in terms of market supply and demand, industry structure, cost considerations, and the competitive environment.
 - o To determine and evaluate the market potential and opportunities for Canadian manufacturers of selected residential heating equipment in the Northeast United States.
 - o To identify factors relevant to the development of appropriate industry/company market segments from the perspective of a Canadian company.
3. At the outset of the project, the physical boundaries of the study were established as the ten (10) states in the Northeastern corridor of the United States and included: Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, and Ohio.

4. Seven basic classes of heating equipment were designated for detailed study:
 - o Warm air furnaces (oil, gas, electric, wood and coal)
 - o Boilers (oil, gas, wood and coal)
 - o Gas burners (conversion and power types)
 - o Air-to-air heat exchangers
 - o Water heaters (gas and electric)
 - o Prefabricated chimnies and chimney liners
 - o Zero clearance fireplaces

B. Project Scope. Given these parameters and the inherent characteristics of the United States residential heating equipment industry, there are several market considerations which have significantly affected this study and should be kept in mind when reviewing its results and in planning subsequent actions. These factors, which are discussed in detail throughout the report, are outlined below:

1. The market for U.S. residential heating equipment, is very mature and can be characterized as complex, diverse, price-sensitive and highly segmented.
2. Market demand in the residential heating business is derived, in part, from the national macroeconomic environment, which includes factors such as: general economic conditions, demographic trends, government policies and regulations, construction activity, interest rates and energy.
3. There are significant regional variations in terms of the type and mix of equipment due in large measure to key local differential factors, which include:
 - o Climate
 - o Type of dwelling (single family, multi-dwelling, mobile, etc.)
 - o New construction versus replacement
 - o Demographic and economic profile
 - o Fuel prices and availability
 - o Regional economic conditions
 - o Utility network strength

4. The selected ten states differ, as a group, from the remainder of the country; there is also considerable variation within the group of selected states. (See Appendix B for standard regional breakdowns.) For example, the most northern states are primarily hydronic boiler markets, while the warm air furnace begins to predominate further south and west. In addition, the vast majority of hydronic systems are installed in the Northeast with minor occurrence throughout the remainder of the U.S.
5. Therefore, although the study's findings are concentrated in the Northeast, a broad overview of the U.S. residential heating market was included in order to put the results of this investigation in proper perspective.
6. The products included in the terms of reference represent a variety of heating alternatives, both in terms of type of equipment and fuel source. Most of these products (e.g., furnaces and boilers) fall within the traditional parameters of the HVAC (heating, ventilating and air conditioning) industry and are distributed through the HVAC system. Other products such as water heaters, fireplaces and chimneys have a broader and more fragmented range of distribution channels.
7. The replacement market accounts for the majority of heating equipment sales in the Northeast. The Northeast is one of the most heavily populated portions of the U.S. Over the last decade, however, this region has experienced heavy population migration to the South. The result has been slower growth in new construction, and a market strongly dominated by replacements, repairs and alterations.
8. The residential heating equipment industry is primarily a distribution business with manufacturers employing either independent distributors or factory-owned branches. A growing percentage of volume has been going directly to dealers from manufacturer-owned branches, thereby creating the need for different market entry strategies.

C. Project Approach and Conduct. Given the established objectives and scope, the information in this report is partly statistical and partly qualitative in nature.

The statistical information was required for assessing the amount and type of market demand, the size of each market and its historical and prospective growth.

Estimates were derived where statistical data were not available. The qualitative information was developed in connection with such factors as distribution channels and structures, key factors for success, the receptivity and potential for Canadian heating equipment, and the range of alternative market entry strategies.

We believe that the report is self-explanatory.

Briefly, it appears in sections, as follows:

Section I is the Introduction.

Section II, The U.S. Residential Heating Market, provides a summary overview of the overall U.S. residential heating market and its major sub-segments. This will serve as a background to the subsequent analysis and aid in providing perspective to the study's designated regional focus.

The following areas are discussed in terms of major regional variation: demand determinants, product characteristics, residential heating equipment and fuel availability and price.

Section III, The Northeast Residential Heating Market, highlights the demand determinants and housing characteristics for each of the ten states included in the study.

Section IV, Channels of Distribution, provides industry overviews of both the traditional HVAC industry and solid fuel appliance markets. Market structures have been developed to define the market from manufacturers, distributors and dealer/contractors to the various end-use markets. Specific focus has been placed on manufacturers' representatives and distributors because these two groups are key market control factors which will determine market entry alternatives for Canadian products.

Section V, Marketing Support Requirements, explores the specific market, product and sales activities which are critical to successful participation in the U.S. These include: product approval and testing, the sales function and associated support activities, promotional methods, pricing structures, and delivery and transportation practices.

Section VI, Product Profiles, describes each of the major product classes in terms of the product's concept, key product features, distribution, pricing, historical market size and potential growth, business characteristics and the competitive environment.

Section VII, Market Penetration, summarizes the key requirements for participation, assesses the market opportunity attractiveness for Canadian products by product, and presents a range of appropriate market penetration strategies.

Appendix contains supporting materials including statistical tables and provides a detailed directory of manufacturers' representatives and distributors identified in the designated states, intended to assist Canadian manufacturers. Also provided is information on promotional organizations such as trade show organizers, publishers and trade associations as well as other data and information intended to assist Canadian manufacturers in their export activities.

In order to gather the required information, Hayes/Hill used a multi-dimensional collection methodology that included:

1. Secondary data. A comprehensive search of published material was undertaken in order to gather statistical data and relevant information. Sources included: the U.S. government; trade associations; industry publications; company annual reports and 10Ks; Dun & Bradstreet reports; product literature; current articles and literature searches; and other standard reference materials.
2. Field interviews were conducted with several groups in order to obtain timely and accurate information:
 - a. A series of interviews with key industry participants regarding the residential

heating industry were held with trade associations, trade publications, utilities and appropriate government agencies.

- b. Extensive interviews with companies (manufacturers' representatives and distributors) engaged in distribution of residential heating equipment in the designated states were conducted to determine current distribution methods, trade practices, and product trends. These interviews were used to gauge the industry's interest in Canadian heating products.
 - c. Selected supplementary interviews were conducted, as required, in order to provide information on subjects such as: customs, product trends, transportation, product approval and testing, and governmental codes and regulations.
3. Analysis, evaluation and interpretation of all gathered and developed data and information was performed to order it into the meaningful and actionable format presented in this report.

II. THE U.S. RESIDENTIAL HEATING MARKET (1)

A. Industry Overview. The U.S. residential heating market is highly diverse and broadly dispersed, with wide variation in requirements due to different types and sizes of housing units and different climatic conditions.

1. Industry characteristics

- o In general, heating equipment is a mature applications market with varying degrees of product saturation. The industry which has evolved to service this market is very complex.
- o The industry is typically characterized as being intensely conservative and very resistant to rapid change.
- o Since the industry is driven by external factors, industry participants tend to be reactive rather than proactive.
- o Industry participants include: small private firms, large public companies and divisions of major corporations.
- o Over the last 20 or 30 years, the industry has evolved from a local or regional business to a national business at the manufacturer level -- but retains a definite local character at the trade (distributor and dealer) market level.
- o Distributors and dealers (collectively) are the key factors in the marketplace -- making or strongly influencing most purchase decisions.
 - Distributors and dealers are the critical element in the market penetration of new products.
 - These two groups have strong local market power and position through a network of long-established direct contact with customers.

(1) See Appendix C for supporting statistical tables on the U.S. Residential Heating Market.

2. Product characteristics

- o Historically, heating equipment has been simple, reliable products. Typically, they are commodity-oriented, with few distinguishing features. They have required only limited capabilities from the marketing system.
- o Until recently, the industry's general level of product innovation has been low with most of the innovations incremental extensions of established technologies. Major product introductions were infrequent and market penetration for new products was slow. Low margins and limited payback opportunities, particularly in heating equipment, have hampered investment funds.
- o U.S. manufacturers historically focused on air conditioning equipment for growth and profitability, while heating equipment was viewed as a loss leader. In the late 60s and 70s, however, manufacturers rationalized their heating operations, which for the most part are now profit centers, albeit at a low to moderate level.

3. Current trends. The U.S. residential heating market is currently experiencing significant fluctuations and extreme instability, caused by energy dislocations of the last 10 years.

- o The market and industry have experienced successive waves of technological and product innovations, prompted by shifts in external forces such as construction levels, types of housing, energy costs and energy availability.
- o The broadening range of market requirements and intensifying competition is leading to greater market segmentation, marketing fragmentation and product differentiation.
- o The pace of product innovation is increasing along with the sophistication of the technologies involved, thereby, challenging the industry's slow rate of change and general conservatism.

4. Longer-term trends. Although the industry is expected to experience good growth near-term, longer-term projections are for slower growth industry-wide.

- o New construction will account for a decreasing portion of total equipment sales as population growth and the rate of household formation slows, and the replacement market will account for the majority of equipment sales.
- o The industry will experience increased market segmentation. Market segments based on distinct cost and performance features will become more and more apparent. There will be increased emphasis on product differentiation. These factors are causing a fragmentation of the traditional marketing system and structure.
- o Industry dynamics are providing the impetus for increased trade and consumer sophistication. All levels of industry participants will require more sophisticated marketing techniques. Consumers will become more knowledgeable decision-makers.

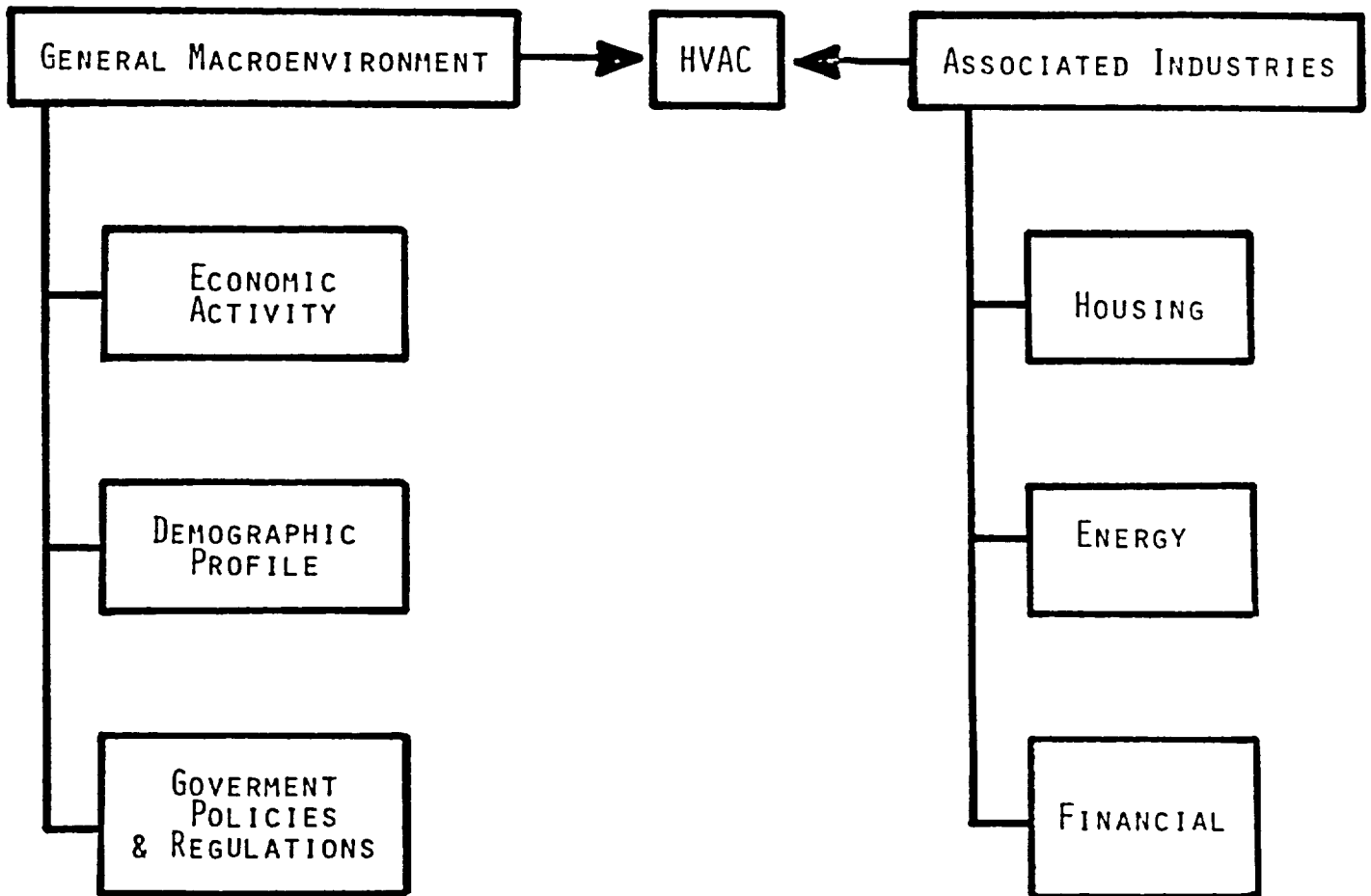
B. Demand Determinants. The basic demand for heating products is a derived demand because the product satisfies a basic need, rather than being desired in its own right. HVAC products have little or no intrinsic value to purchasers. Consumers purchase the end-result -- heated space. The means of achieving it (equipment and fuel) is of secondary interest.

- o Heating systems (equipment and fuel) are primarily an economic purchase decision.
 - Due to the commodity nature of the business, price is the most important product differentiator.
 - Equipment purchase decisions have been and will continue to be based on costs and economics. However, the rapid increase in energy prices has simply changed the relative importance of operating versus initial equipment costs.
 - Increasingly, heating equipment purchase decisions are based on the relative cost/performance value.

- Product safety, reliability and performance are expected. The technological base is generally of little or no interest to the ultimate user.
- o Heating systems are one of the most infrequent consumer purchases.
 - Consumer information about equipment and fuel is likely to be outdated or incorrect and based on likes and dislikes of their present system.
 - Due to the infrequency of purchase, equipment dealers very strongly influence a consumer's purchase decision including the selection of particular energy sources and types of equipment.
 - In many cases, particularly in the new construction market, end-users have little or no involvement in the equipment or fuel selection decision.

As noted earlier, the heating industry is externally-driven by a number of forces that affect the end-use markets -- both directly and indirectly. These factors can be divided into two basic groups: associated industries and the general macroeconomic environment. These factors are all interactive and dynamic, and thus form the basic demand for heating equipment.

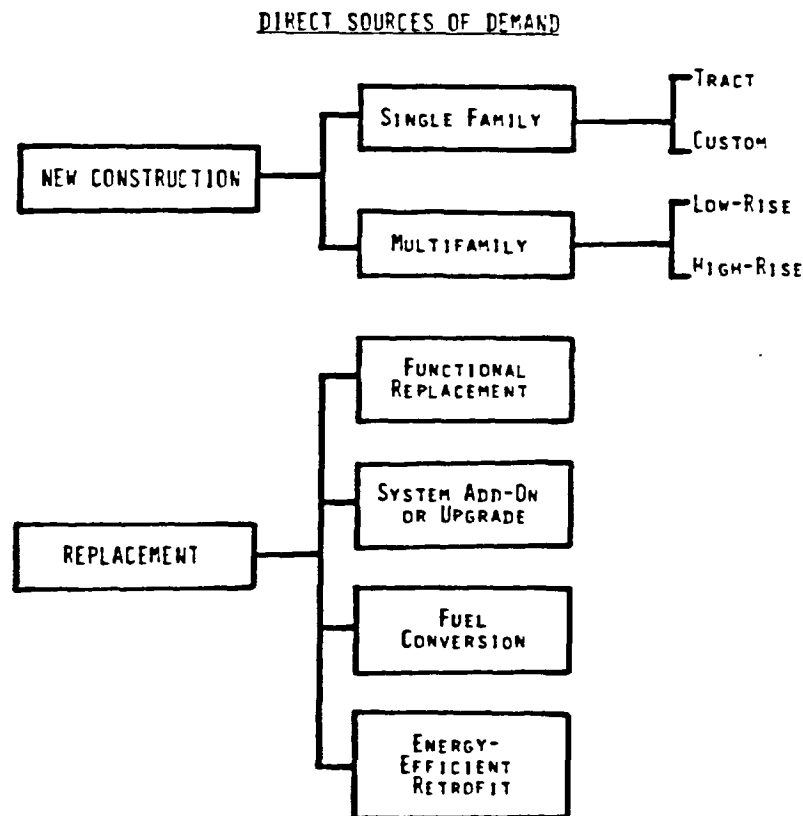
MARKET DEMAND FACTORS



1. Housing. The housing market, both in-place (also referred to as "housing stock") and new construction creates direct demand for residential heating equipment. Therefore, demand must be viewed as a series of local markets characterized by a specific set of influencing factors -- climate, relative energy prices, building styles and practices, and level and distribution of household incomes. Relative market maturity varies, and care must be taken to differentiate application maturity (i.e., heating; cooling) from product maturity (i.e., gas furnace, electric heat pump).

Demand can be segmented along a number of different dimensions, but the two most relevant are type of purchase and type of product.

- a. Type of purchase. The major segments by type of purchase are new construction and replacement/retrofit. This is the basic segmentation used by manufacturers and the HVAC trade, and is depicted in the diagram below.



- o In the new construction market, the builder and/or sub-contractor are the purchase decision-makers. Builders tend to be very first-cost conscious and generally believe that buyers (particularly first-time buyers) are very price sensitive. Although they are becoming more energy-cost conscious, builders still place greater selling emphasis on appearances rather than on "basement appliances."
- The single family new construction market typically represents two-thirds of total housing construction and includes tract, semi-custom and custom site-built segments and manufactured housing. These segments influence the type, size and quality of HVAC system installed.
- The multi-family new construction market includes high rise and low rise apartments, condominiums and public housing segments. Each of these segments contains a range of sub-segments based on quality/price.
- o The replacement market contains a number of segments based on the reason and circumstances of the purchase. The actual end-user is typically more involved in the purchase decision than in the new construction market, and tends to be concerned about energy and other operating costs.
- Functional replacement includes: replacement of systems that have failed totally, and those which require the replacement of a major component (in which case some consideration may be given to replacing the whole system rather than just the failed component). This is an equipment-life driven market segment.
- System add-on or upgrade includes: adding air conditioning, adding space or spot cooling or heating or increasing the capability of the present system. This segment has represented about 20 percent of the total central air conditioning market for the last 5 to 6 years. This is a comfort-demand driven market segment.

- Fuel conversion includes: replacement of either a failed or functioning system with a system using another fuel source. The size of this market depends on the relationships between equipment first-costs and energy operating costs. This is largely an energy-cost driven market segment.
- Energy efficiency retrofit (retaining same energy source) includes: replacement of functioning systems with more energy efficient equipment. It is a technology/product and energy-cost driven market segment.

b. Type of product. Major product segments are defined by the means in which the conditioned medium is distributed to the areas being conditioned, and include:

- o Hydronic systems (boilers) are generally considered to be high quality heating systems, but are expensive (both equipment and installation).
- o Air (duct) systems have a lower first-cost and permit the use of central air conditioning. Products within this category include: warm air furnaces (gas, oil, electric), heat pumps and central air conditioners.
- o Space/spot units are designed to condition a specific area. Types of products include: built-in electric, portable electric heaters, gas space heaters, wood stoves and various types of liquid fuel heaters.
- o Solar systems are available in each of these categories.

2. Energy. The energy industries (particularly gas and electric) have a strong impact on heating markets and industry structure because of their control of energy availability and prices. These factors have both absolute and relative influences on the types of equipment that can be sold and the criteria used for equipment selection. For example, the absolute level of energy prices in an area will affect the sales mix of conventional or high-efficiency products, while the relative prices of energy sources will affect the mix of products sold by energy source.

The major participants in the residential energy market are large public (electric, gas or combination) utilities subject to extensive government regulation and close public scrutiny.

3. Financial. The financial industry affects the HVAC industry through the availability and cost of mortgages and loans -- for builders, HVAC dealers and distributors, end-users and the manufacturers themselves. Interest rates are a prime factor in determining the level of construction activity, and housing sales patterns.

The conditions in regional and national financial markets have a strong influence on the ability of manufacturers to finance their operations and provide trade credit for their distribution system.

4. Economic activity. The general level of economic activity affects construction activity, factor costs and patterns of demand. Economic activity has been cyclical, and since the early 1970's general inflation has been a persistent problem. It has eased somewhat in recent years.
5. Demographic profile. Population and household formation rates are the basic driving forces. The post-World War II "baby boom" is having significant impact on the amount and type of housing required.
6. Government policies and regulations. Government policies and regulations generally emphasized economic growth, low energy prices and favorable treatment for new housing. Various forms of local "siting" and construction regulations have increased, however, and during the 1970's government activity in the energy area increased significantly.

C. U.S. Housing Characteristics

1. In-place house stock. Over the past six decades, the in-place house stock has risen steadily; and by 1983, there were 83.8 million occupied housing units in the United States.

Private Housing Starts Forecast						
	000 Units			% Change		
	1982	1983	1984	1982	1983	1984
<u>U.S. Total</u>	1062	1700	1820	- 2	+60	+ 7
Northeast	117	180	180	0	+54	0
North Central	149	220	290	-10	+48	+32
South	591	930	935	+ 5	+57	+ 1
West	205	370	415	-15	+80	+12
	Percent of Total					
	1982	1983	1984			
<u>U.S. Total</u>	100%	100%	100%			
Northeast	11	11	10			
North Central	14	13	16			
South	56	54	51			
West	19	22	23			

Source: Merrill Lynch Economics, Inc.

Historically growth in housing stock was the natural result of population growth and subsequent household formations. Although population growth has slowed in recent years, the post-war "baby boom" generation is currently reaching the peak household formation age group (and therefore, housing-consumption stage). Hence, in the 1970's alone 17 million new households were formed.

It is even more important to be aware that this growth will not continue. As the "baby boom" group ages the rate of household formations will decline precipitiously as the 80's end. Projections are that there will be 15 million new households created in the 1980's, and that in the 90's this number will drop to 11 million. In-place housing stock is large and aging, however, and will provide an increasing replacement market.

2. New Construction. The new construction market is dominated by single-family units, which are projected to account for 62% of 1984's total 1.82 million housing starts. Multi-family units can be grouped into two segments -- low-rise (2 to 4 units) and high-rise (5 plus) accounting for 7% and 31% respectively. (See Appendix C for trends by type of housing since 1974).
3. Regional Variation. In the past two decades, the United States has experienced a shift in population from the eastern and northern portion of the U.S. to the southern and western portions of the country. This has several important implications for this study:
 - o The Northeast is one of the most densely populated areas of the U.S. The ten states included in this study account for 26% of the housing stock.
 - o However, this region also has the highest migration rate in the country.
 - o The South and West currently are the major regions for new construction, with almost 75% of the total. (See Appendix C for graphic display of regional housing growth since 1965).
 - o The Northeast currently accounts for only 10% of new housing starts.
 - o The Northeast will be predominately a replacement market for heating equipment, which requires different products and marketing efforts than new construction does.

D. Residential Heating Equipment

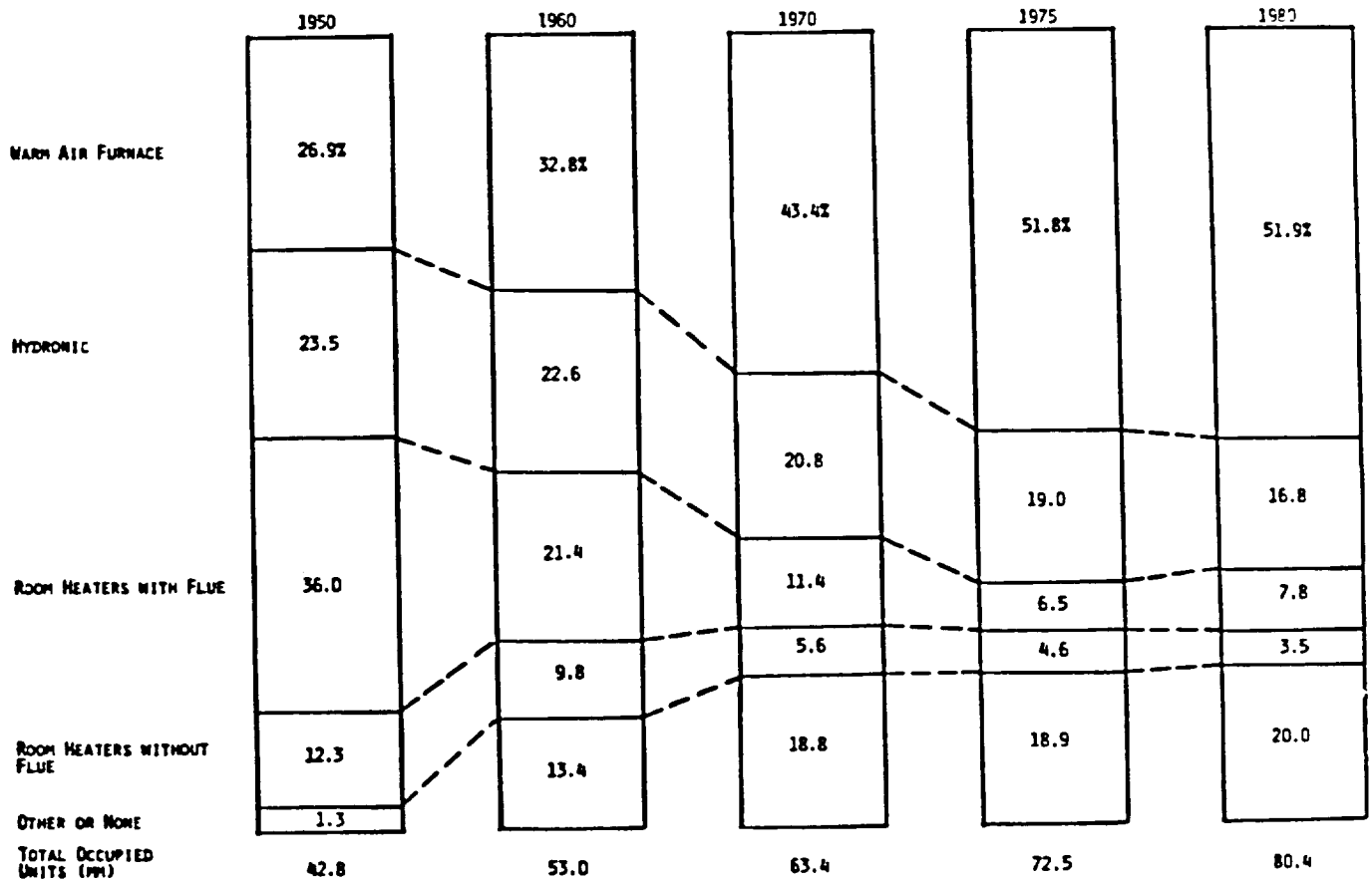
1. In-place heating equipment. The warm air furnace clearly is the primary heat source in the United States today with an almost 52% market share, as shown below. Hydronic equipment follows, at a distant second, with almost 17%. All other types of heating equipment account for the remaining 31%.

<u>RESIDENTIAL HEATING EQUIPMENT MIX -- 1980</u> (In-Place)	
Warm Air Furnaces	51.9%
Hydronic	16.8
Built-in Electric	8.1
Room Heaters with Flue	7.8
Floor, Wall or Pipeless Furnaces	5.8
Fireplace, Stoves	5.1
Room Heaters without Flue	3.5
None	<u>0.9</u>
	100.0%

Source: A.G.A.

The last thirty years have seen a tremendous penetration of the warm air furnace into the home. Installation grew from 27% of the in-place equipment stock in 1950 to almost 52% in 1980. Hydronic equipment has experienced a decline from almost 24% in 1950 to almost 17% in 1980.

U.S. RESIDENTIAL HEATING EQUIPMENT MIX - (IN PLACE)
(PERCENT DISTRIBUTION)



Hayes/Hill estimates based on U.S. Government, GAMA, and related industry figures.

2. Regional variation. There are significant regional variations in the in-place heating equipment mix throughout the United States which must be considered when marketing in the U.S.
 - o As can be seen from the top chart on page 21, hydronic equipment clearly dominates the Northeast, followed by warm air furnaces. Warm air furnaces are most popular in the other three regions.
 - o The bottom chart shows the regional markets in a slightly different perspective, but leads to similar conclusions. Sixty-six percent of the in-place hydronic equipment is located in the Northeast. Sixty-six percent of the warm air furnaces are in the North Central and South regions.

E. Home Heating Fuel

1. In-place fuel usage

- o Utility gas currently accounts for 53.3% of in-place home heating fuel. After experiencing high growth between 1950 and 1975, penetration declined somewhat between 1975 and 1980 due to uncertainty over gas deregulation, higher gas prices, and restricted availability in some areas.
 - o Fuel oil and kerosene have experienced declines since 1960 due to price and availability.
 - o Electricity has experienced the highest growth, but price increases relative to other fuels might depress this growth in future years.
 - o LP gas has stabilized after good growth between 1950 and 1960.
 - o Wood has been rather cyclical and is highly dependent on other fuel's prices and availability.
 - o Coal and coke have experienced the greatest decline, from almost 35% in 1950 to less than 1% in 1980.
2. Regional heating fuel. As with heating equipment, home heating fuel usage varies significantly by region.

U.S. HEATING EQUIPMENT REGIONAL MIX
(In-Place Housing)
(1980-81)

<u>MAJOR REGION</u>	<u>Warm Air Furnace</u>	<u>Hydronic</u>	<u>Room Heaters</u>	<u>Floor, Wall or Pipeless Furnace</u>	<u>Built-in Electric</u>	<u>Total</u>	<u>Total Housing Units</u>
Northeast	36%	54%	2%	1%	7%	100%	16.5
North Central	70%	14%	6%	4%	6%	100%	19.9
South	59%	6%	17%	11%	7%	100%	22.2
West	57%	4%	5%	25%	9%	100%	14.2

U.S. HEATING EQUIPMENT DISTRIBUTION
BY MAJOR REGION (1980-81)
(In-Place Housing)

<u>MAJOR REGION</u>	<u>Warm Air Furnace</u>	<u>Hydronic</u>	<u>Room Heaters</u>	<u>Floor, Wall or Pipeless Furnace</u>	<u>Built-in Electric</u>
Northeast	15%	66%	6%	2%	21%
North Central	34%	21%	18%	10%	23%
South	32%	9%	62%	35%	31%
West	19%	4%	11%	53%	25%
TOTAL HOUSING	100%	100%	100%	100%	100%
UNITS (MM)	41.2	13.5	6.1	6.7	5.3

Source: U.S. Annual Housing Survey, GAMA.

- o The Northeast is the largest oil and kerosene market. 48% of the housing units in the Northeast use oil; 60% of the homes which use oil in the U.S. are in the Northeast.
- o The second largest category of fuel consumed in the Northeast is gas, at 42%. All other fuel accounts for only 10% of total use.
- o Gas clearly dominates fuel consumption in the North Central, South and West.
- o The major electricity markets are the South and West.

Regional fuel usage is driven by climate and fuel availability. Availability in turn establishes relative price. The chart below shows competitive fuel prices by region.

COMPETITIVE FUEL PRICES

CENSUS REGION	All Prices in Dollars Per Million BTU as of December 31, 1982				Average Annual Gas Htg. Bill
	Natural Gas	Fuel Oil No. 2	Electric	Propane	
New England	\$7.95	\$8.39	\$23.60	\$10.94	\$912.20
Middle Atlantic	6.45	8.54	21.08	10.41	669.76
East North Central	5.12	7.92	16.01	8.94	572.59
West North Central	5.08	7.52	14.60	7.84	470.23
South Atlantic	5.85	7.75	15.92	9.66	441.24
East South Central	5.31	7.44	14.84	9.43	402.14
West South Central	4.83	6.46	18.06	9.00	256.44
Mountain	4.15	7.90	14.41	8.97	357.97
Pacific	4.68	6.87	16.26	9.89	235.82

_____ Highest Cost

----- Lowest Cost

Source: AGA, U.S. Dept. of Energy

3. Future trends. The present mix of in-place equipment and fuel used is expected to look somewhat different in future years based on several current trends:
- o Hydronic penetration will continue to decline due to costs involved; only 3% of houses completed in 1982 installed oil equipment.
 - o The majority of new construction is to be expected in warmer climates where air conditioning is required.
 - o The heat pump is making substantial in-roads.
 - o Space heaters continue to gain in popularity due to climatic and energy factors.
 - o For the last five years, 55-57% of housing completions installed electricity as the heating fuel; while gas installations have stabilized at around 35%.

III. THE NORTHEAST RESIDENTIAL HEATING MARKET

A. Regional Summary. Given the significant differences between the four major U.S. census regions discussed in the previous chapter, it is essential to note that there are also important variations among the ten states included in this study. This regional summary highlights some of the major intra-regional differences. The summary is followed by a profile of each state which includes: key metropolitan areas; demographic and economic highlights; and housing and heating characteristics. For each state, similar detailed data on the key metropolitan areas can be found in Appendix D.

1. Climate (See Climate Map on page 27)
 - o The ten designated states fall into two different temperature zones, which are two of the coldest zones in the U.S. and therefore, are prime heating equipment markets.
2. Population growth and distribution (See Population Chart on page 28)
 - o The states range in size from 17.6 million people in New York to 0.5 million in Vermont.
 - o The ten states as a group account for 26% of the U.S. population. The average population growth for these ten states, however, has been much below the national average.
 - o Three of these states, New York, Pennsylvania and Ohio, account for 67% of the population of the ten state total.
 - o New Jersey, Connecticut and New Hampshire have experienced the highest population growth over the past fifty years.

3. Income comparison (See Income Chart on page 29)

- o Only four of the ten states, New York, New Jersey, Massachusetts and Connecticut, had mean family incomes above the national average in 1979.

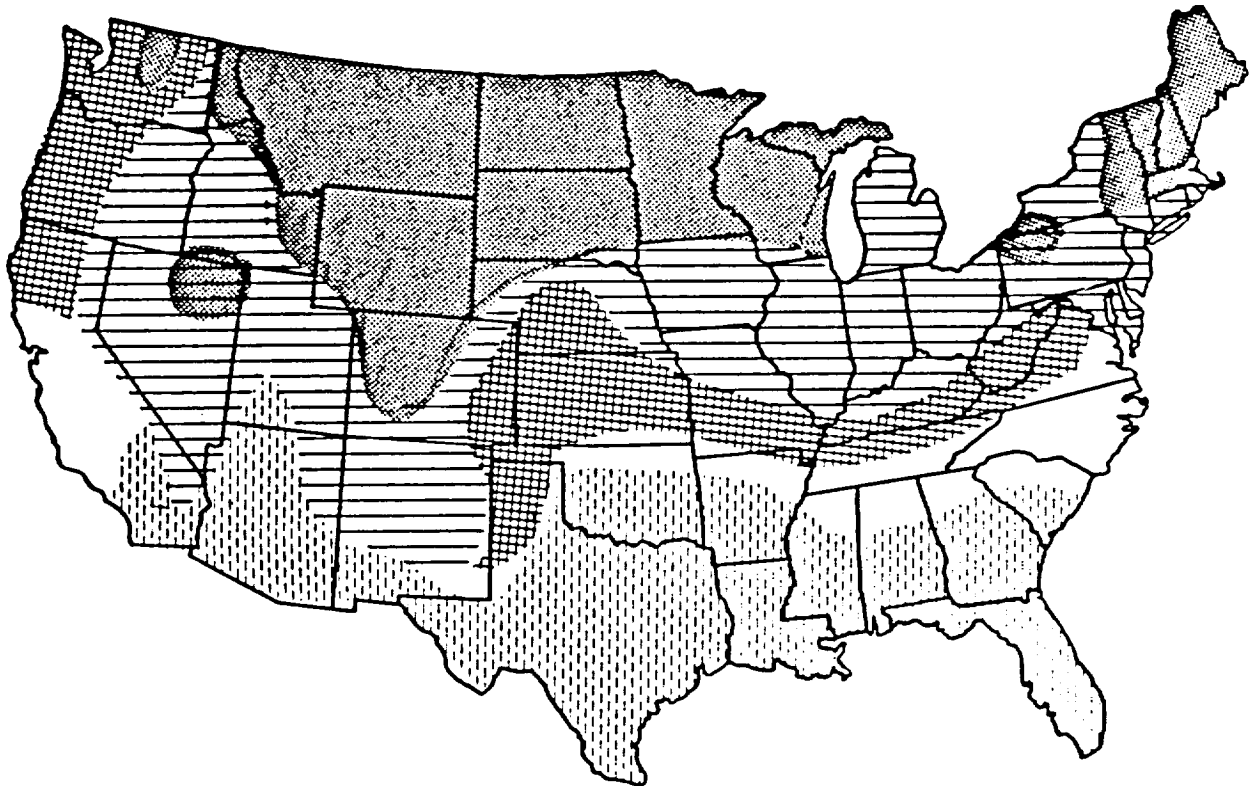
4. Housing characteristics (See Housing Chart on bottom of page 30)






- o The ten states have a total housing stock of 22.5 million units.
- o The individual states range from a high of 6.7 million in New York to a low of 0.2 million in Vermont.
- o Single-family units dominate in all states, except New York where more families live in multiple dwellings.
- o Houses in this region tend to be old, with an average of 42% of the homes over 41 years old, thus providing a large replacement market.

5. Heating equipment and fuel characteristics (See Heating Chart on top of page 30)

- o There is a wide variation from state to state in the occurrence and dominance of heating equipment. For instance: 69% of the homes use warm air furnaces in Ohio, while 62% of the homes in New York are hydronic; or, in Vermont 18% of the homes are heated by fireplaces or stoves, while in New Jersey only 1% are.
- o There is also a significant variation among the states in terms of fuel usage. For instance, 71% of the homes in Maine use fuel oil and only 2% natural gas; while in Pennsylvania 71% use natural gas and 10% use fuel oil.

U.S. WEATHER ZONE MAP OF HEATING DEGREE
DAYS (HDD) AND COOLING DEGREE DAYS (CDD)



-  ZONE 1: LESS THAN 2,000 CDD AND GREATER THAN 7,000 HDD
-  ZONE 2: LESS THAN 2,000 CDD AND 5,500 - 7,000 HDD
-  ZONE 3: LESS THAN 2,000 CDD AND 4,000 - 5,499 HDD
-  ZONE 4: LESS THAN 2,000 CDD AND LESS THAN 4,000 HDD
-  ZONE 5: GREATER THAN 2,000 CDD AND LESS THAN 4,000 HDD

NOTE: HEATING DEGREE DAYS (HDD) REFERS TO THE NUMBER OF DEGREES THE DAILY AVERAGE TEMPERATURE IS BELOW 65 DEGREES FAHRENHEIT. COOLING DEGREE DAYS (CDD) REFERS TO THE NUMBER OF DEGREES THE DAILY AVERAGE TEMPERATURE IS ABOVE 65 DEGREES FAHRENHEIT.

U.S. BUREAU OF THE CENSUS

POPULATION GROWTH AND DISTRIBUTION
(Millions)

REGIONS	1920		1950	1970	1980		Percent Change 1920-1980
	No.	%			No.	%	
TOTAL U.S.	106.0	100%	151.3	203.3	226.5	100%	114%
North East	30.0	28	39.5	49.1	49.1	22	64
North Central	34.0	32	44.5	56.6	58.9	26	73
South	33.1	31	47.2	62.8	74.4	33	125
West	9.2	9	20.2	34.8	43.2	19	370
<hr/>							
<u>DESIGNATED STATES</u> (000)							
TEN STATE TOTAL	35,400		47,400	59,700	59,900		68%
Connecticut	1,381		2,007	3,032	3,108		125
Maine	768		914	994	1,125		46
Massachusetts	3,852		4,691	5,689	5,737		49
New Hampshire	443		533	738	921		108
New Jersey	3,156		4,835	7,171	7,365		133
New York	10,385		14,830	18,241	17,558		69
Ohio	5,759		7,947	10,657	10,798		88
Pennsylvania	8,720		10,498	11,801	11,864		36
Rhode Island	604		792	950	947		57
Vermont	352		378	445	511		45

Source: U.S. Government Bureau of Census

INCOME COMPARISON

	Mean Family Income 1979	Percent Difference From Mean
United States	\$23,177	-----
<u>Northeast</u>		
Maine	18,254	(21%)
New Hampshire	22,138	(4%)
Vermont	19,815	(17%)
Massachusetts	24,109	4%
Rhode Island	22,092	(5%)
Connecticut	27,208	17%
<u>Middle Atlantic</u>		
New York	23,688	2%
New Jersey	26,338	13%
Pennsylvania	22,635	(2%)
<u>East North Central</u>		
Ohio	23,308	(1%)

Source: Sales and Marketing Management

RESIDENTIAL HEATING EQUIPMENT AND FUEL SOURCE BY STATE

	All-Year Housing Units	Type of Equipment							Fuel Used							
		Warm Air Heat			Floor, Wall		Fire-		Natural Gas	Bottled, Tank, LP Gas	Electri-city	Fuel Oil/ Kerosene	Coal/ Coke	Other/ Wood	None	
		Hydronic	Furnace	Pump	Built-in Electric	Pipeless Furnace	Room Heater	place, Stove								None
<u>NORTHEAST</u>																
<u>Northeast</u>																
Maine	0.4	39	29	1	9	1	4	17	-	2	1	10	71	1	15	-
New Hampshire	0.3	41	28	1	12	-	6	12	-	12	3	13	61	-	11	-
Vermont	0.2	30	34	1	9	1	7	18	-	6	5	10	62	-	17	-
Massachusetts	2.1	55	25	1	8	1	7	3	-	32	1	10	55	-	2	-
Rhode Island	0.4	60	19	1	5	1	10	4	-	33	1	6	58	-	2	-
Connecticut	1.1	52	27	2	9	1	6	3	-	22	1	11	63	-	2	1
<u>Middle Atlantic</u>																
New York	6.7	62	26	-	4	1	5	2	-	38	1	5	54	-	2	-
New Jersey	2.7	53	33	1	6	1	5	1	-	44	1	7	47	-	1	-
Pennsylvania	4.5	35	45	2	7	2	6	3	-	49	1	10	34	4	2	-
<u>NORTH CENTRAL</u>																
<u>East North Central</u>																
Ohio	4.1	10	69	4	7	2	6	2	-	71	3	14	10	1	1	-

HOUSING DATA BY STATE

	All-Year Housing Units	Types of Homes			Age of Homes						
		Single-Family	Multi-Family	Mobile Homes	3 Years or Less	4-7 Years	8-12 Years	13-20 Years	21-30 Years	31-40 Years	41 Years or More
<u>Northeast</u>											
Maine	0.4	66	27	7	3	9	11	11	10	9	47
New Hampshire	0.3	62	32	6	3	9	14	15	10	7	42
Vermont	0.2	64	29	7	3	9	12	14	9	6	47
Massachusetts	2.1	52	47	1	1	4	9	14	14	10	48
Rhode Island	0.4	54	45	1	3	5	8	14	15	11	44
Connecticut	1.1	61	38	1	2	6	11	18	18	12	33
<u>Middle Atlantic</u>											
New York	6.7	41	57	2	1	3	6	16	16	12	46
New Jersey	2.7	59	41	-	3	5	8	18	19	12	35
Pennsylvania	4.5	71	26	3	2	6	9	13	15	10	45
<u>East North Central</u>											
Ohio	4.1	69	27	4	3	8	11	17	17	12	32

Source: Bureau of the Census

RESIDENTIAL HOUSING COMPLETIONS BY HEATING FUEL TYPE 1978-1982
(Thousands)

Heating Fuel Type	1978		1979		1980		1981		1982	
	Number	%	Number	%	Number	%	Number	%	Number	%
Total Completions ^(a)	1,869	100	1,870	100	1,502	100	1,265	100	1,006	100
Electricity	1,049	56	1,048	56	844	56	700	55	570	57
Gas ^(b)	642	35	662	35	559	37	481	38	355	35
Oil ^(c)	133	7	113	6	41	3	23	2	26	3
Other or None	45	2	47	3	58	4	61	5	55	5

(a) Units include both single and multifamily units.

(b) Includes Liquified Petroleum Gas, estimated to be about 6% of total gas completions.

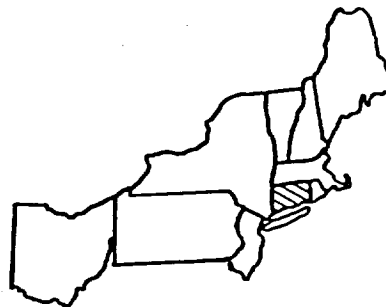
(c) Includes kerosene.

Source: Bureau of Census, Characteristics of New Housing: Series C-25, 1978-1982, June 1983.

CONNECTICUT

1. KEY METROPOLITAN AREAS

Bridgeport-Stamford-Norwalk-Danbury
 Hartford-New Britain-Middletown-Bristol
 New Haven-Waterbury-Meriden
 New London-Norwich



2. DEMOGRAPHIC AND ECONOMIC PROFILE

- a. POPULATION:
 - o 1982 - 3.1 million
 - o 1972-82 Percent Change - 1.5%
- b. HOUSEHOLDS:
 - o 1982 - 1.1 million
 - o 1972-82 Percent Change - 15.2%
- c. INCOME:
 - o Mean Family Income 1979 - \$27,208
 - o Variation from National Average - 17.4% greater
- d. EMPLOYMENT:
 - o 1982 Employment - 1.5 million
 - o 1982 Unemployment - 0.1 million
- e. DISTRIBUTION:
 - o Population Distribution:

<u>Age Group</u>	<u>Percent of Distribution</u> **
18-24 yrs.	12.0%
23-34 yrs.	16.5
35-49 yrs.	18.2
50 & over	28.3
	<u>75.0%</u>

<u>Income by Household EBI Group*</u>	<u>Percent of Distribution</u> **
EBI Group (000)	
\$10-19.9	19.5%
\$20-34.9	31.7
\$35-49.9	20.5
\$50 & over	14.3
	<u>86.0%</u>

3. HOUSING AND HEATING CHARACTERISTICS

- a. HOUSING STOCK: 1.1 million all-year housing units

<u>TYPE OF HOUSING:</u>	<u>Housing Unit</u>	<u>Percent of Distribution</u>
	Single Family	61%
	Multi-Family	38
	Mobile Homes	1
		<u>100%</u>

<u>AGE OF HOME:</u>	<u>Age of Home</u>	<u>Percent of Distribution</u>
	3 yrs. or less	2%
	4-7 yrs.	6
	8-12 yrs.	11
	13-20 yrs.	18
	21-30 yrs.	18
	31-40 yrs.	12
	41 years or more	33
		<u>100%</u>

<u>HOME HEATING EQUIPMENT SATURATION:</u>	<u>Type of Equipment</u>	<u>Percent of Distribution</u>
	Hydronic	52%
	Warm Air Furnace	27
	Heat Pump	2
	Built-in Electric	9
	Floor, Wall Pipeless	1
	Room Heater	6
	Fireplace, Stove	3
		<u>100%</u>

<u>HOME HEATING FUEL:</u>	<u>Fuel Used</u>	<u>Percent of Distribution</u>
	Natural Gas	22%
	Bottled, Tank, LP Gas	1
	Electricity	11
	Fuel Oil/Kerosene	63
	Coal/Coke	0
	Wood	2
	Other/None	1
		<u>100%</u>

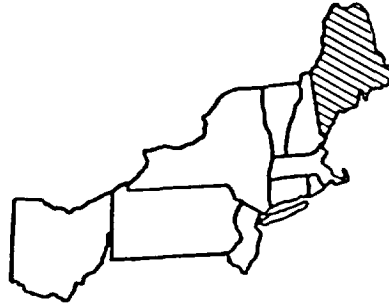
* EBI (Effective Buying Income) equals Personal Disposable Income available for local purchases.

** Age groups 0-18 and EBI group \$0-9,900 account for remaining percentage.

MAINE

1. KEY METROPOLITAN AREAS

Bangor
Lewiston-Auburn
Portland



2. DEMOGRAPHIC AND ECONOMIC PROFILE

- a. POPULATION:
 - o 1982 - 1.1 million
 - o 1972-82 Percent Change - 10.7%
- b. HOUSEHOLDS:
 - o 1982 - 0.4 million
 - o 1972-82 Percent Change - 26.0%
- c. INCOME:
 - o Mean Family Income 1979 - \$18,254
 - o Variation from National Average - 21.2% less
- d. EMPLOYMENT:
 - o 1982 Employment - 0.5 million
 - o 1982 Unemployment - 0.04 million

- e. DISTRIBUTION:
 - o Population Distribution:

<u>Age Group</u>	<u>Percent of Distribution</u>
18-24 yrs.	12.2%
23-34 yrs.	16.5
35-49 yrs.	16.8
50 & over	27.4
	72.9%

- o Income by Household EBI Group:

<u>EBI Group</u> (000)	<u>Percent of Distribution</u>
\$10-19.9	31.2%
\$20-34.9	32.5
\$35-49.9	10.1
\$50 & over	3.4
	77.2%

3. HOUSING AND HEATING CHARACTERISTICS

- a. HOUSING STOCK: 0.4 million all-year housing units

- b. TYPE OF HOUSING:

<u>Housing Unit</u>	<u>Percent of Distribution</u>
Single Family	66%
Multi-Family	27
Mobile Homes	7
	100%

- c. AGE OF HOME:

<u>Age of Home</u>	<u>Percent of Distribution</u>
3 yrs. or less	3%
4-7 yrs.	9
8-12 yrs.	11
13-20 yrs.	11
21-30 yrs.	10
31-40 yrs.	9
41 years or more	47
	100%

- d. HOME HEATING EQUIPMENT SATURATION:

<u>Type of Equipment</u>	<u>Percent of Distribution</u>
Hydronic	39%
Warm Air Furnace	29
Heat Pump	1
Built-in Electric	9
Floor, Wall Pipeless	1
Room Heater	4
Fireplace, Stove	17
	100%

- e. HOME HEATING FUEL:

<u>Fuel Used</u>	<u>Percent of Distribution</u>
Natural Gas	2%
Bottled, Tank, LP Gas	1
Electricity	10
Fuel Oil/Kerosene	71
Coal/Coke	1
Wood	15
Other/None	0
	100%

* EBI (Effective Buying Income) equals Personal Disposable Income available for local purchases.

** Age groups 0-18 and EBI group \$0-9,900 account for remaining percentage.

MASSACHUSETTS

1. KEY METROPOLITAN AREAS
 Boston-Lawrence-Salem-Lowell-Brockton
 New Bedford-Fall River-Attleboro
 Pittsfield
 Springfield
 Worcester-Fitchberg-Leominster



2. DEMOGRAPHIC AND ECONOMIC PROFILE

- a. POPULATION:
 o 1982 - 5.8 million
 o 1972-82 Percent Change - (0.6)%
- b. HOUSEHOLDS:
 o 1982 - 2.1 million
 o 1972-82 Percent Change - 12.8%
- c. INCOME:
 o Mean Family Income 1979 - \$24,109
 o Variation from National Average - 4.0% greater
- d. EMPLOYMENT:
 o 1982 Employment - 2.8 million
 o 1982 Unemployment - 0.2 million

- e. DISTRIBUTION:
 o Population Distribution:

<u>Age Group</u>	<u>Percent of Distribution</u>
18-24 yrs.	13.2%
23-34 yrs.	17.0
35-49 yrs.	16.8
50 & over	28.4
	<u>75.4%</u>

- o Income by Household EBI Group:

<u>EBI Group</u> (000)	<u>Percent of Distribution</u>
\$10-19.9	22.4%
\$20-34.9	32.2
\$35-49.9	17.8
\$50 & over	9.5
	<u>81.9%</u>

3. HOUSING AND HEATING CHARACTERISTICS

- a. HOUSING STOCK: 2.1 million all-year housing units

b. TYPE OF HOUSING:

<u>Housing Unit</u>	<u>Percent of Distribution</u>
Single Family	52%
Multi-Family	47
Mobile Homes	1
	<u>100%</u>

c. AGE OF HOME:

<u>Age of Home</u>	<u>Percent of Distribution</u>
3 yrs. or less	1%
4-7 yrs.	4
8-12 yrs.	9
13-20 yrs.	14
21-30 yrs.	14
31-40 yrs.	10
41 years or more	48
	<u>100%</u>

d. HOME HEATING EQUIPMENT SATURATION:

<u>Type of Equipment</u>	<u>Percent of Distribution</u>
Hydronic	55%
Warm Air Furnace	25
Heat Pump	1
Built-in Electric	8
Floor, Wall Pipeless	1
Room Heater	7
Fireplace, Stove	3
	<u>100%</u>

e. HOME HEATING FUEL:

<u>Fuel Used</u>	<u>Percent of Distribution</u>
Natural Gas	32
Bottled, Tank, LP Gas	1
Electricity	10
Fuel Oil/Kerosene	55
Coal/Coke	0
Wood	2
Other/None	0
	<u>100%</u>

* EBI (Effective Buying Income) equals Personal Disposable Income available for local purchases.

** Age groups 0-18 and EBI group \$0-9,900 account for remaining percentage.

NEW HAMPSHIRE

1. KEY METROPOLITAN AREAS

Manchester-Nashua
Portsmouth-Dover-Rochester



2. DEMOGRAPHIC AND ECONOMIC PROFILE

- a. POPULATION:
 - o 1982 - 1.0 million
 - o 1972-82 Percent Change - 24.8%
- b. HOUSEHOLDS:
 - o 1982 - 0.4 million
 - o 1972-82 Percent Change - 42.5%
- c. INCOME:
 - o Mean Family Income 1979 - \$22,138
 - o Variation from National Average - 4.5% less
- d. EMPLOYMENT:
 - o 1982 Employment - 0.4 million
 - o 1982 Unemployment - 0.04 million

e. DISTRIBUTION:

- o Population Distribution:

<u>Age Group</u>	<u>Percent of Distribution**</u>
18-24 yrs.	12.7%
23-34 yrs.	17.8
35-49 yrs.	17.6
50 & over	25.4
	<u>73.5%</u>

- o Income by Household EBI Group:

<u>EBI Group</u> (000)	<u>Percent of Distribution**</u>
\$10-19.9	25.9%
\$20-34.9	34.8
\$35-49.9	15.3
\$50 & over	6.8
	<u>62.8%</u>

3. HOUSING AND HEATING CHARACTERISTICS

- a. HOUSING STOCK: 0.3 million all-year housing units

b. TYPE OF HOUSING:

<u>Housing Unit</u>	<u>Percent of Distribution</u>
Single Family	62%
Multi-Family	32
Mobile Homes	6
	<u>100%</u>

c. AGE OF HOME:

<u>Age of Home</u>	<u>Percent of Distribution</u>
3 yrs. or less	3%
4-7 yrs.	9
8-12 yrs.	14
13-20 yrs.	15
21-30 yrs.	10
31-40 yrs.	7
41 years or more	42
	<u>100%</u>

d. HOME HEATING EQUIPMENT SATURATION:

<u>Type of Equipment</u>	<u>Percent of Distribution</u>
Hydronic	39%
Warm Air Furnace	29
Heat Pump	1
Built-in Electric	9
Floor, Wall Pipeless	1
Room Heater	4
Fireplace, Stove	17
	<u>100%</u>

e. HOME HEATING FUEL:

<u>Fuel Used</u>	<u>Percent of Distribution</u>
Natural Gas	12%
Bottled, Tank, LP Gas	3
Electricity	13
Fuel Oil/Kerosene	61
Coal/Coke	0
Wood	11
Other/None	0
	<u>100%</u>

* EBI (Effective Buying Income) equals Personal Disposable Income available for local purchases.

** Age groups 0-18 and EBI group \$0-9,900 account for remaining percentage.

NEW JERSEY

1. KEY METROPOLITAN AREAS

Atlantic City
 Bergen-Passaic
 Jersey City
 Middlesex-Somerset-Hunterdon
 Monmouth-Ocean
 Newark
 Trenton
 Vineland-Millville-Bridgeton



2. DEMOGRAPHIC AND ECONOMIC PROFILE

- a. POPULATION:
 o 1982 - 7.4 million
 o 1972-82 Percent Change - (0.4)%
- b. HOUSEHOLDS:
 o 1982 - 2.6 million
 o 1972-82 Percent Change - 10.9%
- c. INCOME:
 o Mean Family Income 1979 - \$26,338
 o Variation from National Average - 13.6% greater
- d. EMPLOYMENT:
 o 1982 Employment - 3.3 million
 o 1982 Unemployment - 0.2 million

e. DISTRIBUTION:
 o Population Distribution:

<u>Age Group</u>	<u>Percent of Distribution</u>
18-24 yrs.	11.5%
23-34 yrs.	16.0
35-49 yrs.	18.4
50 & over	28.5
	74.4%

**

o Income by Household EBI Group:

<u>EBI Group</u> (000)	<u>Percent of Distribution</u>
\$10-19.9	19.9%
\$20-34.9	29.9
\$35-49.9	20.5
\$50 & over	14.4
	64.7%

**

3. HOUSING AND HEATING CHARACTERISTICS

a. HOUSING STOCK: 2.7 million all-year housing units

b. TYPE OF HOUSING:

<u>Housing Unit</u>	<u>Percent of Distribution</u>
Single Family	59%
Multi-Family	41
Mobile Homes	0
	100%

c. AGE OF HOME:

<u>Age of Home</u>	<u>Percent of Distribution</u>
3 yrs. or less	3%
4-7 yrs.	5
8-12 yrs.	8
13-20 yrs.	18
21-30 yrs.	19
31-40 yrs.	12
41 years or more	35
	100%

d. HOME HEATING EQUIPMENT SATURATION:

<u>Type of Equipment</u>	<u>Percent of Distribution</u>
Hydronic	53%
Warm Air Furnace	33
Heat Pump	1
Built-in Electric	6
Floor, Wall Pipeless	1
Room Heater	5
Fireplace, Stove	1
	100%

e. HOME HEATING FUEL:

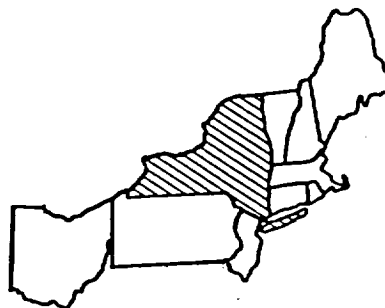
<u>Fuel Used</u>	<u>Percent of Distribution</u>
Natural Gas	49%
Bottled, Tank, LP Gas	1
Electricity	10
Fuel Oil/Kerosene	34
Coal/Coke	4
Wood	2
Other/None	0
	100%

* EBI (Effective Buying Income) equals Personal Disposable Income available for local purchases.

** Age groups 0-18 and EBI group \$0-9,900 account for remaining percentage.

1. KEY METROPOLITAN AREAS

Albany-Schenectady-Troy
 Binghamton
 Buffalo
 Elmira
 Glen Falls
 Nassau-Suffolk
 New York
 Niagara Falls
 Orange County
 Poughkeepsie
 Rochester
 Syracuse
 Utica-Rome

2. DEMOGRAPHIC AND ECONOMIC PROFILE

- a. POPULATION:
 o 1982 - 17.5 million
 o 1972-82 Percent Change - (4.9)%
- b. HOUSEHOLDS:
 o 1982 - 6.5 million
 o 1972-82 Percent Change - (5.0)%
- c. INCOME:
 o Mean Family Income 1979 - \$23,688
 o Variation from National Average - 2.2% greater
- d. EMPLOYMENT:
 o 1982 Employment - 7.3 million
 o 1982 Unemployment - 0.7 million

e. DISTRIBUTION:

- o Population Distribution:

<u>Age Group</u>	<u>Percent of Distribution**</u>
18-24 yrs.	11.9%
23-34 yrs.	16.6
35-49 yrs.	17.9
50 & over	28.4
	<u>74.8%</u>

- o Income by Household EBI Group*:

<u>EBI Group (000)</u>	<u>Percent of Distribution**</u>
\$10-19.9	22.5%
\$20-34.9	29.5
\$35-49.9	17.3
\$50 & over	11.2
	<u>80.5%</u>

3. HOUSING AND HEATING CHARACTERISTICS

- a. HOUSING STOCK: 6.7 million all-year housing units

b. TYPE OF HOUSING:

<u>Housing Unit</u>	<u>Percent of Distribution</u>
Single Family	41%
Multi-Family	57
Mobile Homes	2
	<u>100%</u>

c. AGE OF HOME:

<u>Age of Home</u>	<u>Percent of Distribution</u>
3 yrs. or less	1%
4-7 yrs.	3
8-12 yrs.	6
13-20 yrs.	16
21-30 yrs.	16
31-40 yrs.	12
41 years or more	46
	<u>100%</u>

d. HOME HEATING EQUIPMENT SATURATION:

<u>Type of Equipment</u>	<u>Percent of Distribution</u>
Hydronic	62%
Warm Air Furnace	26
Heat Pump	0
Built-in Electric	4
Floor, Wall Pipeless	1
Room Heater	5
Fireplace, Stove	2
	<u>100%</u>

e. HOME HEATING FUEL:

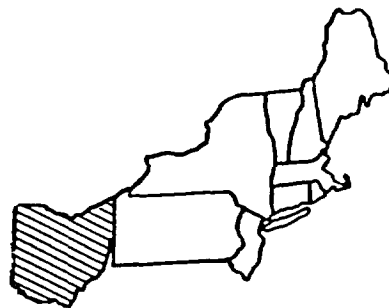
<u>Fuel Used</u>	<u>Percent of Distribution</u>
Natural Gas	38%
Bottled, Tank, LP Gas	1
Electricity	5
Fuel Oil/Kerosene	54
Coal/Coke	0
Wood	2
Other/None	0
	<u>100%</u>

* EBI (Effective Buying Income) equals Personal Disposable Income available for local purchases.

** Age groups 0-18 and EBI group \$0-9,900 account for remaining percentage.

1. KEY METROPOLITAN AREAS

Akron
 Canton
 Cincinnati
 Cleveland
 Columbus
 Dayton-Springfield
 Hamilton-Middletown
 Lima
 Lorain-Elyria
 Mansfield
 Parkersburg-Marietta
 Steubenville-Weirton
 Toledo
 Youngstown

2. DEMOGRAPHIC AND ECONOMIC PROFILE

- a. POPULATION:
 o 1982 - 10.8 million
 o 1972-82 Percent Change - 1.2%
- b. HOUSEHOLDS:
 o 1982 - 4.0 million
 o 1972-82 Percent Change - 13.8%
- c. INCOME:
 o Mean Family Income 1979 - \$23,303
 o Variation from National Average - 0.5% greater
- d. EMPLOYMENT:
 o 1982 Employment - 4.5 million
 o 1982 Unemployment - 0.6 million

- e. DISTRIBUTION:
 o Population Distribution:

<u>Age Group</u>	<u>Percent of Distribution**</u>
16-24 yrs.	12.7%
23-34 yrs.	16.6
35-49 yrs.	17.2
50 & over	26.2
	<u>72.7%</u>

- o Income by Household EBI Group:

<u>EBI Group (000)</u>	<u>Percent of Distribution**</u>
\$10-19.9	23.9%
\$20-34.9	34.0
\$35-49.9	16.2
\$50 & over	6.8
	<u>80.9%</u>

3. HOUSING AND HEATING CHARACTERISTICS

- a. HOUSING STOCK: 4.1 million all-year housing units

b. TYPE OF HOUSING:

<u>Housing Unit</u>	<u>Percent of Distribution</u>
Single Family	69%
Multi-Family	27
Mobile Homes	4
	<u>100%</u>

c. AGE OF HOME:

<u>Age of Home</u>	<u>Percent of Distribution</u>
3 yrs. or less	3%
4-7 yrs.	8
8-12 yrs.	11
13-20 yrs.	17
21-30 yrs.	17
31-40 yrs.	12
41 years or more	32
	<u>100%</u>

d. HOME HEATING EQUIPMENT SATURATION:

<u>Type of Equipment</u>	<u>Percent of Distribution</u>
Hydronic	10%
Warm Air Furnace	69
Heat Pump	4
Built-in Electric	7
Floor, Wall Pipeless	2
Room Heater	6
Fireplace, Stove	2
	<u>100%</u>

e. HOME HEATING FUEL:

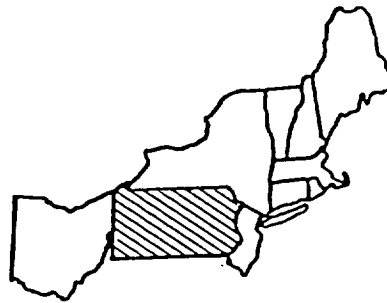
<u>Fuel Used</u>	<u>Percent of Distribution</u>
Natural Gas	71%
Bottled, Tank, LP Gas	3
Electricity	14
Fuel Oil/Kerosene	10
Coal/Coke	1
Wood	1
Other/None	0
	<u>100%</u>

* EBI (Effective Buying Income) equals Personal Disposable Income available for local purchases.

** Age groups 0-18 and EBI group \$0-9,900 account for remaining percentage.

1. KEY METROPOLITAN AREAS

Allentown-Bethlehem
 Altoona
 Beaver County
 Erie
 Harrisburg-Lebanon-Carlisle
 Johnston
 Lancaster
 Philadelphia
 Pittsburgh
 Reading
 Scranton-Wilkes-Barre
 Sharon
 State College
 Williamsport
 York



2. DEMOGRAPHIC AND ECONOMIC PROFILE

- a. POPULATION:
 - o 1982 - 11.9 million
 - o 1972-82 Percent Change - (0.6)%
- b. HOUSEHOLDS:
 - o 1982 - 4.3 million
 - o 1972-82 Percent Change - 11.0%
- c. INCOME:
 - o Mean Family Income 1979 - \$22,635
 - o Variation from National Average - 2.3% less
- d. EMPLOYMENT:
 - o 1982 Employment - 4.9 million
 - o 1982 Unemployment - 0.6 million

e. DISTRIBUTION:

o Population Distribution:

Age Group	Percent of Distribution **
18-24 yrs.	12.3%
23-34 yrs.	15.7
35-49 yrs.	16.8
50 & over	30.2
	<u>75.0%</u>

o Income by Household EBI Group:

EBI Group (000)	Percent of Distribution **
\$10-19.9	24.6%
\$20-34.9	33.5
\$35-49.9	15.6
\$50 & over	7.1
	<u>80.8%</u>

3. HOUSING AND HEATING CHARACTERISTICS

a. HOUSING STOCK: 4.5 million all-year housing units

b. TYPE OF HOUSING:

Housing Unit	Percent of Distribution
Single Family	71%
Multi-Family	26
Mobile Homes	3
	<u>100%</u>

c. AGE OF HOME:

Age of Home	Percent of Distribution
3 yrs. or less	2%
4-7 yrs.	6
8-12 yrs.	9
13-20 yrs.	13
21-30 yrs.	15
31-40 yrs.	10
41 years or more	45
	<u>100%</u>

d. HOME HEATING EQUIPMENT SATURATION:

Type of Equipment	Percent of Distribution
Hydronic	35%
Warm Air Furnace	45
Heat Pump	2
Built-in Electric	7
Floor, Wall Pipeless	2
Room Heater	6
Fireplace, Stove	3
	<u>100%</u>

e. HOME HEATING FUEL:

Fuel Used	Percent of Distribution
Natural Gas	49%
Bottled, Tank, LP Gas	1
Electricity	10
Fuel Oil/Kerosene	34
Coal/Coke	4
Wood	2
Other/None	0
	<u>100%</u>

* EBI (Effective Buying Income) equals Personal Disposable Income available for local purchases.

** Age groups 0-18 and EBI group \$0-9,900 account for remaining percentage.

RHODE ISLAND

1. KEY METROPOLITAN AREAS

Providence-Pawtucket-Woonsocket
Newport



2. DEMOGRAPHIC AND ECONOMIC PROFILE

- a. POPULATION:
 - o 1982 - 1.0 million
 - o 1972-82 Percent Change - (1.7)%
- b. HOUSEHOLDS:
 - o 1982 - 0.4 million
 - o 1972-82 Percent Change - 13.1%
- c. INCOME:
 - o Mean Family Income 1979 - \$22,092
 - o Variation from National Average - 4.7% less
- d. EMPLOYMENT:
 - o 1982 Employment - 0.4 million
 - o 1982 Unemployment - 0.05 million

e. DISTRIBUTION:

- o Population Distribution:

<u>Age Group</u>	<u>Percent of Distribution**</u>
18-24 yrs.	13.3%
23-34 yrs.	16.1
35-49 yrs.	16.1
50 & over	30.2
	<u>75.7%</u>

- o Income by Household EBI Group*:

<u>EBI Group</u> (000)	<u>Percent of Distribution**</u>
\$10-19.9	24.6%
\$20-34.9	32.8
\$35-49.9	15.2
\$50 & over	6.9
	<u>79.5%</u>

3. HOUSING AND HEATING CHARACTERISTICS

a. HOUSING STOCK:

0.4 million all-year housing units

b. TYPE OF HOUSING:

<u>Housing Unit</u>	<u>Percent of Distribution</u>
Single Family	54%
Multi-Family	45
Mobile Homes	1
	<u>100%</u>

c. AGE OF HOME:

<u>Age of Home</u>	<u>Percent of Distribution</u>
3 yrs. or less	3%
4-7 yrs.	5
8-12 yrs.	8
13-20 yrs.	14
21-30 yrs.	15
31-40 yrs.	11
41 years or more	44
	<u>100%</u>

d. HOME HEATING EQUIPMENT SATURATION:

<u>Type of Equipment</u>	<u>Percent of Distribution</u>
Hydronic	60%
Warm Air Furnace	19
Heat Pump	1
Built-in Electric	5
Floor, Wall Pipeless	1
Room Heater	10
Fireplace, Stove	4
	<u>100%</u>

e. HOME HEATING FUEL:

<u>Fuel Used</u>	<u>Percent of Distribution</u>
Natural Gas	33%
Bottled, Tank, LP Gas	1
Electricity	6
Fuel Oil/Kerosene	58
Coal/Coke	0
Wood	2
Other/None	0
	<u>100%</u>

* EBI (Effective Buying Income) equals Personal Disposable Income available for local purchases.

** Age groups 0-18 and EBI group \$0-9,900 account for remaining percentage.

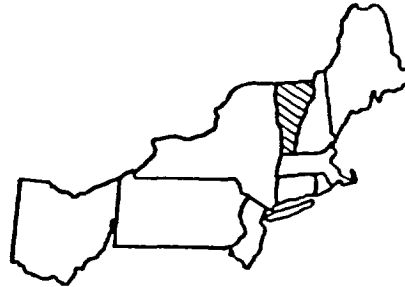
VERMONT

1. KEY METROPOLITAN AREAS

Burlington

2. DEMOGRAPHIC AND ECONOMIC PROFILE

- a. POPULATION:
 - o 1982 - 0.5 million
 - o 1972-82 Percent Change - 12.2%
- b. HOUSEHOLDS:
 - o 1982 - 0.2 million
 - o 1972-82 Percent Change - 30.3%
- c. INCOME:
 - o Mean Family Income 1979 - \$19,815
 - o Variation from National Average - 14.5% less
- d. EMPLOYMENT:
 - o 1982 Employment - 0.2 million
 - o 1982 Unemployment - 0.02 million



e. DISTRIBUTION:

- o Population Distribution:

<u>Age Group</u>	<u>Percent of Distribution</u> **
18-24 yrs.	13.5%
23-34 yrs.	17.8
35-49 yrs.	16.9
50 & over	24.9
	73.1%
- o Income by Household EBI Group:

<u>EBI Group</u>	<u>Percent of Distribution</u> **
(000)	
\$10-19.9	31.2%
\$20-34.9	32.6
\$35-49.9	11.2
\$50 & over	4.3
	79.3%

3. HOUSING AND HEATING CHARACTERISTICS

- a. HOUSING STOCK: 0.2 million all-year housing units
- b. TYPE OF HOUSING:

<u>Housing Unit</u>	<u>Percent of Distribution</u>
Single Family	64%
Multi-Family	24
Mobile Homes	7
	100%
- c. AGE OF HOME:

<u>Age of Home</u>	<u>Percent of Distribution</u>
3 yrs. or less	3%
4-7 yrs.	9
8-12 yrs.	12
13-20 yrs.	14
21-30 yrs.	9
31-40 yrs.	6
41 years or more	47
	100%
- d. HOME HEATING EQUIPMENT SATURATION:

<u>Type of Equipment</u>	<u>Percent of Distribution</u>
Hydronic	30%
Warm Air Furnace	34
Heat Pump	1
Built-in Electric	9
Floor, Wall Pipeless	1
Room Heater	7
Fireplace, Stove	18
	100%
- e. HOME HEATING FUEL:

<u>Fuel Used</u>	<u>Percent of Distribution</u>
Natural Gas	6%
Bottled, Tank, LP Gas	5
Electricity	10
Fuel Oil/Kerosene	62
Coal/Coke	0
Wood	17
Other/None	0
	100%

* EBI (Effective Buying Income) equals Personal Disposable Income available for local purchases.

** Age groups 0-18 and EBI group \$0-9,900 account for remaining percentage.

HOME HEATING FUEL (IN-PLACE STOCK)
1950-1980
 (Percent Distribution)

<u>FUEL TYPE</u>	<u>1950</u>	<u>1960</u>	<u>1970</u>	<u>1975</u>	<u>1980</u>
Utility Gas	26.6%	43.1%	55.2%	56.4%	53.3%
Fuel Oil, Kerosene	22.6	32.4	26.0	22.5	18.1
Electricity	0.7	1.8	7.7	12.6	18.4
Bottled, Tank or LP Gas	1.8	5.1	6.0	5.7	5.5
Wood and Other Fuel	11.3	4.6	1.7	1.3	3.4
Coal or Coke	34.6	12.2	2.9	0.8	0.6
None	<u>2.3</u>	<u>0.9</u>	<u>0.6</u>	<u>0.6</u>	<u>0.7</u>
	100.0%	100.0%	100.0%	100.0%	100.0%
TOTAL OCCUPIED UNITS (MM)	42.8	53.0	63.4	72.5	80.4

Source: U.S. Bureau of Census

**REGIONAL HEATING FUELS AND
MARKET SHARES FOR RESIDENTIAL HOUSING, 1978-1982**

(Thousands of Occupied Units^(a))

Region and Fuel	Actual				Estimate		Market Share
	1978	1979	1980	1981	1982	1982	
Northeast	16,952	17,123	17,264	17,852	17,900	100	
Gas	6,301	6,558	6,928	7,335	7,500	42	
Electric	999	1,109	1,169	1,281	1,300	7	
Oil ^(b)	9,253	9,056	8,685	8,642	8,500	48	
Other ^(c)	399	400	482	594	600	3	
North Central	20,171	20,565	20,842	21,564	21,600	100	
Gas	14,140	14,428	14,688	15,308	15,400	71	
Electric	1,685	1,864	2,036	2,210	2,200	10	
Oil ^(b)	2,817	2,724	2,502	2,328	2,300	11	
Other ^(c)	1,529	1,549	1,616	1,718	1,700	8	
South	25,094	25,585	26,286	27,430	27,800	100	
Gas	11,956	12,054	12,290	12,725	12,800	46	
Electric	6,561	7,074	7,615	8,225	8,600	31	
Oil ^(b)	3,263	3,191	3,009	2,905	2,800	10	
Other ^(c)	3,314	3,266	3,372	3,575	3,600	13	
West	14,950	15,299	15,681	16,329	16,500	100	
Gas	10,125	10,283	10,492	10,716	10,900	66	
Electric	3,013	3,197	3,388	3,770	3,800	23	
Oil ^(b)	739	737	671	619	600	4	
Other ^(c)	1,073	1,082	1,130	1,224	1,200	7	

(a) Units include both single and multifamily.

(b) Oil includes kerosene.

(c) Other includes LP gas, coal, wood solar, and none.

Source: U.S. Bureau of the Census, Annual Housing Survey: General Housing Characteristics, 1978-1981. A.G.A. estimate for 1982 derived by adding number of dwellings completed by fuel type, as reported by U.S. Bureau of Census, Construction Reports - Series C-25, June 1983, to 1981 actual data, considering also the net gains and losses as a result of fuel switching and demolitions.

PRODUCT COMPARISON MARKET SIZE - 1983
Shipment (000s)

<u>Product</u>	1983 <u>Shipments</u>	<u>Percent Distribution</u>	
		<u>New Construction</u>	<u>Replacement</u>
<u>Water Heaters</u>			
*Gas	3,172.1	N/A	N/A
*Electric	3,131.0	N/A	N/A
Oil	25-30	N/A	N/A
	<u>6,328.1</u>	15-20%	75-80%
<u>Furnaces</u>			
*Gas	1,661.8	34%	66%
*Electric	339.0	92%	8%
*Oil	127.3	12%	88%
Total	<u>2,128.1</u>		
<u>Boilers</u>			
*Gas	147.1	50%	50%
Electric	0.7	90%(E)	10%(E)
*Oil	82.6	11%	89%
	<u>231.0</u>		
*Gas Burner Conversions	24.9	-	100%
*Air-to-Air Heat Exchangers	N/A	N/A	N/A
<u>Furnaces/Boilers</u>			
*Wood	-	-	100%
*Coal	-	-	100%
*Boilers	-	-	100%
	<u>10.7</u>		
<u>Fireplaces</u>			
Masonry	381.3	52%	48%
*Zero Clearance, Heat Circ.	331.3	62%	38%
*Zero Clearance, Not Heat Circ.	225.5	83%	17%
Pre-Cast Concrete, Tilt-Up	18.3	100%	-
Freestanding	163.4	1%	99%
	<u>1,119.8</u>		
<u>*Chimneys (for stoves)</u>			
Masonry	1,037		
Pre-Fab Metal, Air-Insulated	251		
Pre-Fab Metal, Solid Pack	88		
Unspecified	415		
	<u>1,719</u>	N/A	N/A

* Included in this study.

Source: GAMA and related industry; Wood 'n Energy Magazine
Hayes/Hill estimates.

IV. CHANNELS OF DISTRIBUTION

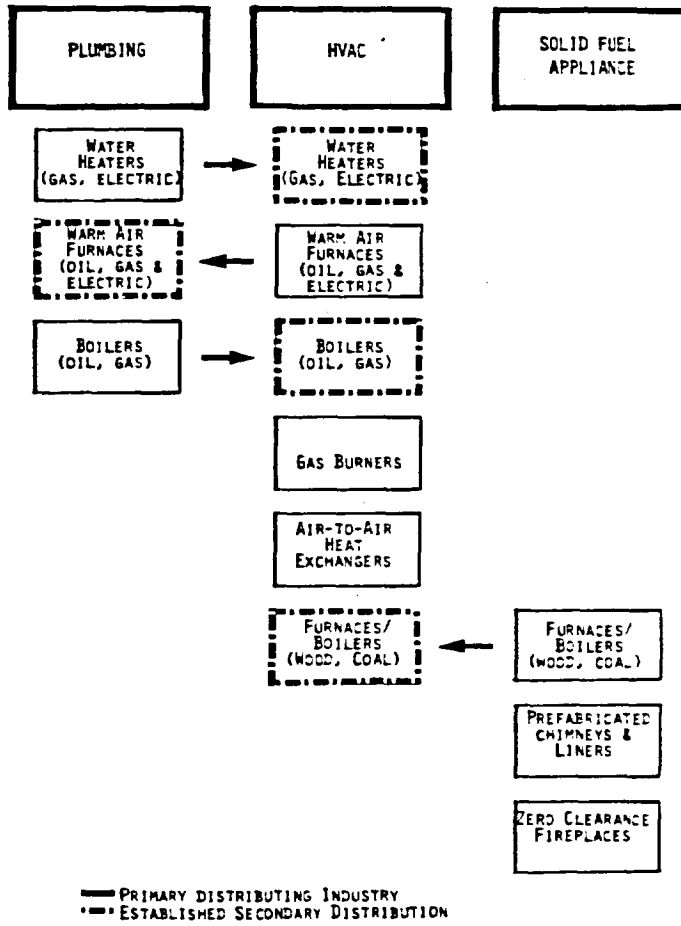
A. Overview of Distribution of the U.S. Residential Heating Industry. This section describes the methods and channels used to distribute heating products in the U.S. The specific products selected for study in the terms of reference represent a wide range of equipment types in various stages of the product life cycle, market sizes and opportunities, price ranges, and distribution modes.

- o The chart on page 44 shows 1983 market sizes and the new construction versus replacement emphasis.
- o The top chart on page 46 depicts the major product groupings selected for the study and their primary distributing industry. In general, these products fall into one of three distribution systems:
 - (1) Traditional HVAC (heat, ventilating and air conditioning)
 - (2) Solid Fuel Appliances
 - (3) Plumbing

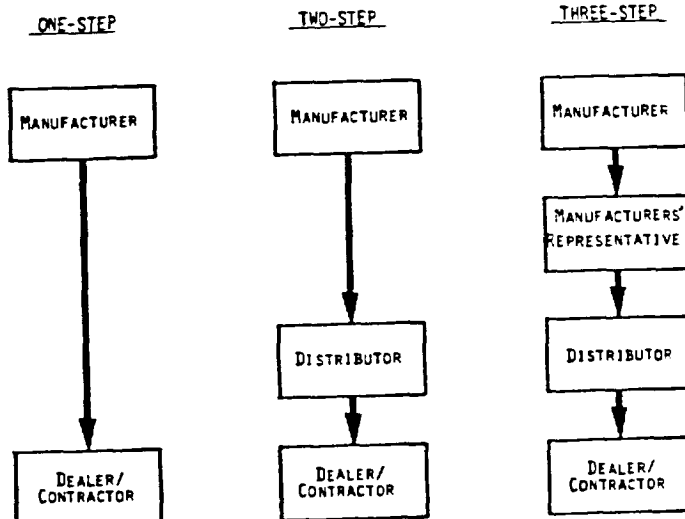
Distribution is the key to successful participation in heating equipment. Therefore, our field research focused on the distribution network both by product and by geographic region.

In general, in all three businesses there exist several types of distribution in varying degrees of occurrence. Typical variations are shown in the bottom chart on page 46. The major types of industry participants are discussed in Section B of this chapter.

INDUSTRY/PRODUCT RELATIONSHIP



TYPES OF DISTRIBUTION

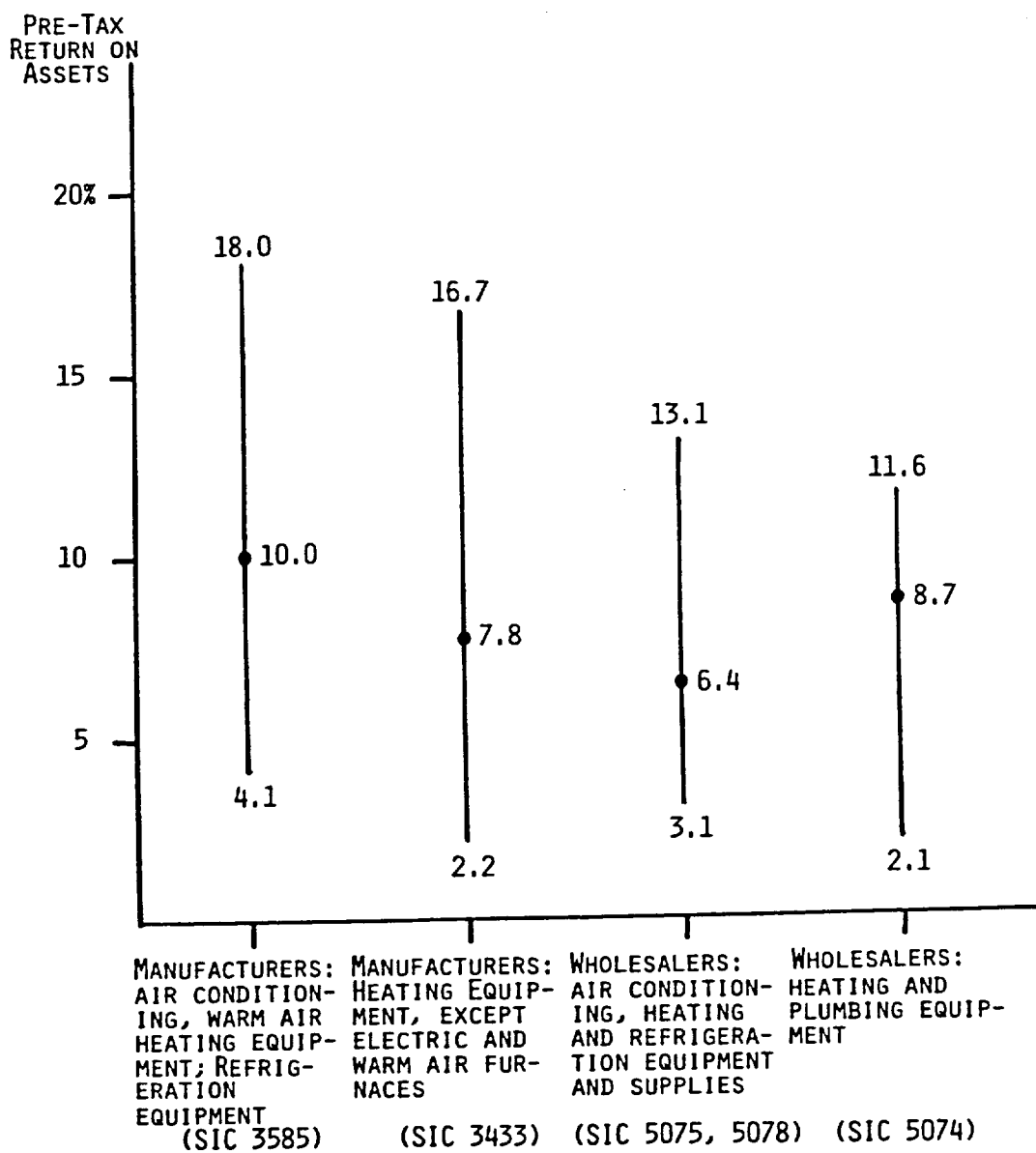


- o The traditional HVAC distribution system, which is large, extensive, but mature and relatively stable, is discussed on page 53.
- o The solid fuel appliance industry, is in a state of flux, and is discussed on page 64.
- o The plumbing industry is also very mature and stable. It is similar in structure to the traditional HVAC industry structure and in fact, overlaps HVAC by 10-15%. Today the plumbing industry is forecasting flat growth and is seeking ways of expanding its business. Many plumbing participants have or are considering the HVAC business as a natural extension. The plumbing business is not discussed separately since it is outside the scope of this study. However, selected plumbing distributors are included in Appendix F-2.

B. Major Types of Industry Participants

1. The industry is characterized by intense competition at all levels.
 - o Distributors have limited market control because they are only the distribution level of the business. They tend to react to, rather than lead, the market. Manufacturers have difficulty controlling the distribution chain.
 - o Most participants achieve only modest profitability and have relatively poor value-added positions. The chart on page 48 offers a relative profitability picture.
 - o Products are perceived essentially as commodities, with few differences between manufacturers and few features of real interest to customers.
 - o End-users usually rely on dealers for recommendations and dealers compete primarily on price.
2. The space conditioning industry consists of three basic types of participants: manufacturers, distributors and dealer/contractors.
 - o Participants tend to emphasize either new construction or the replacement market.

FINANCIAL COMPARISON
PRE-TAX RETURN ON TOTAL ASSETS
(FIVE-YEAR AVERAGE 1978-82)



- o Companies can also be characterized by their marketing and operational approach.
 - Traditional, old-line
 - Aggressive merchandising
- o Most participants define their business as space conditioning (including cooling and heating) and generally do not favor a particular energy source.
- o Each major category of participant is presented in a general discussion below.

3. The consumer environment

- o Cost is a critical decision factor.
- o Consumers are primarily interested in heated space.
- o There is increased awareness and participation in decision-making processes, regarding: fuel source, price, availability and equipment.
- o Customers are beginning to segment into several types, such as: construction contractors (tract, custom); cost conscious (initial/payback relationship); and fuel conservationist.

4. The dealer/contractor environment

- o A dealer's primary market segment (new, replacement, wealthy, poor) focus determines his sales and marketing approach -- the same methods are often applied to all other segments served.
- o There are two basic types of dealer/contractors: new construction and replacement.
- o The aggressive merchandising and service-oriented dealer/contractors are growing at the expense of the conservative, old-line, traditional dealer/contractors.

5. The distributor environment

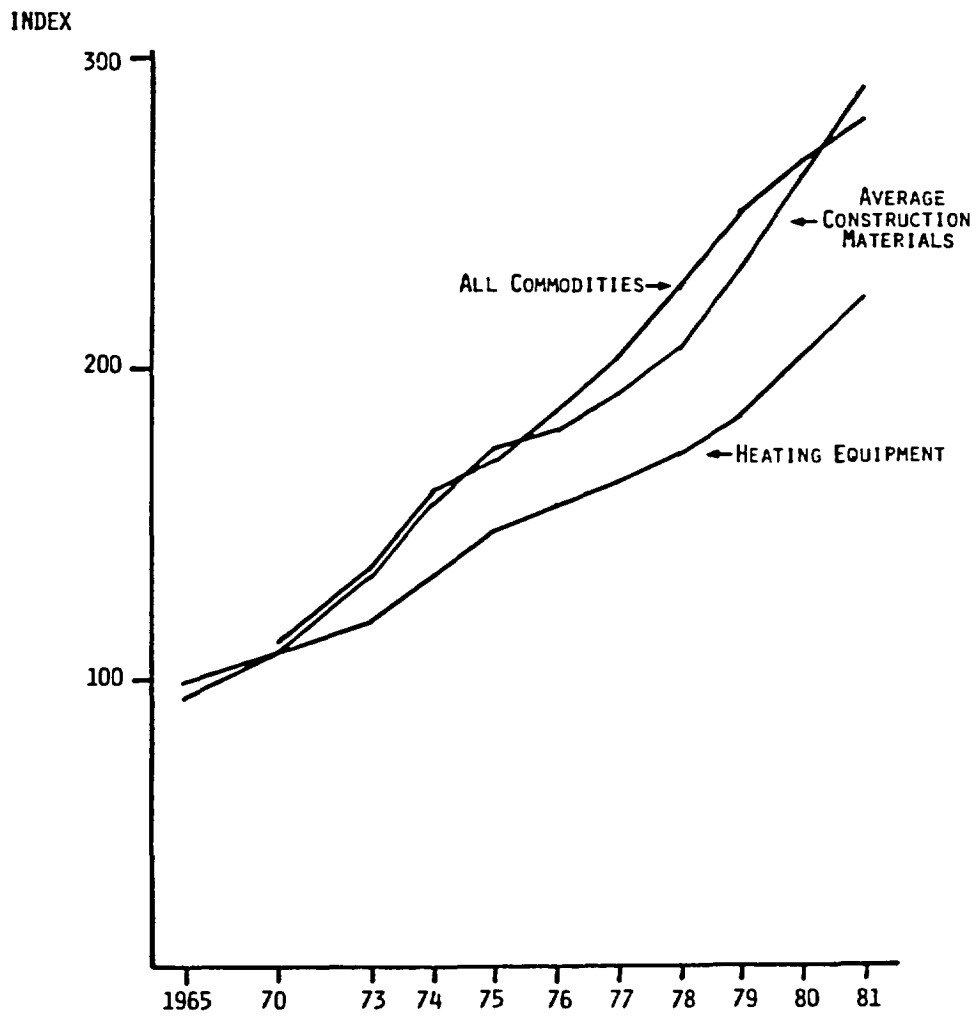
- o Most distributors choose their market focus based on local market needs, dealer's strengths, and capabilities of product line.

- o Distributors tend to emphasize either the new construction market or the replacement market. New construction distributors encourage volume orders with discounts. Replacement distributors encourage volume orders with one-stop shopping.
- o There are three basic types of distributors: independent distributors; exclusive contract/arrangement distributors; and company-owned factory branches.
- o It appears that multi-market and regional distributors will continue to grow at the expense of local independents. Factory branch sales are increasing due to recent acquisitions by large companies which favor strong brand merchandising and company control.

6. The manufacturer environment

- o Air system manufacturers functionally define their business as space conditioning. Most of these manufacturers produce, or at least market, both heating and cooling systems.
- o In recent years, manufacturers have faced decreasing margins as price increases have been difficult to achieve. As shown on page 51, the producer price index for heating equipment has significantly lagged the indices for all commodities and the average for all construction materials over the last sixteen years.
- o All firms market to both the new construction and replacement markets, but usually emphasize one or the other with a given brand. The builder market provides volume orders, while the replacement market provides some sales stability. Distributors sell to both markets, but also tend to emphasize one or the other.
 - Most manufacturers market more than one brand name, often the result of acquisitions/mergers. Actual differences in the equipment are usually minor.
 - Separate brand names for almost identical equipment are maintained for marketing reasons, as are separate distribution systems.

PRODUCER PRICE INDEX COMPARISON
(1967 = 100)



SOURCE: U.S. BUREAU OF COMMERCE

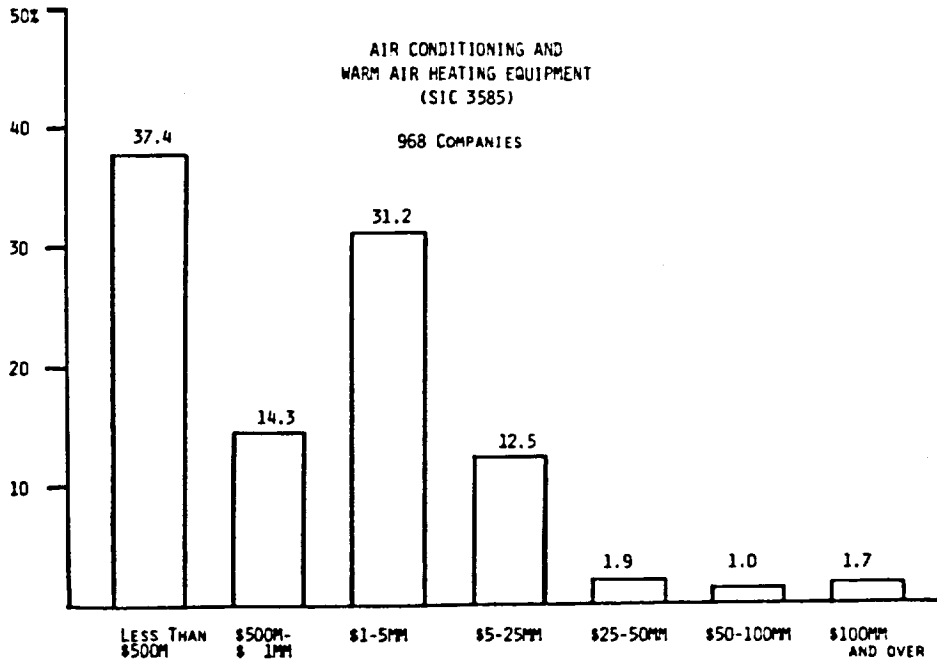
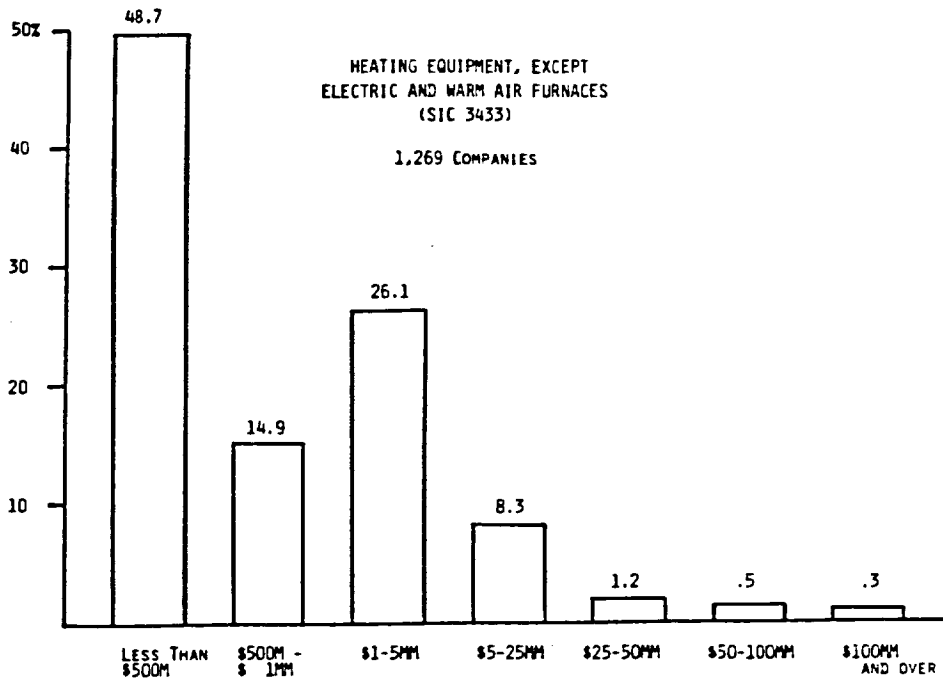
- Each brand typically includes at least two product lines, and add-on accessory options. A standard line (aimed at the builder market) and a deluxe or features line (aimed at the replacement or add-on market).
- The product lines also contain configuration and size variations which result in an exceedingly large number of products to manage. This increases costs in all aspects of the business. Most manufacturers intend to prune and rationalize their product lines.
- o Most participants experience rather moderate profitability, which restricts funds available for major investments and long-term technical research and development.
 - There is strong short-term orientation in technical development efforts, as well as an emphasis on incremental extensions of well-defined, existing technologies rather than major technological innovation.
 - Historically, the risks associated with major technological and product innovation investments often outweighed the potential rewards. Hence, major product introductions were infrequent and market penetration by new products was slow.
 - Recently, the rate of innovation and the sophistication of technologies have increased. There is a growing realization that a participant's future viability will increasingly depend on technical and marketing capabilities.
 - The industry's capacity to absorb an increased rate and complexity of innovation remains a major issue, particularly at the dealer/contractor level.
- o Historically, the HVAC industry was composed of a large number of manufacturers and was highly regional. There has been significant industry consolidation, resulting in heavy concentration and primarily national participation.
 - Equipment manufacturers operate in a competitive, highly segmented, price sensitive, and commodity-like environment.

- It is difficult for most participants to achieve sustainable positions of comparative advantage.
- Although there are many manufacturers, as shown on page 54, most are quite small. However, in terms of volume in almost all the product categories under investigation, the large companies have the majority of market share.
- o Competitive share and position significantly affect a company's profitability, strategic flexibility, and ability to respond to market requirements and changes.
 - Dramatic improvements in share and position are difficult to achieve in this industry, while major mistakes can lead to substantial declines.
 - This is reflected in the generally conservative nature of the industry and the relative stability of competitive share and position.
 - For relative comparison purposes only, manufacturer financial statements -- income structure and balance sheets -- are offered on page 55.
- o The trend toward concentration is expected to continue due to:
 - Generally low profit levels.
 - Increased technical development investments required to meet regulatory and market needs in the future.

C. Distribution in the Residential HVAC Industry. A

simplified structure of the residential/small commercial heating and cooling market is depicted in the chart on page 56. It is important for Canadian manufacturers to understand the distribution network from manufacturer to end-user as this will affect every aspect of a company's marketing mix.

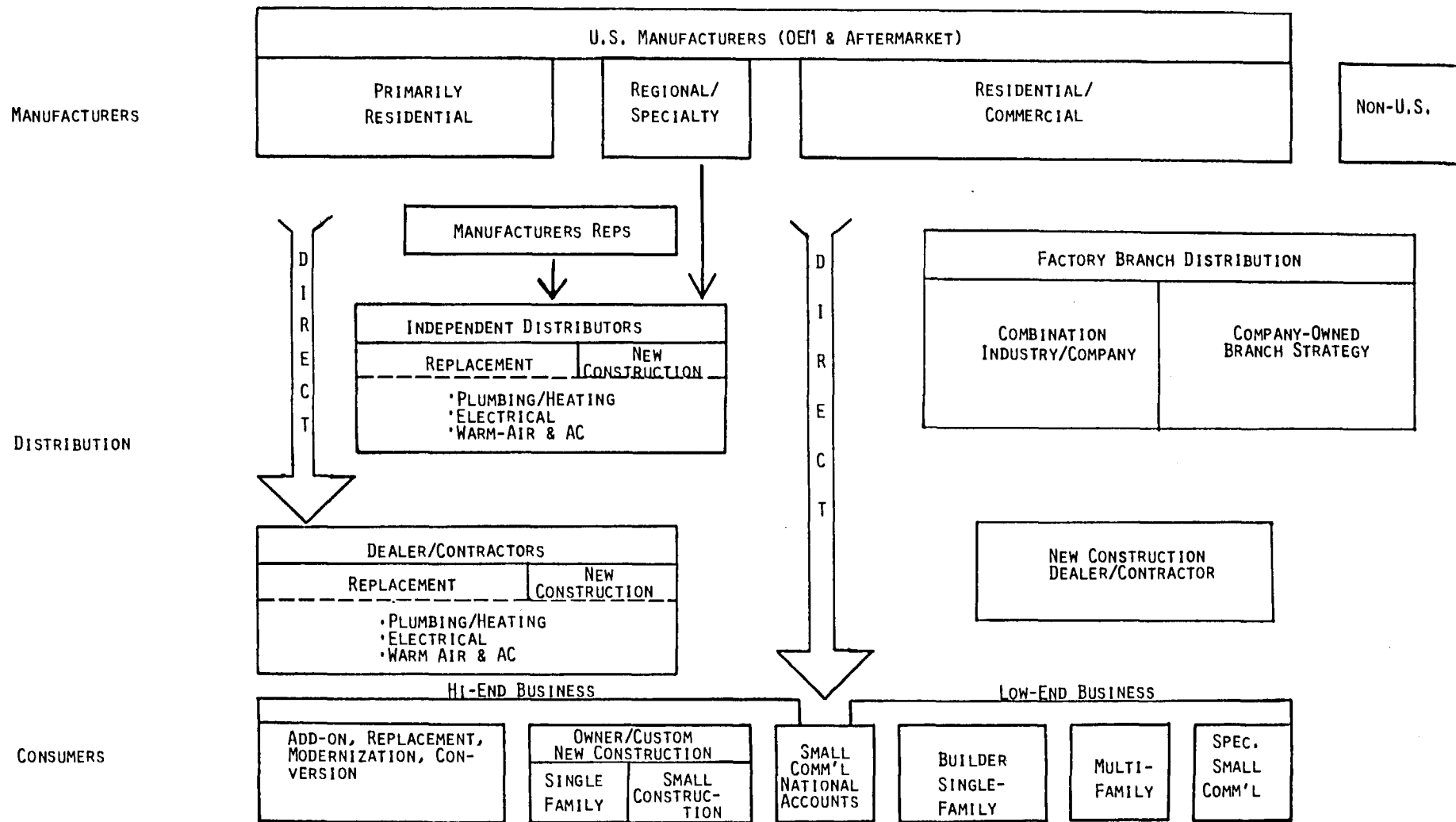
PERCENT DISTRIBUTION OF INDUSTRY PARTICIPANTS



MANUFACTURER FINANCIAL COMPARISON - 1982

	AIR CONDITIONING AND WARM AIR HEATING EQUIPMENT	HEATING EQUIPMENT, EXCEPT ELECTRIC AND WARM AIR FURNACES
<u>INCOME STRUCTURE</u>		
PRE-TAX PROFIT	4.4%	2.9%
OTHER EXPENSE	1.5	2.2
OPERATING EXPENSE	21.3	22.6
COST OF GOODS SOLD	72.8	72.4
<u>BALANCE SHEET STRUCTURE</u>		
<u>ASSETS</u>		
CASH	10.3%	11.7%
ACCOUNTS RECEIVABLE	31.1	24.3
INVENTORY	28.0	31.7
OTHER CURRENTS	2.2	2.0
FIXED AND OTHER ASSETS	28.4	30.3
<u>LIABILITIES</u>		
CURRENT LIABILITIES	40.1%	40.5%
LONG TERM DEBT	18.2	17.4
NET WORTH	41.7	42.1
	100.0%	100.0%

SIMPLIFIED STRUCTURE OF THE RESIDENTIAL/SMALL COMMERCIAL
HEATING AND COOLING MARKET



As noted elsewhere in this report, the HVAC market is controlled by the distributor level. Very little production goes directly to dealer/contractors: the only direct sales to the residential market are to very large contractors. Based on field research, we estimate that at least 50-60% of all heating equipment goes through factory branch or controlled distribution. These distributors are, therefore, not available to handle products of Canadian manufacturers.

In addition, Canadian manufacturers would find it difficult to establish this form of distribution for themselves due to:

- o Geographic distance
- o Cost of captive distribution
- o High product volumes required to justify controlled distribution

Two good distribution options remain open to Canadian manufacturers:

1. Manufacturers representatives
2. Independent distributors

Sections C1, 2, and 3 below summarize the field interviews held with both manufacturer's representatives and independent distributors in terms of: type of equipment carried, geographic territory, customer base, and functions and services provided. During the interviewing process particular emphasis was placed on assessing receptivity to Canadian products and market potential.

Interviews were conducted with 23 manufacturers representatives, 30 HVAC and plumbing distributors and 13 solid fuel appliance distributors. There is a summary of the individual interviews in the Appendix, accompanied by a more extensive list of other industry participants. These lists provide Canadian manufacturers with a ready-to-use guide. Distributors can be contacted based on a company's individual market approach. Listed below is a guide to the appropriate appendices.

Appendix	Title
E-1	Summary of Manufacturers Representatives Interviews
E-2	Listing of Selected Manufacturers Representatives in Designated States
F-1	Summary of HVAC and Plumbing Distributor Interviews
F-2	Listing of Selected HVAC and Plumbing Distributors in Designated States
G-1	Summary of Solid Fuel Appliance Distributor Interviews
G-2	Listing of Selected Solid Fuel Appliance Distributors in Designated States

1. Manufacturers representatives. Manufacturers representatives ("reps") are used extensively in the HVAC business. The basic reason reps are employed is to market and sell a manufacturer's product in lieu of a direct company sales force.
 - o Reps offer manufacturers, especially smaller and newer market entrants, several advantages, including:

- Reps offer immediate entry into a market due to the established and long-term relationships reps have with their customers.
 - It is the economical way to enter the market as reps are paid on a strictly commission basis.
 - Reps tend to be highly motivated as they have to perform or they will not only lose the line, but could go out of business.
 - Reps provide in-depth knowledge of the local marketplace, and offer in-place distribution for a new line. At times, they are instrumental in developing a market for a manufacturer.
 - Reps offer a manufacturer control over sales costs and built-in product knowledge.
- o Reps vary significantly in the breadth of functions they perform. The reps interviewed range from traditional, old-line types ("we just sell the products") to full service merchandisers. The interviews clearly indicated that there is a trend toward reps taking on more and more merchandising functions. Listed below are the range of functions indicated by interviewees. They are presented in three groupings:
- (1) Basic functions
 - . Contact customers and write orders
 - . Offer and maintain sales support
 - . Reach smaller distributors
 - . Handle, administer or assist in advertising and promotion
 - (2) Generally-offered functions
 - . Mix product loads
 - . Provide credit information
 - . Run seminars and training sessions for distributors
 - . Customer relations - handle complaints, make service calls
 - (3) Other merchandising-oriented functions
 - . Warehousing
 - . Hold trade shows

- . Provide market research feedback
 - . Mailings
- o All HVAC reps interviewed carried heating equipment. Due to the historic dominance of hydronic heat in the Northeast, a majority of reps also carried plumbing equipment. The major area of project overlap is with water heaters and boilers. A little less than half of the reps also carried air conditioning, again this is specific to the Northeast where air conditioning has less saturation. Those reps carrying plumbing tended to also carry general hardware items. A few reps carried chimney equipment, but virtually none sold fireplace equipment.
 - o Almost all reps serve both the residential and commercial market, but all emphasize one more than the other. For the purposes of this study, we particularly sought out those specializing in the residential market.
 - o No single rep covers the entire geographic area under investigation, as, by definition, they are experts in local markets. Reps tend to group around metropolitan areas. However, the New England states such as Vermont, Maine and New Hampshire are small, sparsely populated markets and reps tend to cover them as a group.
 - o The number of sales persons per manufacturers rep company ranged from 1 to 20. However, most have 4 to 6 sales people.
 - o Manufacturers reps in the Northeast sell almost exclusively to distributors, with a very small percentage going directly to dealer/contractors.
 - o All sales reps receive payment from manufacturers exclusively on a commission basis. However, the commission rate system varies widely. Listed below are some guidelines:
 - Commissions can range from 5% to 20% on net price billed to customer.
 - Basic or commodity items usually fall in the 5-7% range, but generally not below 5%. Specialty items command higher commissions in the 10-20% range.

- Net price definition varies. In some cases, commission is based on total net price which includes freight. In other cases, the freight is deducted and then the commission is calculated.
- It appears that there is a trend toward reps requiring a standard commission for basic functions and then additional percentages for additional merchandising functions such as invoicing and warehousing.

2. Independent Distributors. Independent distributors are generally larger businesses than manufacturers reps. They are well-established and have long-term relationships with suppliers. Independent distributors can range from a company like Noland which has 3,000 sales reps and 80 branches, down to Energy Supply Company with one salesman and one branch.

- o Almost all distributors interviewed handled both heating and air conditioning equipment. If a third major product line is carried, it is typically plumbing or solid fuel equipment. However, as the solid fuel business has softened recently several companies are dropping their solid fuel lines.
- o The method of distribution to the independent distributor -- either direct from manufacturer or through a manufacturers rep -- is decided upon by the manufacturer. Most distributors get some products direct and some through reps, although a few reported all products coming one way or the other. General comments included:
 - Direct from manufacturer:
 - Better prices
 - Direct line of communication
 - In-depth product knowledge
 - Higher inventory requirements
 - Through manufacturers representative:
 - More service
 - Lower inventory requirements
 - More technical and sales support

- o The primary customer of the independent distributor is the dealer/contractor, accounting for 70 to 100% of distributors sales. The remaining end-users which deal directly with distributors are large do-it-yourself retailers or other mass merchandisers. Distributors do not sell to the public.
- o HVAC distributors in the Northeast offer a fairly standard range of services which include:
 - . Mixing product loads
 - . Providing credit
 - . Handling advertising and promotion
 - . Inventorying for dealer/contractor
 - . Handling warranties and product claims
 - . Some distributors also hold trade shows and offer training, often in conjunction with the manufacturer.

3a. Mass Merchandisers. Certain heating products, (water heaters and solid fuel appliances, for example) are also sold through hardware stores and hardware chains. Smaller retail outlets generally purchase their merchandise through distributors, but some of the larger merchandisers establish direct-from-manufacturer purchasing relations.

Six of the largest merchandisers, along with their heating products buyers, are shown in the table below.

HOME PRODUCTS
LARGE MERCHANTISERS

<u>Company</u>	<u>Heating Buyer</u>	<u>Telephone No.</u>
Sears Roebuck & Co. Sears Tower Chicago, Illinois 60684	Stephen R. Nadle	(312) 875-2500
J.C. Penney Company, Inc. 1301 Avenue of the Americas New York, New York 10019	W.E. Kohler	(212) 957-4321
Montgomery Ward & Co., Inc. Montgomery Ward Plaza Chicago, Illinois 60671	Tony Busch	(312) 467-2000
Channel Home Centers Inc. 945 State Highway No. 10 Whippany, N.J. 07981	Debbi Atkinson	(201) 887-7000

HOME PRODUCTS
LARGE MERCHANDISERS . . .

<u>Company</u>	<u>Heating Buyer</u>	<u>Telephone No.</u>
Plywood Ranch Industries, Inc. 280 Quincy Avenue Braintree, MA. 02184	Mike Fried	(617) 848-7260
Grossman's 200 Union Street Braintree, MA. 02184	James Cotreau	(617) 848-0100

3b. Homebuilders and Developers. Homebuilders and developers represent another large segment of the United States market for heating products that fits loosely into the overall distribution structure. Their purchasing patterns depend upon the size of the developer.

- o Smaller developers typically deal with three or four contractors/installers who specialize in new home construction. The builder will typically request quotations for a particular project and will decide, based on those, upon a contractor. Contractors purchase their heating equipment through a distributor. This market is best reached through the typical manufacturer's rep or distributor structure.
- o Extremely large, often national, homebuilders may offer centrally designed homes. An extremely large builder of this type will specify the equipment for each home. He may then request installation subcontracts from local contractors, or he may make arrangements to purchase equipment directly from manufacturers. Even in cases where he purchases directly from manufacturers, the purchase contract itself may flow through a local distributor and contractor.

A list of the 20 largest home builders with markets in the Northeast United States appears in Appendix U. Canadian manufacturers can contact them to learn which contractors and distributors they deal with most frequently. The possibility of entering a direct-from-manufacturer purchase arrangement can also be explored with them.

There is an extremely large number of home builders in the United States, even within the ten Northeastern states included in the study.

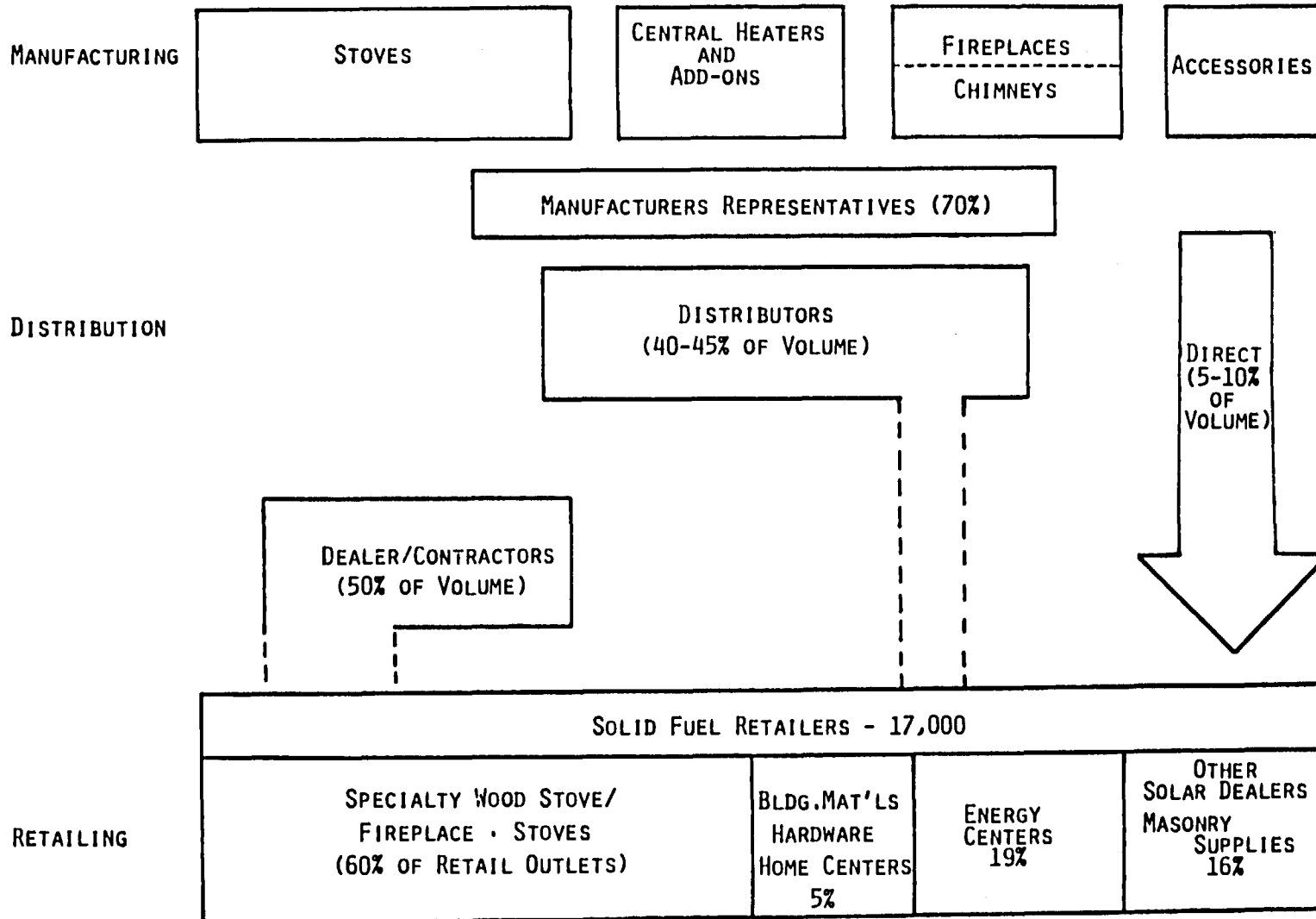
The National Association of Home Builders, (NAHB), (202-822-0200) local home builders associations, and Home Owners Warranty Association, (HOW), (202-822-0200) can provide the names of additional builders if they are desired.

- D. Distribution in the Solid Fuel Appliance Industry. A simplified structure of the solid fuel appliance market is depicted in the chart on page 65. It is important to review briefly the recent history of the business in order to put it in context.

Prior to the Arab Oil embargo of 1973, solid fuel products were primarily sold through hardware stores and mass merchandisers. These products were considered secondary fuel sources, next to oil, gas and electricity. However, the embargo set off a search for alternative fuel sources giving impetus to the so-called "(re) birth of the solid fuel industry".

The industry witnessed explosive growth in the mid-1970's, which led to a new wave of retail shops specializing in wood heaters, furnaces and a full range of accessories. However, industry sales peaked in the late 1970's and since then the industry has been experiencing declining sales. Therefore, unlike the HVAC and plumbing market, the solid fuel market is in a state of flux. Market uncertainty is reverberating throughout the industry at every level of distribution. This section will discuss the various levels of industry participants and key characteristics.

SIMPLIFIED STRUCTURE OF THE SOLID FUEL APPLIANCE INDUSTRY



There are several key trends which appeared during the course of the study which should be noted:

- o Solid fuel distributors are seeking product line expansions to fill in for declining sales. An area of current investigation is the more traditional HVAC products.
- o Manufacturers are broadening their product lines, as product differentiation is increasing.
- o Brand identification is growing. More and more manufacturers are emphasizing the benefits of their brand through efficiency claims and additional decorative and functional features.
- o Retail outlets, particularly specialty stove stores, will diversify in the off-season.
- o Marketing techniques are becoming more sophisticated as market growth slows, competition intensifies and price pressures increase.
- o More money will be spent on R & D to facilitate product innovation and differentiation as well as to meet consumer efficiency requirements.

1. Retailers. There are approximately 17,000 outlets in the U.S. for solid fuel products; ranging from Sears, to small general stores, to the new "Energy Centers", which sell a variety of energy-related products.

- o Specialty wood stove/fireplace stores account for 60% of all retail outlets; "Energy Centers" - 19%; building materials, homeware and home centers - 5%; and other, which includes solar dealers and masonry suppliers rounds out the remaining 16%.
- o The decline in sales has caused a large shake-out of retailers, which is expected to continue until the market stabilizes.
- o Solid fuel retailers are located nationwide, in the following regions:

Northeast	10%
Mid-Atlantic	18
East North Central	20
West North Central	7

South Atlantic	11
East South Central	8
West South Central	5
Mountain	8
Pacific	<u>13</u>
Total	100%

Source: Wood 'N Energy

- o The wood stove is the mainstay of the industry, with over 96% of solid fuel appliance retailers carrying them. Other popular items are fireplace inserts and wood/coal combination heaters.
 - o The products included in this study -- furnaces, fireplaces and boilers have far less retail exposure.
 - o Unlike the HVAC business, retailers are likely to sell more than one line or brand of a product.
 - o Nearly 60% of all retailers gross under \$100,000 in solid fuel appliance sales annually. Another 25% have sales between \$100,000 and \$250,000, while 15% have sales greater than \$250,000.
 - o The sales season for retailers begins during the summer, peaks between October and December and gradually declines until July. In general, 50% of sales volume is done in the last quarter of the calendar year.
2. Distributors. Distribution in the solid fuel market is undergoing dramatic changes. Between 1973 and 1979, the primary channel of distribution was one-step (manufacturer direct to dealer). McNerney and Associates, Eugene, Oregon, estimated that during those years this accounted for 70% of sales. Currently, estimates are that 50% goes through one-step, with the remainder (40-45%) handled through a two-step (manufacturer to distributor) process with a minor portion (5-10%) going directly to consumers.
- o Solid fuel distributors are a relatively new phenomenon. More than 64% have carried solid fuel products for less than eight years. Conversely, only eight percent have been selling solid fuel products for over 25 years.

- o Distributors tend to be small businesses; typically operating in a limited geographic area, selling to under 100 dealers and averaging under \$2 million in solid fuel-related sales annually.
- o Most are full-time distributors. However, many have retail operations as well.
- o While appliances such as stoves and fireplaces form the core of most distributorships, accessories are becoming an important (and profitable) sideline for most distributors.
- o Our research indicated that the number of salesmen ranges from 1 to 11, but averages 2 to 3.

- o Distributors typically offer a wide range of services:

SERVICE	PERCENT OF DISTRIBUTORS
Coop-advertising	77.7%
Sales training	73.9
Product seminars	65.2
Credit lines	63.4
Floor planning	26.7
Management information reports	12.4
Inventory management training	11.2
Other	<u>20.5</u>
	100.0%

Source: Wood 'N Energy

- o Distributors select product lines on five key criteria:

Criteria	Percent of All Distributors
Manufacturers' reputation	90%
Testing lab results	76
Pricing/volume discounts	67
Manufacturers' marketing support	58
Terms of payment	44

Source: Wood 'N Energy

- o Solid fuel distributors' customer base is split between dealer/contractors and direct sales to specialty retailers.
 - o The role of manufacturer's representatives in solid fuel appears to be quite different than HVAC. Field interviews indicate a much more inactive and illusive role, very much limited to selling. At times, it appears distributors do not even make the distinction between a rep or direct purchase.
 - o Solid fuel distributors interviewed are almost totally residentially-oriented and, due to the nature of the products, are strongly focused on the replacement market.
3. Manufacturers. Nearly half of all manufacturers entered the solid fuel market in 1977 or later. More than three-quarters have been manufacturing solid fuel products less than ten years.
- o There are basically four types of manufacturers:
 - (1) Stove manufacturers which include more than one-third of the industry. Half have been making heaters for less than five years; few have been producing more than a decade.
 - (2) Fireplace insert producers dominate the South, in both sales and the location of their production facility. Only a handful have been in business more than ten years. Inserts, fireplaces and chimneys tend to form a manufacturing group.
 - (3) Central heating manufacturers, which includes add-ons, are a very separate group. They tend to be the most established group. Sales are highest in the North Central and Northeast states.
 - (4) Accessory producers are quite varied; with strong sales in the East North Central and Northeast states.
 - o The majority of manufacturers use a combination of one and two-step distribution. Seventy percent of manufacturers employ manufacturers representatives.

- o Safety testing is important and almost 60% of manufacturers report all their products are tested.
- o Most solid fuel industry manufacturers have a single manufacturing plant. With the exception of fireplace inserts, where the South Atlantic region dominates, the North Central states are the largest producing region.

<u>SOLID FUEL APPLIANCE MANUFACTURING</u>	
<u>Census Region</u>	<u>Location of Primary Production Facility</u>
Northeast	14%
Mid-Atlantic	12
South Atlantic	9
South Central	8
East North Central	28
West North Central	15
Mountain	5
Pacific	9
	<u>100%</u>

- o The sales areas for solid fuel manufacturers are localized due to shipping costs.

V. MARKET SUPPORT

The field research conducted for this study focused on identifying market support requirements which Canadian manufacturers will find necessary in order to participate in the designated geographic region. This chapter describes the market support requirements which apply generally to the products under investigation. Five basic types of marketing requirements are discussed and include: product testing and approval; sales support; physical distribution; pricing; and promotion. Chapter IV outlines the specific requirements for each of the individual product categories.

A. Product Testing and Approval. To sell heating equipment in the United States, Canadian manufacturers must ensure that their products meet labeling, safety, and efficiency requirements. This section describes requirements and the usual means of securing them.

As an overview, the only Federal requirements are that specified products carry certain information, usually relating to efficiency, in their labeling. State and local governments may have requirements that products be listed by an appropriate testing laboratory, and frequently have requirements governing installation practices and methods. These are described on page 75.

In addition, almost all products sold in the United States carry U.L., A.G.A., I.B.R., ASME, WHA or other

certification, as appropriate. Aside from localities where such listing is required for installation, these certifications are not mandatory. However, they can be considered as a requirement because no reputable distributor or contractor will consider dealing with products that are not certified, particularly if competing products are certified. Chapter VI discusses the certifications that are usually carried by specific products.

Standards to which products are tested are for either efficiency or for safety. The testing can be done by an independent testing laboratory or, often, by manufacturers self-testing. The testing process is complicated because of the many overlapping requirements. The process can be time consuming, and can be expensive. The National Conference of States on Building Codes and Standards, Inc., (NCSBCS), (address and telephone number appears on page 77) offers consulting assistance to manufacturers on a fee basis. Manufacturer's reps, and occasionally distributors, can also help with approval and certification. Organizations that establish testing standards and independent test labs may be able to recommend specialized consultants to facilitate the approval process.

The following provides more detail on testing, requirements, and laboratories.

1. Laws and regulations

- o Federal government requirements. The products covered by this study fall under Appliance Labeling. Appliance labeling was mandated by the U.S. Congress as part of the Energy Policy and Conservation Act of 1975. The U.S. Department of Energy (DOE) and the Federal Trade Commission (FTC) jointly manage its implementation. The final appliance labeling rule set forth by the FTC can be found in Federal Register, Vol. 44, No. 224, dated November 19, 1979. Detailed information can be found in this document; sample labels can be found in Appendix S.

For the range of products covered in this study, only three categories are currently affected by these labeling requirements, as follows:

Product	Labeling Requirement
Furnace (gas, oil and electric)	Generic label and associated fact sheet
Boiler (gas and oil)	Generic label and associated fact sheet
Water heaters (gas and electric)	Energy cost label

In addition to establishing labeling requirements, the FTC also requires that all broadcast advertisements and printed material relating to consumption or cost of energy be based on a fair representation of DOE test procedures

- o Consumer product safety commission. As previously mentioned the FTC appliance labeling rule applies to the products in this study. Manufacturers selling in the U.S. should also be aware that the Consumer Product Safety Act (CPSA) requires that a manufacturer or importer report any product defects of which he is aware to the Consumer Product Safety Commission (CPSC), an independent government regulatory agency. Copies of specific laws and regulations can be obtained from U.S. Consumer Product Safety Commission; 5401 Westband Avenue, Washington, D.C. 20202; (202) 492-6400, in a publication titled Compilation of Laws Administered by the CPSC, and in No. 16 of the Code of Federal Regulations, Commercial Practices.

- o State and municipal requirements
 - Building codes. In addition to complying with Federal FTC Appliance labeling rules, the residential heating products covered in this study must also comply with state and municipal requirements. State and municipal requirements are created by building codes. Codes vary among states and municipalities. The codes may encompass both safety and efficiency requirements, and may relate to both the installation of the equipment and the equipment itself.
 - In general, building codes require that a covered product be tested, listed and/or certified to accepted national standards. See Appendix S for a listing of the standards which have been established for the covered products.

 - There are several organizations in the U.S. which develop model construction codes. Different regions of the U.S. have adopted certain model codes.

- BOCA, which stands for Building Officials and Code Administrators, dominates the eastern portion of the U.S. BOCA codes have been adopted on a local basis by municipalities in the ten states covered by this study. In addition, eight of the states have adopted them state-wide.
- A chart detailing the applicable codes on a state by state basis can be found in Appendix T. It includes: the technical basis for the code, the pre-emptive application of the code, the level of enforcement, and the agency which administers and enforces the codes.
- BOCA codes can be obtained from Building Officials and Code Administrators International, Inc.; 17926 South Halsted Street, Homewood, Illinois 60430; (312) 799-2300.
- As there can be hundreds of local jurisdictions in each state, it is incumbent on each manufacturer to check regulations in his specific local markets. Manufacturer's representatives can and will help with this.
- Energy codes. Within the applicable building codes, the energy codes address efficiency requirements. Some form of code or standard for energy conservation has been implemented by all ten states. The major differences between these codes are the technical criteria, building occupancies, procedures by which one determines compliance, and the governmental level at which the code is operative.
 - The majority of equipment efficiencies are based on ASHRAE Energy Conservation in New Building Design standards 90-75 and 90A-1980.
 - These standards were developed by ASHRAE via a national voluntary consensus procedure 90A-1980 in a revision of 90-75. Currently, ASHRAE 90A-1980 is being further revised, and will most likely to be updated in the next two years.

- Other energy codes can be based on technical documents published by National Conference of States on Building Codes and Standards, Inc. (NCSBCS); Council of American Building Officials (CABO); and Building Officials and Code Administrators International, Inc. (BOCA).
- Fire codes and regulations. Fire marshalls in each state should be contacted for local regulations. A list of the state fire marshalls can be found in Appendix R. Manufacturer's reps can help understand local fire codes.

Due to wide variation, the subject of state and municipal requirements is rather complex. One of the best sources for specific information on state and municipal requirements is the National Conference of States on Building Codes and Standards, Inc., (NCSBCS); 481 Carlisle Drive, Herndon, Virginia 22070; (703) 437-0100. The NCSPCS provides consulting assistance on a fee basis to manufacturers considering entering certain markets, and should be contacted.

Another source of information is the Association of Major City Building Officials (AMBCO) "1983-1984 Directory of Big City Building Codes and Regulation". This can be ordered through the NCSBCS, 481 Carlisle Drive, Herndon, VA 22070.

It should be noted that manufacturers in the process of research and development should determine early in their development of a new product whether the product will be acceptable to state and local officials. (If the product as proposed will not comply with state and local codes it is sometimes possible to modify the codes. It takes approximately three years to change a code. The NCSBCS can be contacted to help determine whether a new product will be acceptable to state and local officials. Alternatively, the product can be changed.)

2. Product testing. Product testing, both safety and efficiency can be accomplished one of two ways: manufacturer self-testing and independent testing laboratories.

(a) Independent testing laboratories

Independent testing laboratories are the primary method of product testing. They offer the manufacturer the following advantages:

- o Verify product performance;
- o Confirm data supplied to government and municipal agencies;
- o Lend acceptability and credibility to promotional claims;
- o Aid in attaining insurance and/or reduces the cost of insurance; and
- o Support marketing effort since most distributors will not handle a product which is not labeled by a recognized laboratory.

Independent labs also "list" (state that they have examined) products. This listing is at times required by state and local regulations (above).

Product testing services include:

- o Product certification
- o Periodic factory inspections
- o Review of quality control methods
- o Random product inspections
- o Listing in published directories
- o In addition testing laboratories can develop standards for products which are not covered by nationally accepted standards.

There are approximately 20 major labs in the U.S. These are listed in Appendix Q. When selecting a testing laboratory, a Canadian manufacturer should base his decision on a combination of factors, including: the type of product; the type of tests required; and the time requirements and costs involved. For example, additional testing costs may be worthwhile if the time to complete testing is reduced.

- o Appendix Q offers a list of typical products covered, and time and cost estimates for testing laboratories contacted in the course of the study.
- o We were assured by testing laboratories that manufacturers were served on a first come, first served basis, with no preference for product origin.

(b) Manufacturer self-testing

Self-testing is done on a limited basis by only a few manufacturers, largely because of the high investment required to equip, staff and maintain a top-quality test facility. In addition, self-testing is often not sufficient to meet individual state listing requirements (which can be done only by an accepted agency, either an independent testing laboratory or a specific trade association). Therefore, third-party verification might be necessary, which reduces the value of self-testing.

B. Sales Support. The smooth and efficient handling of sales support activities is critical to Canadian manufacturers because they have to overcome U.S. distribution and consumer concerns about both geographic distance and foreign origin. The reasons for this include fear of higher freight charges and also a "feeling" that manufacturers located nearby are better able to resolve problems.

This section outlines key sales support activities which interviewed distributors felt were critical.

1. Invoicing. In general, the manufacturer invoices the distributor directly. However, where a manufacturer's rep is involved, the rep may do the invoicing based on a specific arrangement with a manufacturer.

2. Exclusive arrangements. Survey results indicated that:
 - o Manufacturers reps are almost always offered exclusives on products within a specific geographic territory. Reps considered it as prerequisite to taking on a line.
 - o HVAC distributors would like exclusive arrangements, but manufacturers offer them only on a limited basis. All distributors felt it would be an incentive to sell more product.
 - o Solid fuel distributors rarely get exclusive arrangements, but like the HVAC distributors they feel it would provide additional incentive.
3. Contractual agreements. Manufacturers and distributors have a variety of supply arrangements, from verbal and handshake to written contracts on a 30 or 60 day, an annual, or an indefinite basis. In general:
 - o Due to the prevalence of exclusivity arrangements with manufacturers reps, most arrangements with suppliers tend to be written contracts. Most are for 30 or 60 day periods with automatic renewal; usually both sides have a cancellation clause. There are some annual contracts with exit options.
 - o HVAC distributors have historically worked with open-ended verbal arrangements. There is a definite, trend towards written contracts, particularly with newer suppliers. Here contracts tend to be longer-term, usually annual and cancellable by either side.
 - o The solid fuel area remains more unstructured and agreements tend to be verbal more often than not. However, the full gamut of arrangements are found.
4. Product line offerings
 - o In the major product areas, such as water heaters, furnaces or boilers, relationships tend to be long-term and stable. Distributors generally carry one major brand, but in some cases, might carry two. Three or more brands would be rare.

- o HVAC distributors clearly prefer full-line product participants because of:
 - More potential for quantity discounts
 - More customer options (i.e., matched heating and A/C systems)
 - More purchasing power
 - Ease and convenience of ordering and inventorying from one source
 - Servicability with compatible parts
 - Ease and lower cost of advertising
 - Full-line manufacturers tend to be large and more stable

- o Specialty or single-product lines do find acceptance under certain circumstances. Examples include:
 - A unique product
 - Need to fill on a spot basis when a dealer requests a brand name or when their primary supplier is out of stock
 - Price is right

- o Specialty or short-line situations are usually a short-term situation because the HVAC industry tends to copy products and stabilize quickly. Having new products before they are copied can offer a short-term advantage.

- o Multiple product lines are common in the solid fuel industry.

5. Technical support

- o The technical support required is fairly constant among the various types of distributors and includes:
 - An 800 telephone number (toll free) to handle all questions or complaints.
 - In-house engineers available to answer questions or to go into the field to resolve any problems.
 - Specification books and installation instructions.
 - Warranty back-up.
 - Ability to handle all appropriate testing and approval certifications.

6. Sales training. Manufacturers should provide sales training sessions for reps, and hold dealer training sessions for distributors. Training is particularly critical when a new product is introduced. There is very little sales training in the solid fuel area.

7. Field sales support

- o Reps require the most field sales support as they are, in effect, the company sales force. The frequency of visits with them ranged from once a monthly to quarterly, with telephone contact on a regular basis. Reps want field sales support when they are in a large competitive bidding situation, they are handling customer complaints, and during trade deals, promos or shows.
- o Distributors require field sales support on more of a spot, as-needed basis. Planned visits are usually 1 to 4 times a year. New product introductions are a key opportunity for productive field visits.
- o Field sales support in the solid fuel areas is very limited, averaging 1 to 2 visits a year.

C. Promotion. Promotion is the means by which manufacturers communicate with current and future consumers. It includes all activities directly concerned with providing information, including all persuasive information regarding the nature of the company's goods and services and their relationship to the potential user's perceived needs. Our research has concluded that all aspects of promotion are growing in importance and sophistication for the heating industry. This section first highlights the mix of advertising and promotion which is required to participate and then discusses specific vehicles for advertising and promotion. These are: sales promotion aids, trade associations, trade

publications, and trade shows and conventions.

1. Advertising. Historically, advertising in the heating industry was directed at the trade, particularly on a local level. While trade advertising remains primary, consumer advertising -- local and national -- is increasing due to rising energy awareness on the part of the consumer.
 - o The key point of advertising is to have active campaigns, which provide a clear and definite identity in the marketplace.
 - o Usually the manufacturer handles any national advertising -- be it trade journals or consumer magazines.
 - o The industry's standard guideline is that 2-5% of net sales is spent on advertising; 2% being the most common advertising budget figure.
 - o It is a requirement to offer cooperative advertising to distributors in this industry. This is typically local advertising and details are handled by the distributor. In some cases, the cost is shared 50/50 and in others it is based on the quantity purchased.
 - o Where manufacturers reps are involved, they typically handle, assist, or coordinate the advertising programs.

2. Sales Promotion. Sales promotion should be used to stimulate reps, dealers and distributors to increase product promotion. Each manufacturer must plan his mix carefully to insure the utmost effectiveness. Summarized below are the types of sales promotion distributors in the Northeast U.S. feel were very important:
 - o Product literature which includes brochures, catalogs and price sheets. All must be in English, must be professional looking, easy to read, and up-to-date. Adequate supplies must be maintained at the distributor level.
 - o Trade shows and exhibits - Trade shows are discussed later in this section in greater detail, but it is important to note that our research indicates that exhibition at either ASHRAE or WHA is considered a sign that Canadian manufacturers are serious about the

U.S. In addition, appearances at industry shows by manufacturers, their reps and/or distributors are gaining popularity because they are less costly than individual sales calls. Typically, the cost is shared 50/50 by the manufacturer and rep/ distributor.

- o Point of purchase advertising (POP)
 - For the distribution channel, POP advertising includes promotional items (e.g., hats, tee shirts, calendars, lighters, pens); exterior materials (e.g., banners and signs) and interior devices (window and counter displays, clocks, counter cards).
 - For the heating products which are sold through retail outlets rather than through dealer/contractors, POP advertising is also required. This includes devices, structures, or literature located in or at the retail outlet that identify, advertise and merchandise a product as an aid to retail selling.

3. Trade Associations. Most manufacturers belong to one or more trade associations and/or technical societies. Trade associations and technical societies offer a variety of valuable services, such as:

- o Developing equipment standards;
- o Certifying the performance of industry products;
- o Compiling industry statistics;
- o Lobbying before government and legislative bodies on issues important to the industry;
- o Promoting the industry in general; and
- o Often sponsoring or holding trade shows, conferences, and training classes.

Several major trade associations and technical societies were mentioned repeatedly during the study; they are discussed briefly below. Other major trade associations and technical societies are listed in Appendix N.

- AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR CONDITIONING ENGINEERS (ASHRAE) -
ASHRAE is a technical society with 45,000 members. ASHRAE helps develop equipment standards through technical committees, which are made up of 500-600 volunteers who include those most knowledgeable in the various fields. Approximately 47 states have adopted ASHRAE standards. ASHRAE can be contacted to answer technical questions concerning their standards. ASHRAE sponsors the largest trade show in the HVAC industry and the only major equipment exposition. ASHRAE membership is open to Canadians.

- GAS APPLIANCE MANUFACTURERS ASSOCIATION (GAMA)-
GAMA is a trade association whose members manufacture over 90 percent of the residential, commercial and industrial gas appliances made in the United States. GAMA also represents manufacturers of certain products which use oil and electricity as their energy source. This includes oil-fired furnaces and electric water heaters. GAMA works toward resolving manufacturer's problems which can be more effectively dealt with by a national association. This is reflected in GAMA's major committees:
 - The Laboratories Liaison Committee -- which develops and communicates references and recommendations concerning the activity and policies of certification laboratories.
 - The Legislative Committee -- which determines positions on pertinent legislation and regulation and attempts to obtain action.
 - The Marketing Council -- which promotes the acceptance, sale, and use of gas and related appliances

GAMA serves as an industry voice to legislative and regulatory bodies of government, as a force for product improvement, as a source of market statistics, as a coordinator of generic advertising and promotion and industry publicity, as a contact with consumers, and as a representative before freight rate-making bodies. GAMA has a close relationship with its Canadian counterpart, and its membership is open to Canadian manufacturers.

- GAS RESEARCH INSTITUTE (GRI) - GRI plans and manages product-oriented research and development in the natural gas industry. GRI's goal is to plan and coordinate research which leads to a marketable product. Manufacturers can submit proposals to GRI for research they want done. Manufacturers may also become involved with GRI at a point where GRI's research project is technically feasible and a manufacturer is needed to do marketing. GRI also runs an appliance technology center. The purpose of this center is to solve specific problems a manufacturer might have. GRI is open to Canadians.

- WOOD HEATING ALLIANCE (WHA) - The WHA is the leading trade association in the residential coal and wood heating industry. Its 900 members include manufacturers, distributors, retailers, educators, ecologists and other industry supporting individuals. WHA offers its members seminars, training programs, radio, newspaper and TV publicity, and sales tools including consumer education materials and appliance performance directories. WHA also sponsors the major international trade show in the industry. Membership is open to Canadians.

- NORTHAMERICAN HEATING AND AIR CONDITIONING WHOLESALERS ASSOCIATION (NHAW) - The NHAW is dedicated to the improvement of wholesale business conditions and the advancement of understanding among manufacturers, distributors and dealers. It represents more than 450 individual wholesale firms with 1400 locations in the U.S. and Canada. Manufacturers of heating equipment are included among its associate members. One of NHAW's major efforts is its education program, which regularly holds regional meetings and idea exchanges, runs special schools, and operates a home study program. Its special publications include Sales Trends, a monthly computer-compiled summary of regional sales. A detailed analysis of industry developments and government legislation and regulations is included in NHAW member seminars. Through its membership the NHAW represents the industry to Federal and state governments. Membership is open to Canadians.

- AMERICAN GAS ASSOCIATION (AGA) - The AGA's membership of almost 5000 includes U.S. and Canadian distributors of natural gas. Associate members include heating equipment manufacturers. Founded in 1918, it is one of

the oldest and largest associations in the gas industry. The main service the AGA offers equipment manufacturers is the testing, research and development of equipment standards done with its two nationally recognized laboratories.

The AGA compiles a wide variety of national and regional statistical, economic, financial and marketing studies, which include studies on heating equipment. The AGA has a national advertising program to promote all aspects of the gas industry, and it acts as a representative of the industry before governmental and regulatory Federal and state agencies. Manufacturers can get information from the AGA on a non-member basis. Association membership is open to Canadian manufacturers of heating equipment.

- o HYDRONICS INSTITUTE (HI) - Founded in 1915, HI has 75 members which include manufacturers of boilers, radiators and accessory equipment. HI offers an IBR (Institute of Boiler and Radiator Manufacturers) rating for boilers which have passed independent testing. This certification is voluntary, but is considered important in the industry. HI also compiles marketing statistics, including information on industry shipments. For 35 years, HI has run three-day heating schools throughout the country. HI also is a source of industry publicity for trade magazines, and newspapers. HI acts as an industry representative to Federal and state governments, offering feedback on various regulations. HI is receptive to helping non-members on a preliminary basis. Membership is open to Canadian manufacturers.
4. Trade Publications. Trade publications are important to residential heating manufacturers as a current source of information about the industry. They publish information varying from statistics to current events. They also provide a manufacturer an important medium for advertising his product.

Residential heating publications generally fall into one of four categories:

- o Fuel
- o Heating Equipment
- o Heating Distribution

- o Directories

A list of major trade publications can be found in Appendix O.

5. Trade shows. Trade shows are a personal marketing tool which:

- o offer initial exposure to a variety of potential buyers;
- o offer an opportunity to see, touch and explain your product;
- o allow participants to "put their arms around the industry";
- o provide a forum to compare merchandise; and
- o remove potential customers from office distractions.

There are two general types of trade shows:
(1) Those sponsored by trade associations or societies. These are both national and regional;
(2) Industry participant's meetings held regionally by manufacturers, manufacturers representatives, and/or distributors.

Virtually every respondent in our research attends trade shows. The major reasons for attendance were to:

- o Meet customers
- o Meet potential suppliers
- o Place orders
- o Keep abreast of industry current events

There are three national and one well established regional shows which are mentioned most frequently; these are listed below with a brief description. A more complete list of national and regional trade shows appears in Appendix P.

- o ASHRAE - ARI Exposition

ASHRAE-ARI Exposition is co-sponsored by the American Society of Heating Refrigeration and Air Conditioning Engineers and the Air Conditioning and Refrigeration Institute. It is the

major national HVAC industry event. It is usually held in late January or early February. The 1984 show saw over 15,000 visitors and over 550 exhibitors. All distributors and manufacturers representatives to whom we spoke indicated attendance at this show was very important.

o ASA Trade Show

The American Supply Association trade show is a national show with 650 exhibitors. These exhibitors are mainly manufacturers in the plumbing industry. For their 1984 trade show, ASA expects an attendance of 7,000.

o WHA Trade Show

WHA Trade Show is sponsored by the Wood Heating Alliance. It is the most important trade show in the solid fuel industry. The trade show is held annually in March. It includes approximately 500 booths. The 1984 WHA Trade Show had a total attendance of 4,350. This event reports an unusually high buyer-seller ratio of 1:1. Solid fuel distributors interviewed indicated that the WHA show was the most important industry show and attendance was critical.

o Mid-Atlantic Plumbing, Heating and Cooling Exposition

This exposition is a regional trade show. It is sponsored by the Philadelphia Manufacturers Representative Association. Wholesalers and contractors make up a majority of the attendance. Ninety-eight percent of the attendance is from the Mid-Atlantic area. More than 250 major manufacturers and suppliers exhibit their products. The 1984 show will be held in November and attendance is estimated at 4,000.

D. Pricing and Terms

1. Pricing. Pricing and pricing practices in the HVAC and related markets in the United States are extremely complicated. In part this is simply because there are a large number of similar, but not identical, products. Pricing is also complicated because price competition in the HVAC market is intense. Most manufacturers and distributors

attempt to disguise their true price from competitors as much as possible. In addition, the industry frequently uses price as a marketing tool, leading to further variations. Finally, many participants at the distributor and contractor level are small businessmen who are very cautious about revealing pricing information that they feel may reveal their true costs or profitability.

Most manufacturers publish what is known as a trade price list. Manufacturers tend to publish dealer list price sheets. These sometimes have suggested retail, but not always. It is industry practice to offer a series of discounts from the trade list.

The discounting structure is complex and varies widely. The discounting process offers the manufacturer flexibility to change prices quickly and serves to obscure actual prices from competitors. In general, there are four types of discounts:

- (1) Functional (range from 20-50%)
- (2) Annual volume (approximately 5%)
- (3) Quantity for a particular order (approximately 3%)
- (4) Dating (order placed pre-season)

The discounts are serial (being taken one on top of the next), not additive, and are structured to favor large, long-term customers.

Discounts to distributors run 40-50% of the published price lists. Distributors in turn charge their larger, more established customers the trade list price less 10-15%. New or small customers usually are charged very close to the published trade price. Contractors generally mark-up their merchandise 30-50% from their purchase price when selling to end-use customers. However, at this level it is often too difficult to isolate the price of equipment because the contractor generally quotes an installed price and does not break out installation labor and materials separately.

Mark-ups and margins at each level of the industry are shown below. It is important to remember that these are overall averages. Very large orders, and therefore large volume distributors, may be able to cut prices and margins because of their volume. Also, some products, such as water

heaters, are extremely price competitive, while others, such as air conditioners and heat pumps, are much less subject to price based competition.

There is a good deal of confusion over terms. As used here they will be defined as:

- o Margin - the difference between cost and selling price

$$\text{Percentage Margin} = \frac{\text{Selling Price} - \text{Cost}}{\text{Selling Price}}$$

- o Mark-up - a factor applied to cost to determine selling price

$$\text{Percentage Mark-up} = \frac{\text{Selling Price} - \text{Cost}}{\text{Cost}}$$

PRICING EXAMPLE			
Participant	Price	Mark-up	Gross Margin
Distributor	\$55-60 ⁽¹⁾	40-55%	20-25%
Contractor	\$85-100 ⁽¹⁾	50-60%	25-30%
Published Trade Price	\$100		
Customer	\$130-150 ⁽²⁾		-NA-

- (1) Lower for large volume, pre-season, promotions, etc.
- (2) Plus installation.

Finally, between manufacturers and distributors, manufacturers representatives are paid a commission, usually of 5-7% of selling price. In general this is invisible to the trade; they see the trade price list only. However, manufacturers should remember to include this cost when calculating their own margins.

2. Terms. In the U.S. HVAC channels, terms are usually 1-2% 10 or 15, net 30. This is different from the hardware/solid fuel channel where many distributors contacted reported no discount, net 30 terms. In the solid fuel channel several distributors reported cash or COD terms.

Typical practice in the U.S. is for the manufacturer to pay freight (or include a freight allowance) for large orders and for the purchaser to pay for small orders. The dividing line between "large" and "small" varies, but usually falls between 1/4 truckload and 3/4 truckload. It is usual practice for manufacturers to pay all freight on back-ordered merchandise, no matter how small the shipment. A usual freight allowance is \$3.00/Cwt (100 lbs. in the U.S.).

Manufacturers in the U.S. may quote prices F.O.B. customer's store-door; if they quote F.O.B. their factory they include a method of calculating freight charges and allowances. Most U.S. businessmen are not familiar with shipping to and from Canada, and in our surveys expressed a very strong preference for Canadian manufacturers to quote freight-included prices.

Finally, in quoting prices, U.S. businessmen are not familiar with tariff rates and duties. Therefore, it is strongly advised that Canadian manufacturers quote prices including tariffs and duties. Most industry sources contacted during our study stated that including tariffs and duties in pricing would be a requirement for Canadians doing business with them.

- E. Tariffs and Customs. In order to be sold in the United States, Canadian manufactured heating equipment must clear United States customs. To do this all United States labeling and consumer protection laws must be satisfied, and appropriate import tariffs must be paid. In general it is the responsibility of the importer of record to satisfy U.S. customs on all of these points. The importer of record could be a final customer, or a manufacturer's representative or agent. However, customs clearance is viewed as an unknown or a nuisance by most distributors contacted, so to be competitive Canadian manufacturers are advised to arrange to handle all customs related work.

CUSTOMS AND TARIFF CLASSIFICATIONS AND RATES

<u>Product</u>	<u>Classification</u>	<u>1984 Rate</u>
Gas Furnace	653.52	4.2%
Oil Furnace	653.52	4.2%
Elect. Furnace	684.40	4.2%
Gas Water Heater	653.52	4.2%
Elect. Water Heater	684.40	4.2%
Gas Burner	653.52	4.2%
Oil Boiler	653.52	4.2%
Gas Boiler	653.52	4.2%
Wood Furnace	653.52	4.2%
Wood Boiler	653.52	4.2%
Coal Furnace	653.52	4.2%
Coal Boiler	653.52	4.2%
Air-to-Air Heat Exchanger	684.55	4.5%
Prefabricated Chimneys	657.25	7.1%
Metal Stoves	653.48	4.2%
Cast Iron Stoves	653.48	4.2%
Zero Clearance Fireplaces	653.52	4.2%

NB: Tariffs will be reduced each January 1 until 1987.

1. Customs Brokers. In order to clear customs the usual procedure is to hire a U.S. customs house broker to act as agent in these transactions. It is usually best to form a long term working relationship with one particular broker. Brokers typically charge a fee to clear each shipment; these may vary from one broker to another, as will the extent of service offered. Manufacturers should contact several brokers to determine which one offers the most appropriate service for him. A good customs broker can supply invaluable advice on clearing customs and satisfying United States import requirements. In the United States there is a trade association of licensed customs house brokers, which publishes an annual membership directory.

Membership directories can be obtained for \$9.95 by contacting The National Customs Brokers & Forwarders Association of America; One World Trade Center, Suite 1109; New York, NY 10048, or at telephone number (212) 432-0050.

2. General Requirements. In order to be imported into the United States all foreign manufactured products must be marked clearly in English with the country of manufacture. Shipments must be accompanied by a full set of invoices that state the value for duty. Value for duty is usually the invoice cost transaction value of the merchandise excluding such charges as duties, brokerage and freight that are incurred on the United States side of the border. The rate of duty payable is described in the Tariff Schedules of the United States. The tariff schedules include descriptions of commodities and their respective rates of duty. Rates for the heating products considered in this study are shown on page 93.

Merchandise must also be accompanied by properly completed commercial invoices. It should be demonstrated that all United States labeling and consumer protection requirements have been met. In order to leave Canada, (and especially if there is the possibility that the merchandise will be returned to Canada), each shipment should be accompanied by a Canadian customs form B-13.

A customs house broker or the United States customs service can be contacted for help on these issues. However, the best first source of information and help is the Market Entry Section, USA

Marketing Division, US Trade and Development Bureau of the Department of External Affairs in Ottawa. Their telephone number is (613) 993-7484. In particular, the Market Entry Section will help obtain binding tariff classification rulings from United States Customs, will assist Canadian manufacturers with UL or other agency requirements for import, will offer advice on the details of exporting, and will provide other general services and advice. Canadian manufacturers are advised to contact the Market Entry Section first before exporting.

3. Entry to the United States. In order to enter the United States merchandise must pass through a port-of-entry. The ports-of-entry in the ten states of this study are listed below. In general it is advisable for Canadian manufacturers to have their merchandise clear customs at a border port-of-entry. In order to be cleared at an interior port-of-entry, the merchandise must be sealed at the border and bonded pending clearance at the interior port-of-entry.

It is also important that a Canadian manufacturer's carrier or freight forwarder have a complete set of documentation and explicit instructions on clearing customs. Otherwise the carrier may choose to clear customs in a manner disadvantageous to the manufacturer.

Ports of Entry

CONNECTICUT

Bridgeport
Hartford
New Haven
New London

MAINE

Bangor
Bar Harbor
Bath
Belfast
Bridgewater
Calais
Eastport
Fort Fairfield
Fort Kent
Houlton
Jackman
Jonesport
Limestone
Madawaska
Portland
Rodkland
Van Buren
Vanceboro

MASSACHUSETTS

Boston
Fall River
Gloucester
Lawrence
New Bedford
Plymouth
Salem
Springfield
Worcester

MICHIGAN

Battle Creek
Detroit
Flint
GrandRapids
Muskegon
Port Huron
Saginaw-Bay City
Sault Ste. Marie

NEW HAMPSHIRE

Portsmouth

NEW JERSEY

Perth Amboy

NEW YORK

Albany
Alexandria Bay
Buffalo-Niagra
Falls
Cape Vincent
Champlain-Rouses
Point
Chateaugay
Clayton
Fort Covington
Massena
New York
Kennedy Airport
Area
Newark Area
New York Seaport
Area
Ogdensburg
Oswego
Rochester
Sodus Point
Syracuse
Trout River
Utica

OHIO

Akron
Ashtabula
Cincinnati
Cleveland
Columbus
Conneaut
Dayton
Sandusky
Toledo

PENNSYLVANIA

Chester
Erie
Harrisburg
Philadelphia
Pittsburgh
Wilkes-Barre/
Scranton

RHODE ISLAND

Newport
Providence

VERMONT

Beecher Falls
Burlington
Derby Line
Highgate Springs/
Alburg
Norton
Richford
St. Albans

Key: Districts are
underlined

F. Transportation and Delivery. Manufacturers representatives and distributors contacted by Hayes/Hill during the course of this study almost uniformly expected to receive delivery of products by common carrier. In general, Canadian manufacturers shipping into the United States have three choices of trucking methods: using their own private trucking fleet, which will not be discussed here; using common carriers; and using freight consolidators.

Common carriers are trucking firms for hire that operate over designated routes. Along the routes that they serve, carriers publish tariffs and quote prices for transportation of merchandise according to its classification. Special tariffs are unique to specific carriers, and are generally lower than the class rate (an industry rate based on product weight and mileage) would be over that route. Not all common carriers have tariffs for all routes. Special tariffs from different common carriers over the same route may differ.

Canadian manufacturers should contact specific common carriers for tariff and route information.

To find the common carriers serving a manufacturer's plant location and the intended delivery point, Canadian manufacturers can contact the State Trucking Association of the state in which delivery will be

made. The State Association can be reached through the American Trucking Association in Washington DC. The American Trucking Association also publishes the National Motor Freight Classification Guide, which lists the classification category of products on which tariff rates are based. (These are based on the relative volume per unit weight of products. HVAC products are usually class 65). The guide can be obtained from the Traffic Department, American Trucking Association, 1616 P Street Northwest, Washington DC, 20036.

In addition G.R. Leonard and Company Incorporated, 79 Madison Avenue, New York, NY, publishes a series of motor freight directories listing all of the trucking firms plying routes from specific United States cities. The relevant directories would be for New England, New York vicinity, Philadelphia, and Ohio. The directories list both common carriers and freight consolidators according to routes served. To find a common carrier serving both a manufacturer's plant site and the expected delivery points in the U.S., a manufacturer can work backwards through these guides.

Freight consolidators act as brokers between firms shipping small quantities and common carriers. The consolidators collect a large group of shipments, consolidate them, and ship them together to reduce what

would otherwise be LTL (less than truckload) freight charges for the shippers. For very small shipments, freight consolidation can be substantially cheaper than common carrier rates. Consolidating freight, however, takes time, and can extend delivery between one and three weeks. For this reason Canadian manufacturers should consider using ordinary common carriers whenever possible.

Typical common carrier rates from several points in Canada to several points in the United States are shown on the next page. Additional rates can be obtained by calling the rate department at any common carrier. In general, rates depend on the size of the load and the distance shipped. The larger the load the lower the cost per unit weight; the longer the distance the higher the charge. In addition, for small loads, there is frequently a flat shipment charge added. Special tariffs, which are rates quoted by carriers covering a specific route, are generally lower than the class rate that is assigned to that route.

<u>COMMON CARRIER RATES</u>				
HVAC Equip. Load Size, lbs.	Special Tariff		Class Rate	
	Montreal- New York	Quebec- Boston	Montreal- New York	Toronto- Philadelphia
<5000	\$7.01/cwt +\$34.95	\$5.58/cwt +\$34.02	-	-
5000- 10,000	\$6.95/cwt	\$5.51/cwt	\$9.37/cwt	\$13.55/cwt
10,000- 20,000	\$5.40/cwt	\$4.21/cwt	\$8.38/cwt	\$13.02/cwt

Source: Sanborn Motor Express (800) 341-1024

- Note:
1. Cwt in the U.S. means 100 lbs.
 2. Special tariffs are available from most points. The table illustrates typical differences between special tariffs and class rates, and also the general level of freight charges from several Canadian cities to several U.S. locations.

VI. PRODUCT PROFILES

This section describes, for each of the categories in the study, product characteristics and characteristics of the markets in the ten Northeastern states.

The numbers that are included are the best that are available. The market size estimates for furnaces, boilers, and water heaters are based on figures collected annually by industry groups, and are quite accurate. Estimates for other products are based on field research, and may be less accurate.

Also, it is worth noting that U.S. manufacturers attempt as much as possible to conceal their true prices from competitors. That, combined with variations in equipment sizes, options, delivery terms, and with the age of price lists available to us means that the price information in these sections should be viewed as very good approximations of price levels, but not as the exact price that Canadian manufacturers must meet or beat. Manufacturer's reps can help manufacturers establish competitive prices.

Finally, market share estimates are based on national market shares. These are the best indicators of the overall strength of different competitors. Shares in the Northeast and in particular regional markets will certainly vary from these estimates.

A. Water Heaters (Gas, Electric)

1. Product. Residential water heaters are used to provide hot water for washing, dishwashing, washing machines, and other applications in the residence. The water heaters considered in this section heat and store quantities of hot water in a centrally located tank. Other types of water heaters, for example, those that heat tap water by passing it through a small pipe or reservoir in the central heating boiler, are considered add-ons to the central heating system and are not dealt with in this report.

Hot water is present in nearly every year round residence in the United States, and so water heaters are the most prevalent of the products considered in this report. More energy in the home is used on hot water than on any other application except heating and cooling.

Hot water heaters are distinguished in the United States by several features:

- o Fuel - Gas and electricity are the two most common power sources for hot water heaters in the United States. Other fuel sources such as oil, and wood/coal are used extremely rarely. Solar powered water heaters and water heaters that extract heat from the output of the heat pump or air conditioning system also exist, but these appear principally in the warmer southern and western states. Solar and heat recovery water heaters are almost always assisted by a backup electric system.
- o Size - The most common way of specifying size of water heaters in the United States is according to the capacity of hot water it stores. The most popular sizes of electric water heaters are 30, 40, 52, 66, 80, and 120 gallons. These will have an electric input of 3.5 to 4.5 Kw. The most popular sizes for gas water heaters are 30, 40, 50, 75, and 100 gallons, which represent 32-60,000 Btu/h. The most popular electric size is 52 gallons, the most popular gas size is 40 gallons. Gas sizes are usually smaller than electric sizes because gas water heaters are capable of heating water more quickly and therefore need to store less. The range of energy inputs also determines how quickly water can be heated.

- o Efficiency - Water heaters are rated according to efficiency and carry an appropriate energy guide label. Efficiency is not as big an issue for water heaters as it is for furnaces, although there are indications that consumers are increasingly willing to pay more for higher efficiency. Gas water heaters range from typical energy recovery of 55% up to a "high efficiency model" which may extract 75% of available heat. Electric water heaters range from 75% up to slightly above 90%.
- o Configuration - Central water heaters appear in a variety of configurations with the most popular being a standard, a tall (narrow), and a low-boy (low and squat). Tabletop and other special design models are also available.
- o Options - It is difficult to add real options to what is a simple tank to store hot water. However, manufacturers and merchandisers advertise "features" such as glass lining of the inner tank to prevent corrosion, specially sized and coated electric heating elements for electric heaters that promises longer life, specially designed anode rods to counteract the chemical properties of local water supplies, high efficiency gas burners, special design flue gas baffling systems to increase heat transfer, and special design insulation.
- o Warranties - Water heaters are shorter lived than most other major appliances. The standard warranty is five years on the storage tank. Some manufacturers offer longer warranties and charge a higher price for them. Sometimes the longer warranties are available on what in fact are identical units; in this case the higher price is in effect an insurance premium that is statistically balanced against the units expected to fail.

Water heaters are required to carry FTC and efficiency ratings. They also carry UL or AGA certification. In addition, manufacturers commonly state that units meet ASHRAE Standard 90, and BOCA code energy efficiency performance criteria.

2. Markets. Water heaters have among the most stable sales of all major appliances in the United States. This is due to their relatively short life, leading to a larger portion of replacement sales. In addition to replacement, new construction provides water heater sales.

Water heaters are required to carry FTC and efficiency ratings. They also carry UL or AGA certification. In addition, manufacturers commonly state that units meet ASHRAE Standard 90, and BOCA code energy efficiency performance criteria.

2. Markets. Water heaters have among the most stable sales of all major appliances in the United States. This is due to their relatively short life, leading to a larger portion of replacement sales. In addition to replacement, new construction provides water heater sales.

Hayes/Hill's estimates of water heater sales in the ten Northeastern states included in this study are shown below:

WATER HEATERS
(Shipment in Thousands)

<u>Total US</u>	<u>1977</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>
Gas	3070	2818	2785	3041	3172
Electric	2703	2451	2463	2716	3131
Oil	<u>49</u>	<u>29</u>	<u>26</u>	<u>30</u>	<u>30</u>
	5822	5298	5274	5787	6333
 <u>10 NE States</u>					
Gas	1096	1047	1042	1085	1197
Electric	266	242	240	264	290
Oil	<u>42</u>	<u>25</u>	<u>22</u>	<u>25</u>	<u>26</u>
	1404	1314	1304	1374	1513

Source: GAMA; Hayes/Hill Estimates

These estimates are based on the age of the housing stock in the Northeast, the rate of new construction in the Northeast, and the current availability of gas, electricity, and oil as heating sources.

Water heaters are distributed through the traditional plumbing channel, through retail mass merchants such as Sears or Grossman's, and through

retail plumbers. Although similar to traditional HVAC products, a relatively limited portion of water heaters flow through the traditional HVAC channel in the Northeastern United States. A recent industry study suggested that the following distribution shares apply:

Retail plumbing (replacement)	60-65%
Retail merchants (Do-it-yourself)	17-22%
Plumbing contracting (new construction)	15-20%
HVAC	5-10%

Pricing of domestic water heaters is viewed by industry participants as being the most competitive of any product. This in part reflects the commodity nature of water heaters. It also reflects the large incidence of do-it-yourself installation of water heaters. This has led to low pricing by merchandisers and hardware chains, and has forced plumbing contractors to be extremely price competitive in their bids to homeowners. They in turn apply price pressure to distributors and manufacturers.

Trade prices of water heaters range from \$200 to slightly over \$500. The majority of water heater sales are of low-priced models between \$200 and \$250. In general, water heater prices vary according to fuel source used, the size of the holding tank, the warranty on the tank, and the efficiency of the heater. It is worth noting that to date sales of higher efficiency water heaters carrying higher prices have not been as strong as sales of high efficiency furnaces or air conditioners have been. There is suspicion in the

industry that strong high-efficiency sales may become more important in the next few years. Typical prices at the trade level are shown:

WATER HEATER LIST PRICES
(TRADE LEVEL)

Warranty:	<u>Standard Efficiency</u>		<u>Medium Efficiency</u>		<u>High Efficiency</u>	
	<u>5 year</u>	<u>10 year</u>	<u>5 year</u>	<u>10 year</u>	<u>5 year</u>	<u>10 year</u>
Gas ¹						
40 gal	\$230	NS ²	\$350	\$460	NS	\$540
Electric						
40 gal	\$215	NS	\$275	\$360	NS	\$365

¹ Add \$50-75 for propane. ² NS = not sold.

In addition to being extremely price competitive the market for water heaters is dominated by five large manufacturers. The top five competitors account for 94-96% of industry sales. These competitors and their shares are shown below:

State Stove (Ashland City, TN)	28%
Rheem/Rudd (Montgomery AL, Chicago, IL)	25%
Mor Flo (Cleveland OH, Chattanooga TN)	18%
A. O. Smith (Kankakee, IL)	15%
Bradford-White	<u>10%</u>
	96%

B. Furnaces (oil, electric, gas)

1. Products. Warm air furnaces are the central component of a forced warm air heating system. The heat that they create is transferred from the combustion gasses (for oil, gas, and solid -- this is eliminated for electric which simply is a resistance heater in the duct) to circulating house air through a heat exchanger. The circulating air is delivered to the living space through ducts. Warm air furnaces are the most popular form of heating in the U.S., and are second only to hydronic systems in the ten state area. Warm air furnaces are particularly popular where central air conditioning systems can use the same duct-work for cool air in the summer.

Warm air furnaces in the U.S. are distinguished by several features:

- o Size - DOE defines residential warm air furnaces as those up to 225,000 Btu/h. Most sizes between 25,000 and 225,000 Btu/h are available, with most manufacturers offering 5-10 models of varying size within a single family. Electric furnaces are sized in Kw, with 10Kw = 35,000 Btu/h and 20Kw = 70,000 Btu/h.
- o Families - Most large U.S. manufacturers offer a minimum of three furnace families. The least costly is targeted on the price sensitive new construction market, the medium priced model is for the price conscious homeowner, and the most expensive (often with added features such as extra coats of paint, a longer warranty on the heat exchanger, and so forth) is for the quality conscious homeowner.
- o Efficiency - In addition to quality and features, large U.S. manufacturers usually offer models of varying efficiency. The efficiency of the average residential furnace (gas) is 65-70%. A typical manufacturer will have models at 65-70%, 75%, and 80+%.

For some, added efficiency comes with the highest priced model in a product line (achieved with a better heat exchanger and more insulation). Many have, or plan to introduce soon, models that achieve high efficiency (generally 85% or better) through special design and technology.

(This is important because there are strong indications that American consumers are increasingly willing to pay a premium for fuel efficiency, and are increasingly replacing useable furnaces solely to get better efficiency. Manufacturers without high efficiency models may not fare well in the market).

- o Fuel - Warm air furnaces are fired by oil, gas, electricity, or solid fuel. As is illustrated below, gas is the most popular fuel. Oil warm air furnaces are much more common in the Northeast than elsewhere. Electric furnaces are most commonly used as back-up to heat-pump systems, which have not penetrated the Northeast yet, and in warm parts of the U.S. where heat loads are low. Electric furnaces are believed by industry sources to be relatively rare in the Northeast.
- o Configuration - Most large manufacturers offer roughly the same furnace in more than one configuration to satisfy installation in narrow, low ceilinged, or other space. A large manufacturer will offer a tall, narrow high-boy with up or down flowing air; a horizontal; a counter flow; and perhaps a squat low-boy model.
- o Options - Almost all furnaces in the U.S. are available with options such as vent-damping, electronic (non-pilot) ignitions, belt driven or induction motor fans, and adaptability to air conditioning add-ons.
- o Warranty - Most furnaces come with limited warranties. An additional warranty (gas and oil) often covers the heat exchanger. A frequent practice is to offer longer warranties (10, 15, and 20 years) on the more expensive models in a family.

2. Markets. The table below shows the current size and recent history of the warm air furnace market. It includes Hayes/Hill estimates for the ten Northeastern states in this study.

SHIPMENT OF WARM AIR FURNACES (000)					
Total US	<u>1976</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>Total in Place</u>
Gas	1553	1416	1156	1661	-
Oil	234	81	104	127	-
Elect	<u>242</u>	<u>235</u>	<u>177</u>	<u>339</u>	<u>-</u>
Total	2029	1732	1437	2127	41,967
Ten States					
Gas	150	129	110	163	-
Oil	63	54	46	68	-
Elect	<u>137</u>	<u>117</u>	<u>100</u>	<u>147</u>	<u>-</u>
Total	350	300	256	378	8,665

Source: GAMA; Hayes/Hill Estimates

As with other primary heating products, a broad base of replacement sales (running 65-85% of units in most years) is relatively constant. New construction adds to those sales when the economy is strong.

Replacement sales in the ten Northeastern states are affected by three factors. The first is the lifetime of a furnace, estimated by the industry at 15-20 years. Second is replacement of operating furnaces with furnaces of higher efficiency. Although difficult to measure, and not a strong trend yet, there is widespread belief in the industry that efficiency replacements are becoming more common. Third, the change of relative gas, oil, and electricity prices through the Northeast, combined with low availability of gas connections in the late 1970's (even today some public utilities, for example, Boston Gas,

connect residential customers in a "load controlled" manner -- meaning with an eye to supply) produced conversion replacement sales, both away from and then toward gas.

Warm air furnaces are sold through the traditional HVAC channels. Distributors purchase from manufacturers, and sell to installer/contractors. Homeowner's purchase from installers, and generally rely upon their recommendation in making a purchase.

Prices for furnaces depend upon size, configuration, and fuel. Typical prices are shown:

TYPICAL FURNACE LIST PRICES
TRADE LEVEL (no discounts included)

<u>Model</u>	<u>Gas</u>	<u>Oil</u>	<u>Electric</u>
<u>Highboy</u>			
125 Btu/h	\$ 975	\$1350	\$1200 (30 kw)
185 Btu/h	1350	1625	NA -
High Efficiency 115 Btu/h	1800	NA	NA
<u>Counterflow</u>			
125 kBtu/h	1300	1380	1200 (30 kw)
160 kBtu/h	1585	1600	NA -
<u>Horizontal</u>			
85K Btu/h	783	1250	1125 (25 kw)
125K Btu/h	1300	1425	1200 (30 kw)
(Additional for air conditioning adaptability)	50-200	50-200	NA

Price quotation is typical of U.S. practice. Terms are generally net 30, with early payment discounts. Freight is usually included, or a freight allowance (\$3.00 per cwt) is made. Taxes are often quoted as additional. Because of uncertainties on the part of customers, Canadian manufacturers would be advised to quote prices including tariffs, taxes and transportation.

Promotion of furnaces in the U.S. is focused on the trade. It includes appearances at trade shows, promotion allowances, co-op advertising,

sponsored radio and newspaper advertising (much less frequently, local TV), and a variety of purchase incentives (trips to Hawaii for purchasing large volumes) and volume purchase discount incentives.

Competition in the U.S. is dominated by several large firms. Almost all have a related air conditioning product line. Many consider air conditioning sales to be a profit center, and view furnace sales as a loss leader or a marginally profitable way to get the air conditioning sale. Hence price competition exists at the manufacturer level, as well as at the trade level. (However, some heating products, high-efficiency furnaces for example, are viewed as profitable and are less subject to price cutting).

Large competitors and selected plant locations include:

	<u>Estimated Share</u>
o Carrier (BDP) (Indianapolis, IN)	20-25%
o Lennox (Marshalltown, IA)	12-16%
o Trane (Former G.E.) (Lexington, KY)	8-12%
o Rheem/Rudd (Ft. Smith, AR)	7-11%
o Whirlpool (Heil/Sears) (Nashville, TN)	6-10%
o Magic Chef (Columbus, OH)	1-4%
o Fedders (Frederick, MD)	1-4%
o York (Luxaire)	1-4%

C. Boilers

1. Product. Boilers are the central component of a hydronic heating system. They create the hot water or steam that is used to transfer heat to the living space. Hydronic heating has the advantages of quiet operation, a reasonably constant, even heating, low space requirements for water pipes as compared to warm air ducts, and easy zone control of heat flow. Hydronic heat

suffers a disadvantage against forced warm air heat in environments where central air conditioning (which requires air ducts) is popular. Central air conditioning has its lowest U.S. penetration in the Northeast.

Boilers are distinguished by several characteristics:

- o Size - Residential boilers are defined by D.O.E. as those up to 300,000 Btu/h. Almost every size between 35,000 and 300,000 Btu/h appears on the market.
- o Material - Cast-iron boilers, preferred for their corrosion resistant properties, account for 80-90% of boiler sales. Steel boilers account for the remainder.
- o Fuel - Boilers are fired by gas, oil, electricity, and other solid fuels (wood/coal). About 60% of boilers sold in the northeast U.S. are gas, most of the rest are oil. Very few are electric, and, in most years, 1/4 -1/2% are solid fuel fired.
- o Output - Boilers can produce either steam or hot water. Steam boiler sales are small -- almost all go into replacing defective steam systems.

Manufacturers of boilers are concentrated in the Northeast U.S. Almost all manufacturers of residential boilers also produce a full range of commercial and industrial sizes. Below 300,000 Btu/h most manufacturers offer three to seven models (varying material, fuel, configuration, etc.), with four or five sizes available for each model. When final options (electric ignition vs. pilot; pumped water circulation vs. gravity) are included, hundreds of possible "models" are available.

Boilers are subject to ASME standards for design and construction. A plant inspection of every boiler is required to obtain the "H" stamp. Boilers are efficiency tested on a spot basis at the factory by the Hydronics Institute, to obtain the I=B=R rating. AGA, U.L. or other appropriate bodies assure safety of gas burners, electric controls, and etc. AGA certifies efficiency of larger-than-residential boilers, and GAMA lists all residential boilers.

2. Markets. The table below shows the current size and history of the U.S. boiler market, and Hayes/Hill estimates for the ten Northeastern states in this study. As can be seen, the Northeast accounts for 70-80% of U.S. boiler sales, and gas fired units for 60-70% of sales.

Shipments of Boilers

<u>Total US</u>	<u>1977</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>Installed base</u>
Gas	50%	85%	73%	69%	65%	N/A
Oil	49	14	27	31	35	N/A
Other	<u>1</u>	<u>1</u>	<u>2.3</u>	<u>0.3</u>	<u>.04</u>	N/A
Units (000)	269	373	224	260	230	14,709
<u>10 N.E. States</u>						
Gas	21%	84%	64%	57%	53%	N/A
Oil	<u>78</u>	<u>15</u>	<u>34</u>	<u>40</u>	<u>44</u>	N/A
Units (000)	161	317	168	195	173	9,899

Source: GAMA, Hayes/Hill estimates

Demand for boilers is created by new construction, and replacement sales. In recent years, 20-30% of new construction in the Northeast has used hydronic heat. The Northeast accounts for 70-80% of new hydronic installations in the U.S.

At the same time the Northeast has about 70% of the installed hydronic systems, and therefore, (including housing age effects) 70-80% of the replacement sales. Boilers are relatively long-lived, (industry sources estimate 25-40 years), and have not yet experienced substantial replacement for efficiency upgrade. The introduction of very efficient pulse-combustion, condensing units by Hydrotherm may begin a trend in that direction.

Year to year variations in overall demand reflect the effects of the economy on both new construction and on consumer readiness to make large item purchases. (However, the relative stability indicates the large replacement of failed unit component). The variation between gas and oil units resulted from the low availability and threatened high price of natural gas in the mid 1970's, followed by gas availability and increased oil and electric prices in the early 1980's.

SHIPMENTS OF BOILERS, 1983
(000)

	<u>Installed Base</u>	<u>1983 New</u>	<u>1983 Replacement</u>	<u>1983 Total Shipments</u>
Total US	14,709	24	206	230
10 NE States	9,899	18	154	172

Source: The Air Conditioning, Heating & Refrigeration News

Boilers and hydronics heating systems, are distributed through both the plumbing and the HVAC channels, described above. Both homeowners and builders deal with an installer/contractor, who recommends a particular unit and installs it.

Prices for boilers are based on the unit's size, the optional features, and the manufacturers' reputation. At the consumer level, prices are generally quoted including installation, and so vary wildly. Prices typical at the trade level (not including any discounts) are shown below. Manufacturers should consult with their representatives and agents to identify prices of the models they will primarily compete with.

TYPICAL LISTED U.S. TRADE BOILER PRICES

Boiler (water) 90,000 Btu/h	\$ 725
Boiler (water) 240,000 Btu/h	1310
Additional for steam	100
Additional for electronic start	75
Additional for electronic start & vent damping	175

Pricing and delivery terms are typical of U.S. practices. They include pricing FOB customer's dock or use of a freight allowance. U.S. manufacturers often list prices net of taxes - but Canadian manufacturers are advised to list and quote all tariffs and taxes other than local taxes.

Promotion by boiler manufacturers is focused on the trade. It includes appearances at trade shows, promotion allowances, trade advertising, sales and purchase incentive programs, and the like. Little advertising is directed at consumers, with the possible exception of the new, higher efficiency units.

Competitors in the U.S. are typically located in the Northeastern states. Few -- and none of the majors -- have non-hydronic heating systems. Almost all have product lines that extend into the commercial and industrial ranges. The industry estimates that two companies: Burnham Corporation (plants in Pennsylvania and Ohio) and Weil-McLain (Indiana) produce almost 80% of U.S. boilers. Other participants include: Hydrotherm, Inc.; Peerless; Slantfin.

- D. Power Gas Replacement Burners. Power gas replacement burners are used primarily for the conversion of oil fired central furnaces and boilers to natural gas power. Consumers who are prompted to change to natural gas because of rising fuel oil prices often choose to install a conversion burner rather than to replace the entire central heating unit. Power burners are used for this (as opposed to atmospheric burners which are usually used to replace expired burners in existing gas equipment), because the power burner compresses the gas and, therefore, releases more heat in a smaller space. This is important because the firebox in oil fired furnaces is typically much smaller than that in a gas furnace.

Power gas conversion burners are considered by their manufacturers to be very close to commodities. Any manufacturer's products are considered to be nearly identical to those of his competitor. There are several features that distinguish one burner from another:

- o Size - for residential use, the maximum burner rating is 225,000 Btu/h. Most manufacturers offer a model rated at a minimum of 50,000 and a maximum of 220,000 Btu/h. Some offer additional models starting with a minimum input of 35,000 Btu/h. In addition, manufacturers of power conversion gas burners for residential use generally offer a full product line that extends to gas burners for commercial and industrial use. They very likely also make burners for oil and other fuels at the industrial and commercial level.
- o Ignition - both constant pilot and direct spark ignition models are available from all manufacturers.
- o Accessories - some manufacturers offer several tube lengths and mounting bracket configurations. In addition, optional mounting brackets, tube extensions, and other minor accessories such as flame spreaders are available at very nominal costs.
- o Fuel - models offered by major manufacturers are capable of burning either natural or LP gas.
- o Efficiency - Some manufacturers offer a model which is termed "high efficiency". However, this is often simply a model that has direct spark ignition rather than a recycled pilot spark ignition system.

Power gas conversion burners are design certified and listed by AGA and, if they have an electric spark ignition, by the UL also.

2. Markets. The market for powered gas conversion burners has been among the most cyclical of all heating products in the United States. It is strongest in the Northeast, because that is where oil is most prevalent.

The market was at a relatively stable level in the early 1970's. It dropped substantially with the reduced availability of natural gas in the Northeast United States in the mid 1970's, and increased sharply in the early 1980's because of pick-up demand following renewed natural gas availability and because of rapidly increasing fuel oil prices.

In 1982 and 1983 the number of conversions has dropped substantially, and many industry experts believe that the conversion fad is over. Industry sources such as GAMA have decided not to attempt to collect statistics on conversion burner sales because of their dwindling importance. Several manufacturers contacted by Hayes/Hill had either withdrawn from natural gas conversion burner market, or stated the an intention to do so in the near future.

On the other hand, some industry sources believe that every oil fueled house (totalling some 10 million in the 10 Northeastern states in the study), will eventually convert and represent a potential market. Hayes/Hill is not optimistic on that score. Our estimates of sales of conversion burners in the 10 Northeastern states for the past 10 years are shown below:

SHIPMENTS OF POWERED GAS CONVERSION BURNER
(000)

<u>Year</u>	<u>1972</u>	<u>73</u>	<u>74</u>	<u>75</u>	<u>76</u>	<u>77</u>	<u>78</u>	<u>79</u>	<u>80</u>	<u>81</u>	<u>82</u>	<u>83</u>
Powered Gas Conversion Burners	27	27	25	15	6	5	17	77	177	108	44	18

Source: The Air Conditioning, Heating, and Refrigeration News; Hayes/Hill Estimates.

Distribution of powered gas conversion burners is through the traditional HVAC channel, and also through gas utilities. As part of their marketing efforts some gas utilities sell conversion burners to new customers and arrange for contractors to install them. Some offer a complete fixed price installation package to potential converters. Some utilities purchase conversion burners and lease them (typical fee, \$3-4 per month), to consumers. In the latter case, the utility often provides free installation. The share of power gas conversion burners flowing through the traditional channel and through utilities varies wildly from year to year because utilities constantly reassess their marketing and merchandising positions. Another factor may be that HVAC contractors have reduced emphasis on what they view as a dying market.

Hayes/Hill estimates of the shares that each of these channels has had in the last 3 years are shown below:

POWER GAS REPLACEMENT BURNERS
DISTRIBUTION CHANNELS

	YEAR		
	<u>1981</u>	<u>1982</u>	<u>1983</u>
Through Utilities	52%	76%	39%
Through HVAC	45	18	38
Burner Sales Not to Residences	3	6	23
	-----	-----	-----
	100%	100%	100%

A typical price for a consumer to pay for a full conversion, parts and labor included, is \$700-900. Prices for conversion burners themselves, at the trade level, are shown below.

POWER GAS CONVERSION BURNER LIST PRICES
(TRADE LEVEL)

<u>SIZE</u>	<u>PRICE</u>
50-225K Btu/h, Pilot	\$250-300
50-225K Btu/h, IID	\$330-400

There is one major competitor and a handful of minor competitors in the power gas conversion burner market. Several manufacturers of oil and gas burners at the industrial and commercial level have recently withdrawn from the residential conversion market. Two of these are Cox and Beckett. Remaining in the market are the following:

<u>Competitors</u>	<u>Estimated Share</u>
MIDCO (Chicago, Illinois)	60-70%
ABC Sun Ray (New York, New York)	6-12%
Adams Manufacturing (Cleveland, Ohio)	6-12%
Solarflo (Cleveland, Ohio)	6-12%
Wayne Home Equipment (Ft. Wayne, Indiana)	6-12%

E. Wood and Coal Furnaces and Boilers

1. Products. Wood and coal fired furnaces and boilers provide the same functions as their more standard gas, oil, and electric counterparts. Manufacturers should consult the section on those products (VI-B and VI-C) for background on the products and on the market.

In the U.S. market, there are three related furnace and boiler products that are coal or wood fired. First are those that burn only coal or wood. These are traditional rural products, and sales are both small and declining. Second are dual fuel units. These burn wood or coal as a primary fuel, but have the built-in capability of using a backup fuel, usually oil. Frequently oil is used to heat the firebox and ignite the primary fuel, and then shuts off. If wood or coal is not replenished the backup fuel takes over. Ideally, the homeowner recognizes the cost benefits of burning wood or coal, but has more flexibility than with a solid-fuel-only central heating system. The final category of solid fuel heating equipment is add-ons. These are furnaces or boilers that burn only solid fuel, and are

installed separately in series with an existing heating system. They are then used as the primary heating source. Again the cost benefits of solid fuel are recognized while the backup and convenience of oil or gas heat is not lost.

Coal and wood fired furnaces and boilers sold in the U.S. have, in general, fewer options and configurations than fossil fuel fired equipment. In part, this is a reflection of the fact that the principal appeal of coal and wood equipment is purchased with economy in mind; "features" that serve only to distinguish a product in the market but add no functional value do not help sales. In part, this is also a reflection of the kind of manufacturer who produces coal and wood fired equipment and of his customer. The manufacturer is not a large HVAC supplier, he is instead a firm (often small) with metal forming and welding capabilities. His customer is principally interested in fuel and money savings. Finally, the market is small, and there simply is not a demand for all of the models and configurations that exist in fossil fuel fired equipment.

Nonetheless, most manufacturers offer a two or three member family of products. The family members typically are of two sizes -- often about 90,000 Btu/h and 130,000 Btu/h. Some offer as many as four models ranging from 70,000 Btu/h to 225,000 Btu/h. Units will also vary in physical size, but generally because of firebox size and not, as with gas and oil units, to facilitate installation in tight spaces in development housing. Products are generally UL listed, and may be approved by the Wood Heating Alliance (WHA) and the National Fire Prevention Association (NFPA).

2. Markets

The market for wood and coal fired central heating equipment is relatively small. It reached a peak in the late 1970's with the concurrence of oil shortages and fears of substantial price increases or reduced availability of fossil fuels. The industry has not collected sales figures until very recently. Hayes/Hill's estimate of current years and recent market history is shown:

Wood and Coal Furnaces and Boilers

	<u>1981</u>	<u>1982</u>	<u>1983</u>
Total U.S.			
Boilers	3,450-3,500	2,000-2,100	1,650-1,750
Furnaces	18,400-18,600	10,700-11,000	8,900-9,100
10 N.E. States			
Boilers	850-900	500-525	400-450
Furnaces	4,500-4,700	2,600-2,800	2,150-2,300

Source: Hayes/Hill estimates based on WHA data

Distribution of wood and coal fired equipment is through the hardware or building supplies channels. Consumers purchase these from a solid fuel appliance store. With rare exceptions, manufacturers have close relationships with distributors but few, if any, units are actually kept in distributor's stock. In fact, due to the low level of demand, several manufacturers note on their trade price lists that certain units are manufactured to order. Manufacturers usually use a manufacturer's representative to reach the market.

Pricing for wood and coal fired equipment is generally higher than for similar sized gas or oil equipment. Prices vary according to equipment size. In general, there is only a small price difference between identical wood and coal units. Typical prices from the listed trade prices are:

<u>Unit</u>	<u>Trade List Price</u>
Wood Boiler	
100,000 Btu/h	\$1,620
150,000 Btu/h	1,940
Wood/Coal Boiler	
100,000 Btu/h	\$2,100
150,000 Btu/h	2,430
Wood Furnace	
140,000 Btu/h	\$1,150-1,300 (gravity v. forced air)
225,000 Btu/h	1,275-1,500 (gravity v. forced air)
Wood/Coal Add-ons	
80,000 Btu/h	\$725

Terms are typically net 30, with a discount for quick payment. In the U.S. prices are often quoted F.O.B. manufacturers' dock. Canadian firms, however, are advised to quote either F.O.B. customer

or, at the least, F.O.B. Canadian border. In addition, special payment restrictions -- such as deposit or payment in advance -- are often in effect for manufactured-to-order pieces.

Manufacturers tend to be small and fragmented. Many manufacture other products. Selected competitors include: Orville Products (Orville, OH), Yukon (Minneapolis, MN), Domback (Cleveland, OH) and Van Wert (Peckville, PA).

F. Air to Air Heat Exchangers

1. Products. Air to air heat exchangers are products that are used to reduce the heat loss when stale, moisture-laden, or polluted air is vented from a home and replaced with fresh outside air. They transfer the heat, and in some cases the moisture, from the outgoing air to the incoming air; this keeps more of the heat in the house and reduces the load on the central heating system. Heat exchangers have been in use in hospitals and industrial applications on large scale for many years. Only recently have they been designed in small sizes appropriate for residences.

Heat exchangers are generally considered necessary or useful only in relatively new homes that are air tight. Older homes allow so much air to flow in around windows, doors, and joints that the venting which the heat exchanger provides is unnecessary. It is also worth noting that heat exchangers for appropriately tight homes should be just as valuable during the summer cooling period as during the winter heating period. However, to date, use of heat exchangers is much more common in heating than in cooling applications.

There are many products on the market, and very few standard designs or even standard design concepts. Among the features that distinguish heat exchangers are the following:

- o Size - Heat exchangers are generally rated in terms of cubic feet per minute (cfm). Sizes appropriate for residences range from about 100 cfm to over 400 cfm. Small units may be wall mounted and vent air directly to the outside. Larger units may operate centrally with ducts that draw air from different parts of the home. The costs of the units, and especially the installation costs, can vary accordingly.

- o Exchange mechanism - Many different technologies exist to transfer heat from the outgoing to the incoming air. The simplest simply pass the two streams of air through parallel baffles. In this type of design some units have baffles that are permeable by moisture and other particles carried by the outgoing air, (which are therefore transferred to the incoming air), and some are impermeable. Other designs use an intermediary medium, such as a metal wheel which absorbs heat from the outgoing air. It then is spun into the incoming air stream where the heat is absorbed by the incoming air. Claims and counterclaims about the effectiveness of different heat transfer systems and the value of transferring or not transferring moisture and other particles are made by all manufacturers.
- o Efficiency - Based on the heat transfer system used, and the engineering of the exchanger, some units recover more heat from the outgoing air than others. Typical performances range from 60 to 75% "efficiency". Many tests are suspect, challenged by other manufacturers, because they require special tuning in laboratory conditions to work.
- o Other options - Other features which distinguish heat exchangers include the physical appearance of the ducting or the casing, use of variable speed or dual speed fans, and silence of operation.

Most manufacturers of heat exchangers are small. As a result many offer only one or at the most two models in their product line. The larger companies in the United States, for example Des Champs, will have as many as three product lines with three models in each line. The lines vary according to design and efficiency. Models within the line vary according to size.

2. Markets. Air to air heat exchangers for residential use, (other than special cases for medical use), are a relatively new product on the United States market. In truth they are only useful in the homes constructed in the last two or three years that are extremely energy efficient, or in older homes that have been completely re-engineered (and sealed) for energy efficiency. Even in such energy efficient homes there is a mild debate in

the United States housing industry as to the true degree of airtightness of the house envelope, and therefore of the need for an air to air heat exchanger.

No industry or other figures are collected for air to air heat exchangers. Based on interviews with manufacturers and industry participants Hayes/Hill makes the following estimates for heat exchanger sales at the residential level in the United States and in the Northeastern ten states covered for this study:

	<u>YEAR</u>			
	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>
Total United States:	small	1,000- 2,000	2,000- 5,000	7,000- 14,000
Ten Northeast States:	-	250-500	400-900	2,000- 3,500

Although market growth from these figures looks to be very strong, it should be remembered that the market is still very very small. Development of sales will likely require education of the HVAC industry, and general acceptance by home builders. During the interviews conducted for this study by Hayes/Hill, none of the HVAC distributors or manufacturers representatives were familiar with air to air heat exchangers. Several large home builders contacted were familiar, but were not inclined to include heat exchangers in new home construction. There were, in fact, strong rumors that one major builder had evaluated the units in detail before making a decision not to install. This could be an influential development.

Most manufacturers of heat exchangers market them through manufacturers representatives. One such representative contacted acts as a distributor in his own right for heat exchangers, Hayes/Hill suspects, because the HVAC distributors to whom he usually sells are not interested in carrying such a low volume product. At least one manufacturer is making an effort to establish traditional HVAC distribution through a group of nationally affiliated HVAC distributors. We believe he is the only manufacturer making this effort.

Prices for air to air heat exchangers at the trade level in the United States range from \$350 to \$500. Larger units may run as much as \$1000 or more for large central units. Typical installations are believed to add \$1000-1,500 to a price of a newly constructed home, and could run \$2,000-3,000 for full installation retrofit in an existing home.

Competition in the heat exchanger business is scattered. There are an estimated 20 to 25 manufacturers of heat exchangers, most of whom are believed to sell fewer than 500 per year. The largest United States participants are believed to be Des Champs, whose volume is estimated at 2500-4500 units per year. Nu-Tone, a well-known United States marketer of household devices is marketing a product made by AirXchange.

Unlike other segments of the HVAC industry, heat exchangers have a very strong presence of foreign manufacturers. Mitsubishi has a model in the marketplace, (although it is rumored to have stopped marketing). Industry participants also report a very strong presence, perhaps accounting for more than half of the market, from Canadian firms.

G. Prefabricated Chimneys and Chimney Liners

1. Products. Prefabricated chimneys and chimney liners are metal chimneys with, typically, two or three concentric metal rings. In general the inside is stainless steel and the outside galvanized steel. The inner annulus is designed to get extremely hot from contact with the flue gases, while the outer ring -- which is insulated by air or other insulation -- remains cool.

Prefabricated chimneys are used in new construction fireplaces because they are lower in cost than masonry chimneys. They are also installed with most woodburning stoves, remodelled (add-on) fireplaces, and for wood or coal furnaces and boilers. They are also occasionally used to reline failing masonry chimneys.

Prefabricated chimneys are commonly available in a range of diameters from 6" to 10", and appear also in larger diameters. Manufacturers offer a selection of elbows, joints, collars (for penetrating roofs or floors), caps, and mountings.

Prefabricated chimneys usually carry a UL approval and a Wood Heating Alliance (WHA) approval. Many also have a 5 or 10 year warranty.

2. Markets. Prefabricated chimneys and chimney liners are manufactured by a large number of firms in both the U.S. and Canada. (Unlike several of the other products considered in this report, there is a Canadian presence in the northern U.S. in prefabricated chimneys. Several U.S. firms, in fact, market under their own names chimneys purchased from Canadian manufacturers). There are no dominant firms in the market.

In general manufacturers of fireplace inserts, zero clearance fireplaces and stoves also manufacture their own prefabricated chimneys. There are no dominant manufacturers, but there are hundreds of small firms in the market. (The reason is that most have the capability to make their own, and U.L. certification is for the entire unit as a whole.) As a result, independent sales of prefabricated chimneys are believed by industry participants to depend strongly on new construction. Hayes/Hill estimates of market size are:

SHIPMENTS OF PREFABRICATED CHIMNEYS
(000)

	<u>1975</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>
Total U.S.	120-145	265-335	260-330	238-303	285-365
10 NE states	14-18	35-40	34-39	32-36	37-42

Prices for prefabricated chimneys vary according to the diameter of the pipe, the length of the section, and the number of concentric rings. Typical retail prices in the U.S. are shown below.

PREFABRICATED CHIMNEY LIST PRICES

<u>Section Length</u>	<u>Double Wall</u>	<u>Triple Wall</u>
18" X 8" dia.	\$27.00	\$40.00
36" X 8" dia.	\$42.00	\$60.00

Prefabricated chimneys are sold through both the building materials and the hardware distribution structure. A very few large builders buy direct from manufacturers; most buy from building and construction supply. Retail consumers typically purchase from either a solid fuel appliance store or from a hardware or home improvement store, both of which are distributed to through the hardware channel. Use of manufacturers representatives is common.

H. Zero Clearance Fireplaces.

1. Products - Zero clearance fireplaces are one member of a family that also includes free standing prefabricated fireplaces, stoves, fireplace inserts, and other precast concrete or masonry fireplaces.

Zero clearance fireplaces are self-contained metal fireboxes that are well enough insulated that they can be placed immediately against combustible surfaces without insulation. They are distinguished from precast concrete fireplaces which are used exclusively in new construction, from fireplace inserts which are placed into existing fireplaces in order to improve efficiency, and from stoves which are not set into or against walls. Free standing prefabricated fireplaces are similar to zero clearance fireplaces, but require spacing or insulation around the outside. Zero clearance fireplaces are by far the largest selling of all fireplaces.

Among zero clearance fireplaces there are both circulating and non-circulating units. Circulating includes fans blowers to force the draft; non-circulating works on a gravity draft. Circulating zero clearance fireplaces account for about half of the zero clearance fireplaces installed in new construction, and for about three quarters of those installed into existing homes.

Zero clearance fireplaces, known as "tin boxes" in the industry (because that is in fact all they consist of), are none-the-less available in enough sizes and with enough adornment that most manufacturers offer several product families with several models in each family. Distinguishing characteristics include:

- o Size - The largest manufacturers offer model families with two or sometimes three sizes per family. Many offer several families of different configurations.
- o Adornments - Most models are offered in a variety of facings such as pewter, antique, or brass. In addition models come with or without glass doors of different designs.

2. Markets. Sales of zero clearance fireplaces have two components: new construction sales, and remodeling/rehabilitation sales. The size of new construction sales depends entirely upon the rate of new home construction in the United States. In 1982 and 1983, with good new construction starts, 65-70% of new construction fireplace sales were of zero clearance fireplaces (as were 55% of remodeling fireplace sales).

Zero clearance fireplaces are popular in new construction because they are easily installed. Sales to the remodeling market are more stable, and have been about 30% of total zero clearance sales in the last few years. In the remodeling market an estimated 60-70% of zero clearance fireplaces are installed on a do-it-yourself basis.

Overall, zero clearance fireplace sales are weakest in the ten Northeastern states covered by this study, (with the exception of Ohio where they are reasonably strong). Part of the reason for this is the relatively low rate of new construction starts in this area. There is also an apparent consumer preference for stone and masonry fireplaces in New England rather than the metal of zero clearance units.

Hayes/Hill's estimates of market size for the total United States and for the ten Northeastern states are shown below:

SHIPMENTS OF ZERO CLEARANCE FIREPLACE
(000)

	<u>1975</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>
Total US	450	740	680	570	490
10 NE States	43-47	107-114	93-98	65-70	47-52

Source: Hayes/Hill estimates based on WHA data.

Distribution of zero clearance fireplaces is less well defined than is that of other major heating products. Distribution is split between traditional building supply distributors, and the emerging solid fuel channel. Builders and contractors typically purchase zero clearance fireplaces through a construction materials distributor. Consumers and do-it-yourselfers may purchase from a mass merchant, a do-it-yourself home center such as Grossmans, or from a solid fuel appliance store (known as a "stove store" in the business). Mass merchants and large hardware chains typically purchase direct from manufacturers. Stove stores and smaller hardware stores may purchase from a building supplies distributor or, more likely, from a hardware distributor. Manufacturers reps are active in sales of zero clearance fireplaces because of the lack of a strong traditional distribution channels.

Pricing in the zero clearance fireplace market is competitive. Unlike other HVAC markets, suggested list prices are often given at the consumer level rather than the trade level, reflecting the high percentage of do-it-yourself purchases. Typical prices in the United States market are shown below.

MARKET PRICE LEVELS
ZERO CLEARANCE FIREPLACES

	<u>Small, Unadorned</u>	<u>Large, Glass Doors, etc.</u>
Builder Prices	\$200	\$500
Retail Prices	\$300	\$750

Competition in the zero clearance fireplace market is spread very thin. There are an estimated five to ten major manufacturers, and another two to three dozen participants. None has an overwhelming share. Selected competitors include:

- o Temco; Nashville, TN
- o Heatilator; Mt. Pleasant, IA
- o Marco; Lynnwood, CA
- o National Fireplace; Dallas, TX

VII. MARKET PENETRATION

This section summarizes the general attitude in the U.S. to Canadian manufactured heating products, (good), reviews the most important requirements for Canadian manufacturer's participation, and discusses the specific attractions in the markets for individual products.

A. Receptivity to Canadian Residential Heating

Equipment.⁽¹⁾ Overall reaction to Canadian residential heating equipment is very favorable. In general, the actual equipment is considered the equal of, or even superior in quality to, its U.S. counterpart. However, since penetration by non-U.S. heating products is rather limited, distributors and manufacturers reps are relatively unsophisticated about importing. They have basic questions and raise issues which would be common to all imported products.

In order to successfully participate in the U.S. market, it is incumbent upon Canadian manufacturers to address and neutralize these issues at the outset. The following discussion summarizes the field research and respective comments.

(1) Appendices E-1, F-1 and G-1 provide individual distributor reaction to Canadian products.

The penetration of Canadian heating products varies considerably by product:

1. Traditional HVAC. Participation in the more traditional HVAC system is very low for both the reps and distributors.
 - o For those currently carrying Canadian products, the concensus on product is clear -- Canadians offer a good quality product. But distributors and reps tend to take issue with lead and delivery times, customs delays, and border crossings.
 - o For those companies which do not currently carry Canadian equipment, we found:
 - Many had never been approached.
 - Most were very receptive, if the product and associated services (price, warranty, delivery, promotion) were comparable to U.S. companies.
 - Many were worried about transportation costs, sales support and parts availability.
 - In areas where unemployment is high such as Pittsburgh, it appears that Canadian (or for that matter, any other non-U.S. producer) will run into resistance in the form of "Buy American" or "U.S.A. All the Way" campaigns.
2. Solid fuel. In contrast, Canadian penetration in the solid fuel area is high and established, with the overwhelming majority of distributors currently carrying Canadian products.
 - o Again, products are considered similar or superior to U.S. products.
 - o Other positive comments include: "cooperative suppliers", and "price competitive" (aided by exchange rates).
 - o However, less than positive comments included:
 - Difficulty with language barrier
 - Delays in getting parts and service

- Expensive freight charges
- Customs problems and delays

In summary, in order to successfully participate in the U.S. market, it must appear as if the product is made and serviced in the U.S. All the activities involved with getting to the U.S. should be invisible to the customer.

B. Key Requirements for Participation in the U.S. Market.

There are three areas of key requirements for participation by Canadian manufacturers in the U.S. market for HVAC equipment.

1. Plan. It is important to approach the market in an organized fashion, and to have a good idea of who the customer and the competitors are and how large sales are likely to be. This report is a good beginning. It can and should be followed with meetings with manufacturers' representatives who can offer detailed knowledge of U.S. markets, and eventually with meetings with potential customers.
2. Arrange for all logistics. The first step in this process is to arrange for distribution, and it is strongly advised that Canadian manufacturers find a good manufacturer's representative to help them with this.

The next step is to arrange to clear U.S. customs. It is advised that Canadian manufacturers form a working relationship with a U.S. customs broker to help in this area. Remember that the USA Marketing Division, U.S. Trade and Investment Development Bureau of the Department of External Affairs in Ottawa can offer advice in this area.

Arrange for transportation. Find and decide upon a common carrier or a freight consolidator. Keeping in mind that because freight consolidation can take extra time, it is advisable to consider common carriers first.

Finally, make certain that products meet all U.S. safety, testing and labeling requirements.

3. Arrange matters so that you are indistinguishable in U.S. customers' eyes from U.S. based manufacturers. This simply means adopt U.S. trade practices and customs, and quote all prices and terms so that duties, tariffs, and international freight charges are included in price quotes.

Other issues in this area include:

- o Label products, write contracts, and advertise in English.
- o Quote prices in U.S. dollars including freight and duties.
- o Adopt U.S. terms and conditions (e.g., payment, warranty).
- o (Again) Quote prices including freight and duties.
- o Be available to customers.
 - Get an 800 (toll free) telephone number
 - Visit potential customers in person
 - Call those you cannot visit
 - Have an in-house engineer available for questions and problem resolution
- o Provide product literature, brochures, catalogs and price sheets which look professional, are easy to read and current. Be sure to have installation instructions available for dealers and contractors.
- o Advertise in the appropriate U.S. publications.
- o Attend and exhibit at appropriate U.S. trade shows.

And, most important: DO NOT WAVER OR HESITATE. U.S. customers' biggest fear of Canadian suppliers is that they will desert them. Make your commitment to U.S. customers clear.

C. Market Opportunity Attractiveness for Products. The following market comments are based on the product market assessments in this report and a review of Canadian manufacturers' product literature. There are two classes of markets discussed: those that hold some attraction and those that are less attractive. None of the markets reviewed is without some flaw.

1. Markets that appear moderate to fairly attractive

a. Air-to-air heat exchangers - Canadian manufacturers already have a strong presence in this market. The market is small, but growing rapidly. There are no overpowering U.S. competitors. Distribution is still quite fragmented -- so Canadians entering are not yet at a disadvantage. The only unknown is whether sales will continue to increase sharply, or will fade. The 10 Northeastern states in this study have potential to be a strong heat exchanger market.

The market flaw is the low incidence of new construction in the Northeast -- and heat exchangers are a new construction product.

b. Zero clearance fireplaces - Canadian manufacturers also have a presence in the prefabricated fireplace market, and here also no U.S. firms dominate the market. Distribution here too is fragmented, and Canadian firms are not at a substantial disadvantage. The two problems facing this product are a general decline in zero clearance sales in recent years suggesting that the market may be close to saturation, and the lower acceptance of zero clearance fireplaces in New England than in the remainder of the U.S. However, note that sales in Ohio, Pennsylvania, lower New York, and New Jersey are stronger.

c. Water heaters - The water heater market through the entire U.S. is both large and stable. Water heaters are considered enough of a commodity that there are few proprietary features that exclude Canadian manufacturers from the market. For Canadians the three

principal disadvantages in this market are that it is dominated by a few very large U.S. firms, distribution channels are well established and may be difficult to penetrate, and price competition is very strong, thus reducing potential profits.

- d. Oil, electric and gas furnaces - Again the market for furnaces in the U.S. is quite large, making room for more competitors and products. The market in the Northeast is reasonably strong, and because of lower overall construction levels, is driven more by stable replacement sales. The disadvantages are that distribution is well established, which means that the strongest distributors are already taken. Smaller distributors are always looking for a good line -- particularly one that offers some unique advantage -- but they have less market control. Also, the furnace market is, at times, used as a loss leader by major U.S. heating and air conditioning manufacturers in order to build cooling equipment sales. Canadian manufacturers with somewhat limited product lines, no air conditioning, and no unique high efficiency products may be at a slight disadvantage.
- e. Oil and gas boilers - The market for oil and gas boilers has many of the same characteristics as the furnace market. Canadian manufacturers are not at a serious disadvantage except to the extent that, in the Northeast, most U.S. manufacturers may be located closer to potential customers and thus may be able to offer lower freight charges. Unique (high efficiency) products are not as important in this market yet.
- f. Prefabricated chimneys and liners - The market for prefabricated chimneys and liners in the U.S. is fragmented, and Canadian products are already present. The disadvantage that the market has is that entry barriers are low -- that is, many U.S. firms have the capability of entering the market. Also, the large, central users of prefabricated chimneys (manufacturers of fireplaces and stoves) often make their own. However, the fragmented nature of distribution is to Canadian manufacturers' advantage.

2. Markets that are less attractive

- a. Power gas conversion burners - The market for power gas conversion burners is less attractive than others because it is small and declining. Most industry participants believe that the market is saturated and will not rebound. Major U.S. participants have withdrawn or are planning to withdraw. The attractive feature of the market is that it is centered in the 10 Northeastern states -- particularly the New England states -- and so is close to most Canadian manufactures.
- b. Wood and coal furnaces and boilers - The market for wood and coal furnaces and boilers is less attractive first because it is small, and second because it is already saturated with Canadian manufactured products. Those already in the market will not find the latter a disadvantage, but those not participating now may find that the best distributors and representatives for Canadians are already taken. The small size of the market, and the fact that many industry sources believe that it will decline further as the energy shocks of the 1970s recede in time, make it less attractive.

DEPARTMENT OF
EXTERNAL AFFAIRS

UNITED STATES TRADE AND
INVESTMENT DEVELOPMENT
BUREAU

"An Analysis of Market
Opportunities for
Selected Canadian
Residential Heating
Equipment in the
Northeast
United States"

Appendix

HAYES/HILL INCORPORATED

220 EAST 42ND STREET NEW YORK, NEW YORK 10017/212-573-8750
TELEX 233468

APPENDIX LISTING

APPENDICES

<u>Appendix</u>	<u>Title</u>	<u>Page</u>
A	Heating Equipment in Study	A-3
B	Geographic Regions of the United States	A-5
C	Supporting Statistical Tables on U.S. Residential Heating Market	A-10
D	Supporting Statistical Tables on Northeast Residential Heating Market	A-18
E	Manufacturers' Representatives	A-44
F	HVAC and Plumbing Distributors	A-94
G	Solid Fuel Appliance Distributors	A-104
H	Supporting Data for Product Reviews	A-109
I	State Consumer Protection Offices	A-114
J	State Insurance Regulators	A-117
K	Chambers of Commerce in Designated States	A-120
L	State Energy Offices	A-122
M	State Utility Commissions	A-125
N	Major Trade Associations	A-128
O	Major Trade Publications	A-132
P	Major U.S. and Selected Northeast Regional Trade Shows and Conventions	A-136
Q	Independent Testing Laboratories	A-140
R	State Fire Marshals	A-144
S	Supporting Materials on Product Testing and Approval	A-146
T	Supporting Materials on State Building Codes and Regulations	A-158
U	Twenty Largest Home Builders	A-183

APPENDIX

Appendix A

HEATING EQUIPMENT IN STUDY

Appendix A
HEATING EQUIPMENT INCLUDED IN THE STUDY

The following categories of heating equipment are included in this study:

Furnaces

- Oil Furnaces
- Gas Furnaces
- Electric Furnaces
- Wood/Coal Furnaces

Boilers

- Oil-fired Boilers
- Gas-fired Boilers
- Wood/Coal-fired Boilers

Water Heaters

- Gas Water Heaters
- Electric Water Heaters

Prefabricated Chimneys and
Chimney Liners

Zero-clearance Fireplaces

Gas Conversion Burners (Power)

Air to Air Heat Exchangers

A total of thirty Canadian firms manufacturing these products participated in the study.

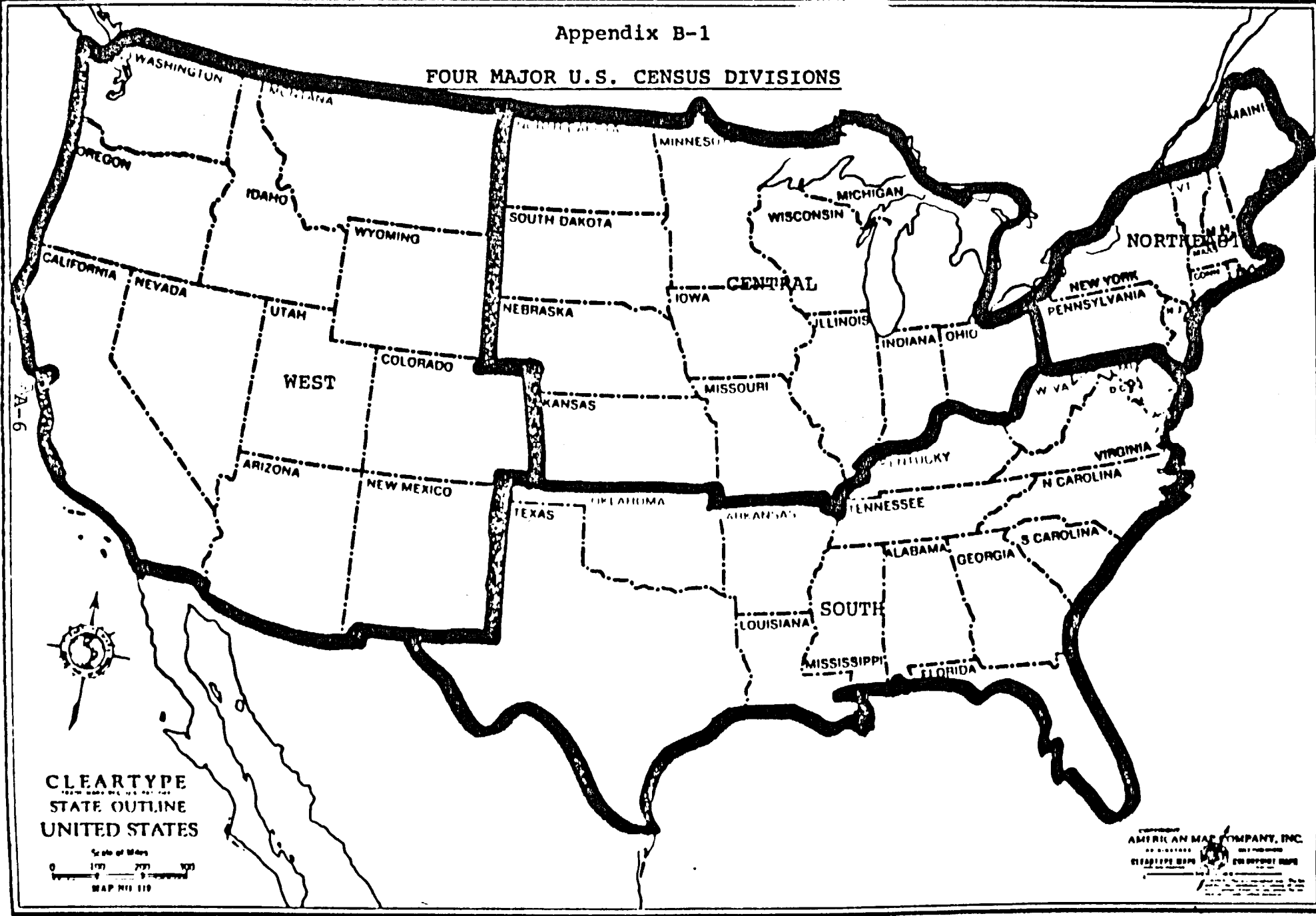
Appendix B

GEOGRAPHIC REGIONS OF THE UNITED STATES

- B-1 - Map of Four Major Census Divisions
- B-2 - Map of Nine Major Census Regions
- B-3 - Designated States Included in Study
- B-4 - Listing of U.S. Standard Statistical
Census Regions

Appendix B-1

FOUR MAJOR U.S. CENSUS DIVISIONS



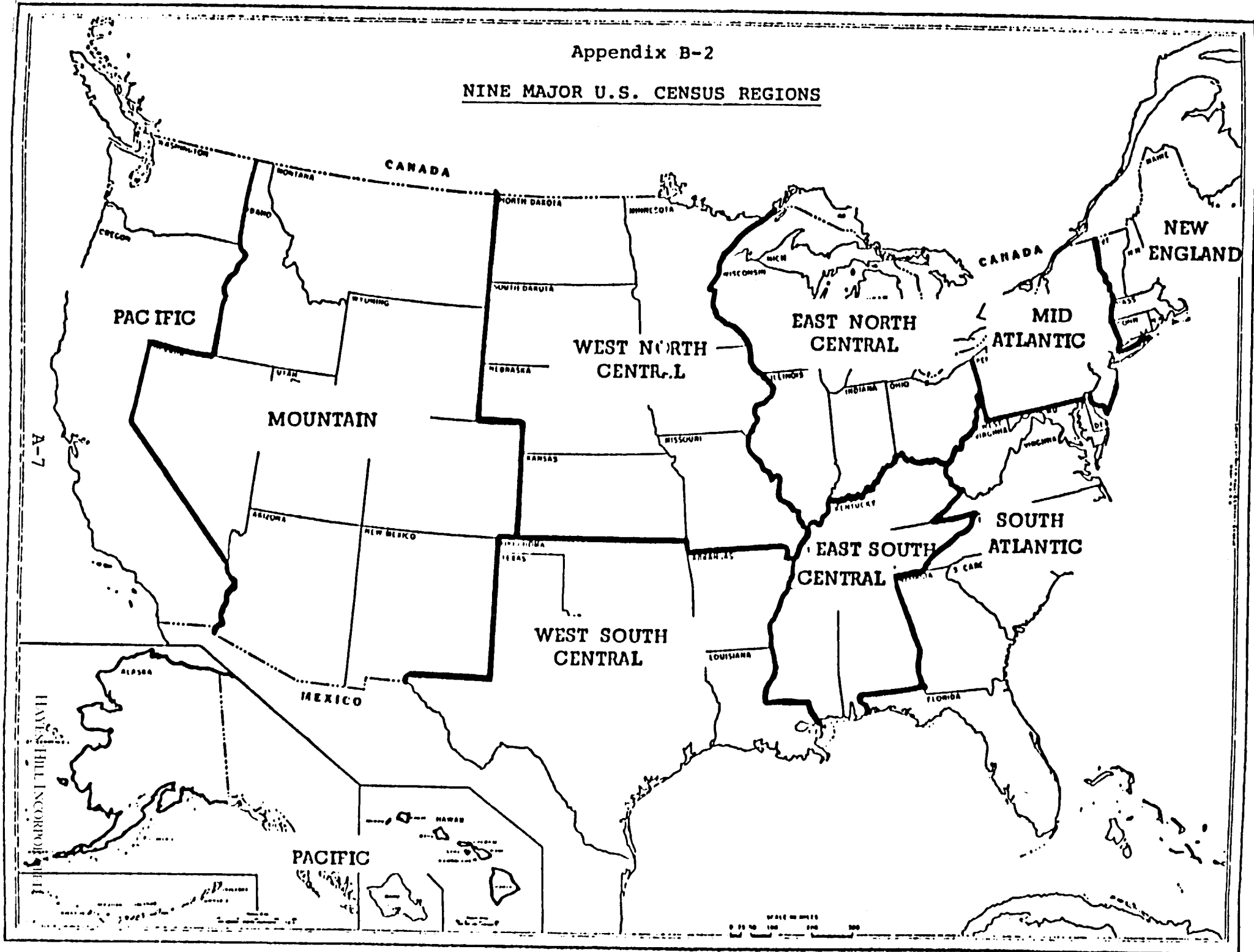
CLEARTYPE
STATE OUTLINE
UNITED STATES



AMERICAN MAP COMPANY, INC.
CLEARTYPE MAPS

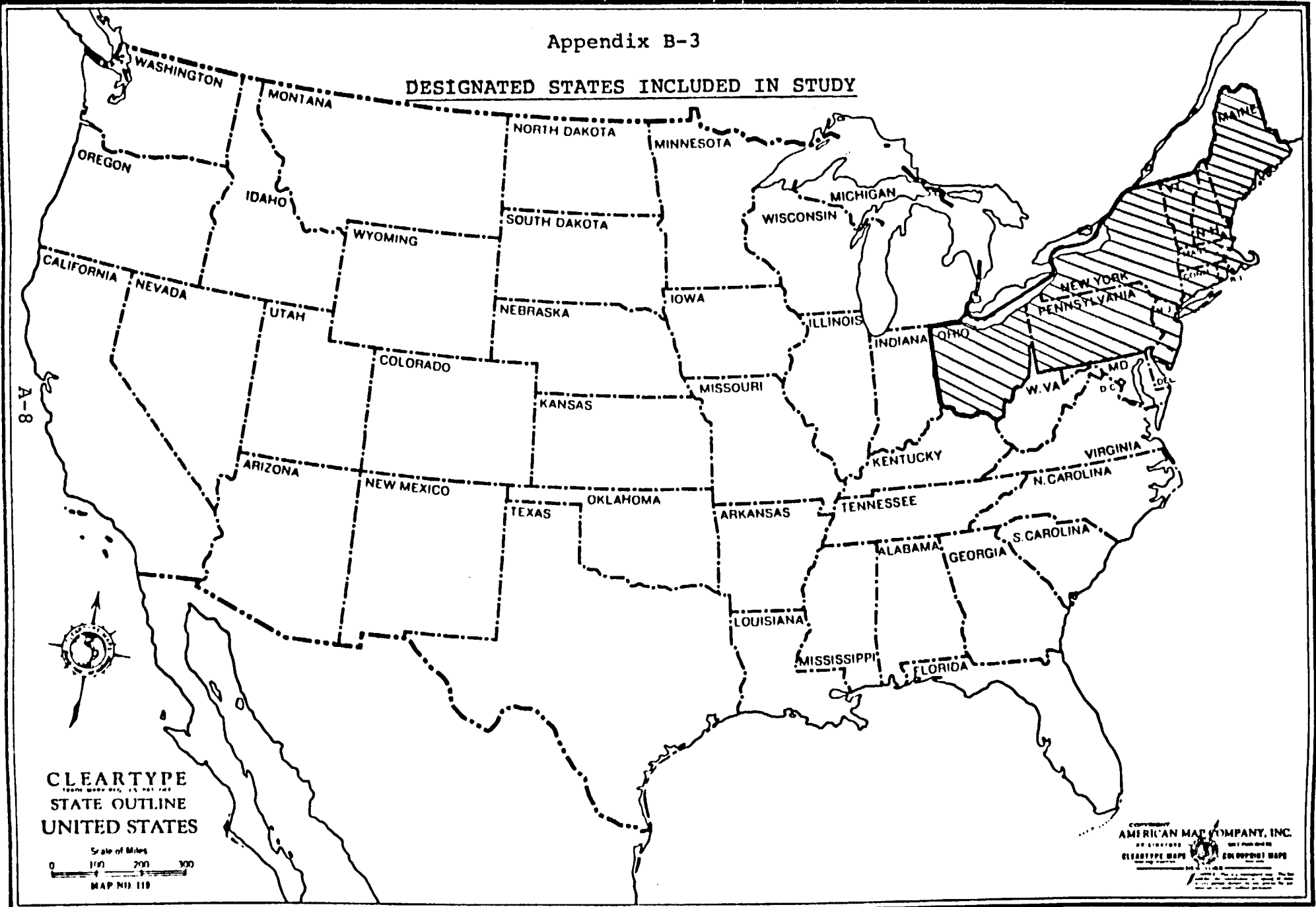
Appendix B-2

NINE MAJOR U.S. CENSUS REGIONS



Appendix B-3

DESIGNATED STATES INCLUDED IN STUDY



CLEARTYPE
STATE OUTLINE
UNITED STATES

Scale of Miles
0 100 200 300
MAP NO. 119

AMERICAN MAP COMPANY, INC.
CLEARTYPE MAPS

Appendix B-4

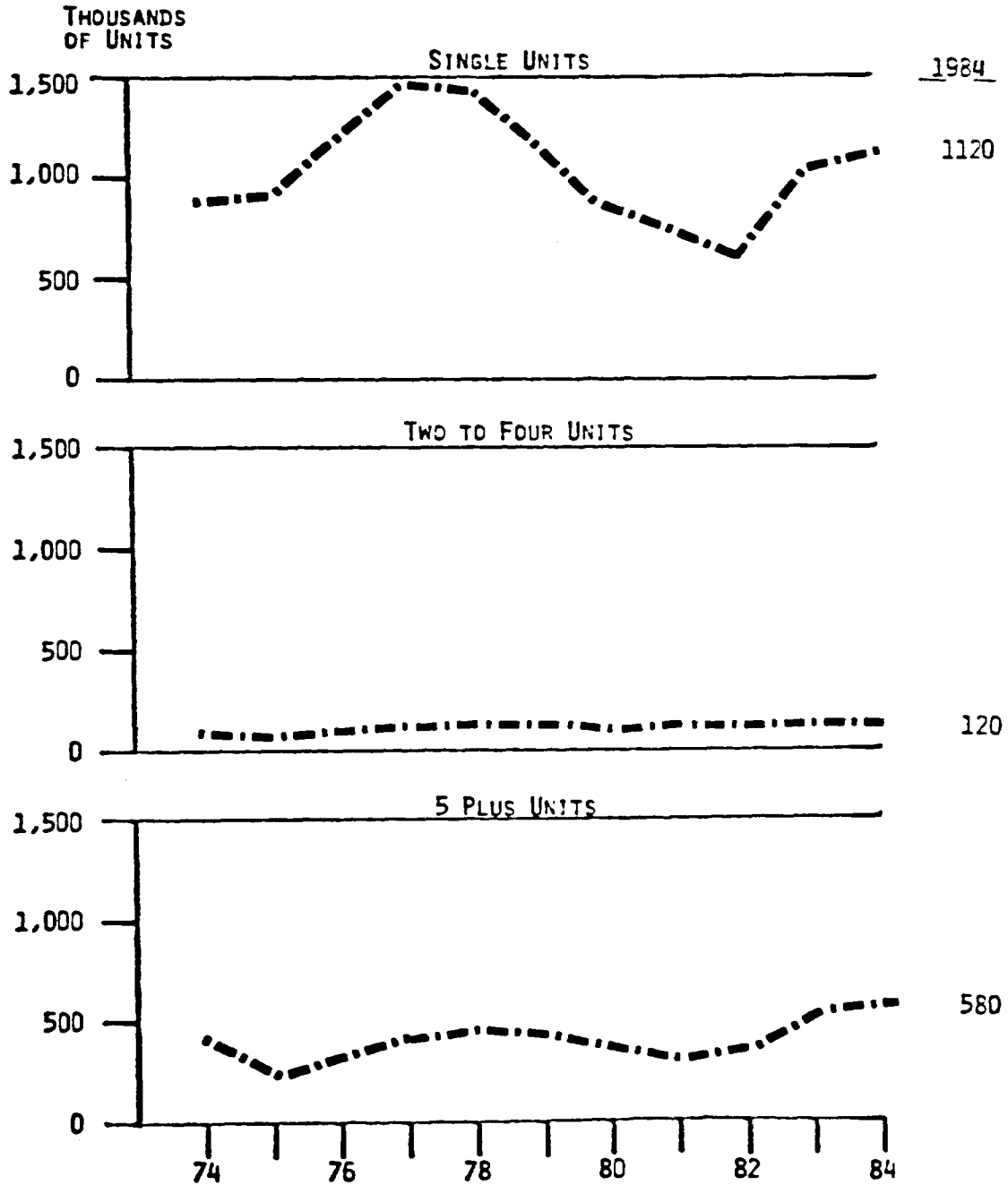
LISTING OF U.S. STANDARD STATISTICAL CENSUS REGIONS

<u>Divisions</u>	<u>Regions</u>	<u>States</u>	<u>States Indicated in Terms of Reference</u>
<u>Northeast</u>	Northeast	Maine New Hampshire Vermont Massachusetts Rhode Island Connecticut	Maine New Hampshire Vermont Massachusetts Rhode Island Connecticut
	Middle Atlantic	New York New Jersey Pennsylvania	New York New Jersey Pennsylvania
<u>North Central</u>	East North Central	Ohio Indiana Illinois Michigan Wisconsin	Ohio
	West North Central	Minnesota Iowa Missouri North Dakota South Dakota Nebraska Kansas	
<u>South</u>	South Atlantic	Delaware Maryland District of Columbia Virginia West Virginia North Carolina South Carolina Georgia Florida	
	East South Central	Kentucky Tennessee Alabama Mississippi	
	West South Central	Arkansas Louisiana Oklahoma Texas	
<u>West</u>	Mountain	Montana Idaho Wyoming Colorado New Mexico Arizona Utah Nevada	
	Pacific	Washington Oregon California Alaska Hawaii	

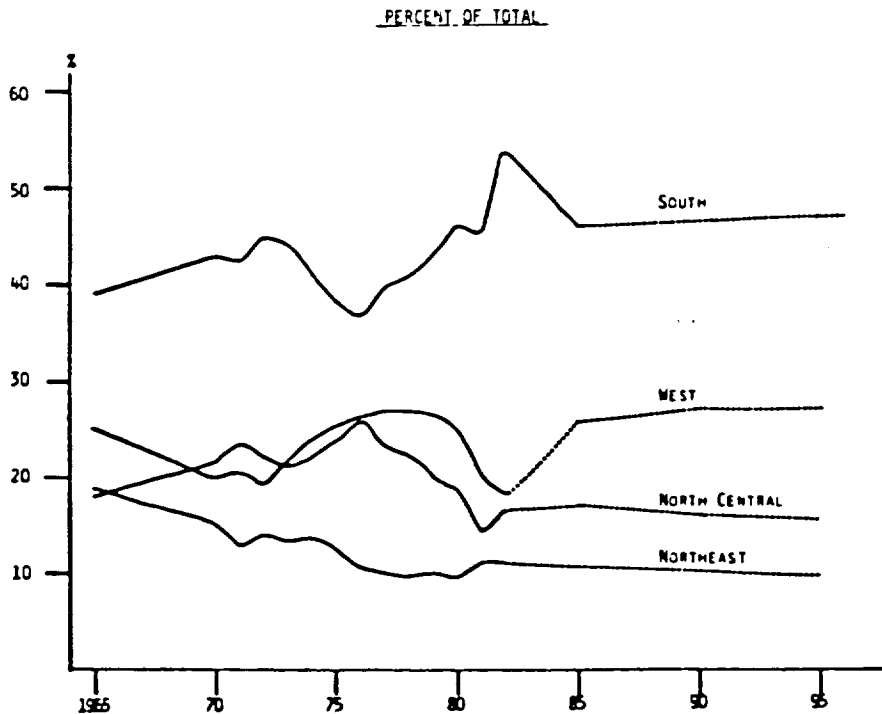
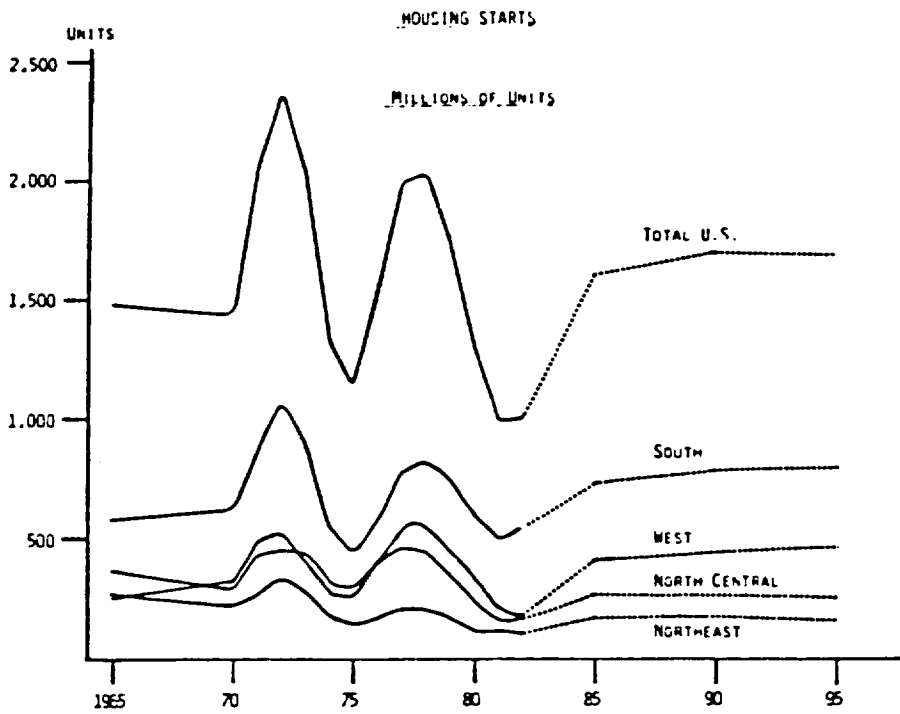
Appendix C

SUPPORTING STATISTICAL TABLES ON
U.S. RESIDENTIAL HEATING MARKET

HOUSING STARTS
(TOTAL U.S.)

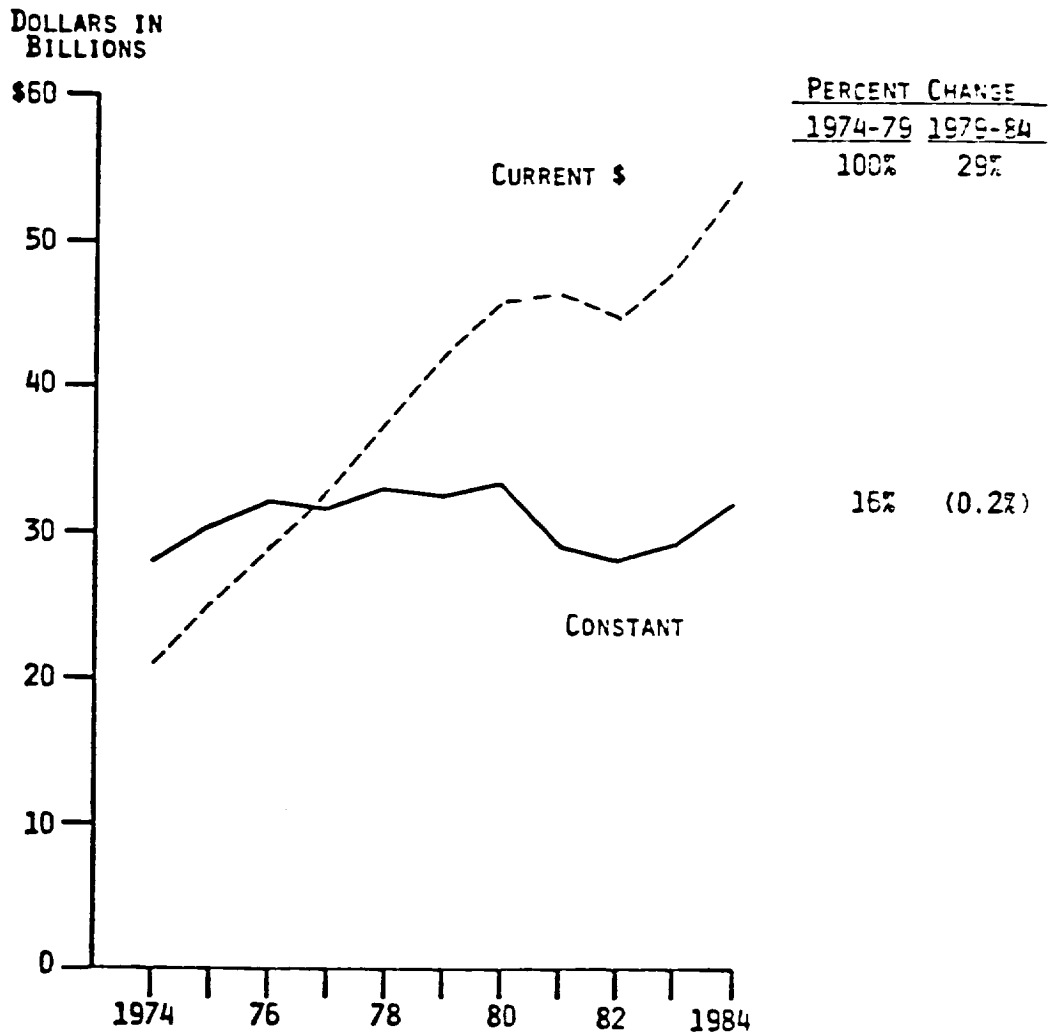


SOURCE: MERRILL LYNCH ECONOMICS, INC.



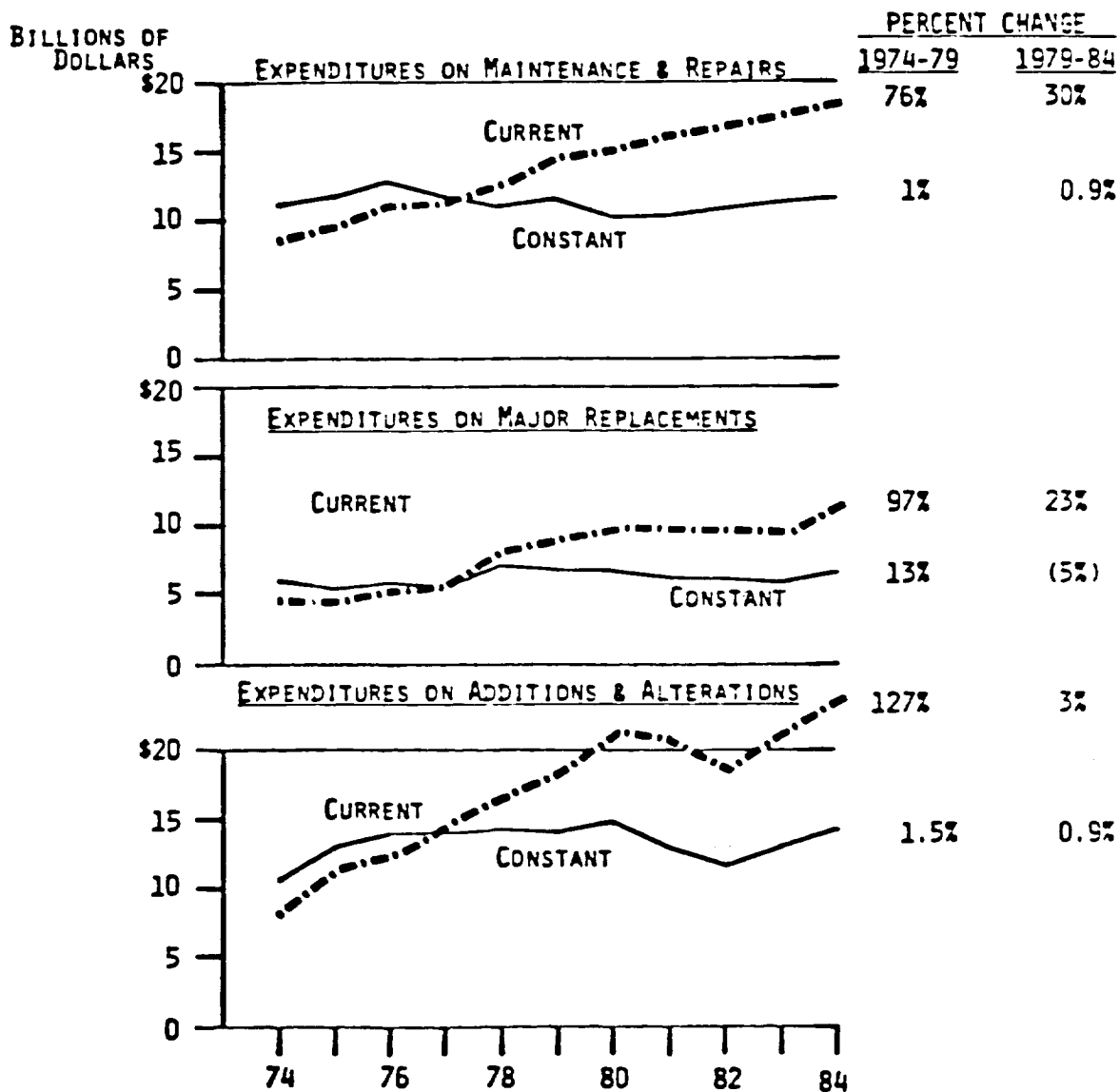
SOURCE: U.S. DEPARTMENT OF COMMERCE, BUREAU OF THE CENSUS.

TOTAL U.S. EXPENDITURES ON RESIDENTIAL
ALTERATIONS AND REPAIRS



SOURCE: MERRILL LYNCH ECONOMICS, INC.

**COMPONENTS OF RESIDENTIAL ALTERATIONS
AND REPAIRS**
(TOTAL U.S.)



SOURCE: MERRILL LYNCH ECONOMICS, INC.

HOUSING DATA BY STATE

	All-Year Housing Units (1)	Types of Homes			Age of Homes						
		Single- Family	Multi- Family	Mobile Homes	3 Years or Less	4-7 Years	8-12 Years	13-20 Years	21-30 Years	31-40 Years	41 Years or More
<u>NORTHEAST</u>											
<u>Northeast</u>											
Maine	0.4	66	27	7	3	9	11	11	10	9	47
New Hampshire	0.3	62	32	6	3	9	14	15	10	7	42
Vermont	0.2	64	29	7	3	9	12	14	9	6	47
Massachusetts	2.1	52	47	1	1	4	9	14	14	10	48
Rhode Island	0.4	54	45	1	3	5	8	14	15	11	44
Connecticut	1.1	61	38	1	2	6	11	18	18	12	33
<u>Middle Atlantic</u>											
New York	6.7	41	57	2	1	3	6	16	16	12	46
New Jersey	2.7	59	41	-	3	5	8	18	19	12	35
Pennsylvania	4.5	71	26	3	2	6	9	13	15	10	45
<u>NORTH CENTRAL</u>											
<u>East North Central</u>											
Ohio	4.1	69	27	4	3	8	11	17	17	12	32
Indiana	2.1	75	20	5	2	8	12	19	16	11	32
Illinois	4.3	60	37	3	2	7	9	17	18	12	35
Michigan	3.5	74	22	4	2	8	11	18	19	14	28
Wisconsin	1.7	69	27	3	3	9	11	15	15	11	36
<u>West North Central</u>											
Minnesota	1.5	70	26	4	4	12	13	16	15	8	32
Iowa	1.1	77	20	3	3	10	9	14	12	9	43
Missouri	2.0	73	22	5	3	9	13	19	15	11	30
North Dakota	0.2	65	26	9	4	15	12	15	12	6	36
South Dakota	0.3	72	19	9	3	12	11	14	12	7	41
Nebraska	0.6	75	20	5	3	9	11	16	13	8	40
Kansas	1.0	78	16	6	3	9	9	15	18	11	35
<u>SOUTH</u>											
<u>South Atlantic</u>											
Delaware	0.2	68	24	8	3	8	13	24	19	11	22
Maryland	1.6	69	29	2	3	8	13	21	18	11	26
District of Columbia	0.3	34	66	-	1	1	1	15	21	21	40
Virginia	2.0	73	22	5	3	10	17	24	18	12	16
West Virginia	0.7	76	14	10	3	10	11	13	13	14	36
North Carolina	2.2	75	15	10	3	10	17	23	17	11	19
South Carolina	1.1	75	15	10	4	12	18	22	17	11	16
Georgia	2.0	71	21	8	3	10	19	24	16	10	18
Florida	4.2	59	32	9	6	14	23	25	18	7	7
<u>East South Central</u>											
Kentucky	1.4	74	17	9	3	11	14	20	18	11	23
Tennessee	1.7	75	18	7	3	12	16	24	17	12	16
Alabama	1.4	76	16	8	4	11	15	23	18	12	17
Mississippi	0.9	78	14	8	4	11	18	24	14	11	18
<u>West South Central</u>											
Arkansas	0.9	78	13	9	4	13	17	22	15	12	17
Louisiana	1.5	71	22	7	4	12	14	23	18	13	16
Oklahoma	1.2	79	15	6	4	11	14	19	17	12	23
Texas	5.5	71	25	4	6	14	14	21	19	13	13
<u>WEST</u>											
<u>Mountain</u>											
Montana	0.3	65	21	14	4	15	13	14	16	9	29
Idaho	0.3	72	18	10	5	17	14	15	14	12	23
Wyoming	0.2	62	19	19	9	18	14	13	13	9	24
Colorado	1.2	67	27	6	6	13	19	20	16	7	19
New Mexico	0.5	68	19	13	6	15	16	19	20	11	13
Arizona	1.1	66	22	12	9	18	23	21	16	6	7
Utah	0.5	72	23	5	6	16	14	18	16	10	20
Nevada	0.3	54	34	12	11	21	20	25	11	5	7
<u>Pacific</u>											
Washington	1.7	70	24	6	6	15	11	19	15	13	21
Oregon	1.1	70	22	8	5	14	14	17	15	12	23
California	9.2	63	33	4	4	10	13	24	22	13	14
Alaska	1.5	52	37	11	6	25	21	23	14	7	4
Hawaii	0.3	50	50	-	5	12	21	28	15	8	11

(1) million housing units

RESIDENTIAL HEATING EQUIPMENT AND FUEL SOURCE BY STATE

All-Year Housing Units	Home Heating Equipment Saturation								Home Heating Fuel							
	Floor, Wall				Fire-				Bottled,		Fuel					
	Warm Air Hydronic	Air Furnace	Heat Pump	Built-in Electric	Pipeless Furnace	Room Heater	place, Stove	None	Natural Gas	Tank, LP Gas	Electricity	Oil/ Kerosene	Coal/ Coke	Wood	Other/ None	
<u>NORTHEAST</u>																
<u>Northeast</u>																
Maine	0.4	39	29	1	9	1	4	17	-	2	1	10	71	1	15	-
New Hampshire	0.3	41	28	1	12	-	6	12	-	12	3	13	61	-	11	-
Vermont	0.2	30	34	1	9	1	7	18	-	6	5	10	62	-	17	-
Massachusetts	2.1	55	25	1	8	1	7	3	-	32	1	10	55	-	2	-
Rhode Island	0.4	60	19	1	5	1	10	4	-	33	1	6	58	-	2	-
Connecticut	1.1	52	27	2	9	1	6	3	-	22	1	11	63	-	2	1
<u>Middle Atlantic</u>																
New York	6.7	62	26	-	4	1	5	2	-	38	1	5	54	-	2	-
New Jersey	2.7	53	33	1	6	1	5	1	-	44	1	7	47	-	1	-
Pennsylvania	4.5	35	45	2	7	2	6	3	-	49	1	10	34	4	2	-
<u>NORTH CENTRAL</u>																
<u>East North Central</u>																
Ohio	4.1	10	69	4	7	2	6	2	-	71	3	14	10	1	1	-
Indiana	2.1	8	65	3	10	3	8	3	-	61	7	17	12	-	3	-
Illinois	4.3	24	61	1	4	2	7	1	-	82	5	7	5	-	-	1
Michigan	3.5	15	71	1	3	2	6	2	-	77	3	5	13	-	2	-
Wisconsin	1.7	15	67	1	5	2	7	3	-	59	8	6	25	-	2	-
<u>West North Central</u>																
Minnesota	1.5	22	60	1	5	2	7	3	-	59	8	8	22	-	3	-
Iowa	1.1	10	72	2	5	3	6	1	1	67	13	9	10	-	1	-
Missouri	2.0	8	64	2	5	5	10	6	-	65	15	12	3	-	5	-
North Dakota	0.2	17	58	3	12	1	8	1	-	40	12	18	28	2	-	-
South Dakota	0.3	10	60	3	9	4	10	4	-	42	17	15	23	-	3	-
Nebraska	0.6	6	74	2	3	5	8	2	-	74	11	9	5	-	1	-
Kansas	1.0	3	65	1	2	14	11	4	-	81	8	8	-	-	3	-

RESIDENTIAL HEATING EQUIPMENT AND FUEL SOURCE BY STATE (continued)

All-Year Housing Units	Home Heating Equipment Saturation									Home Heating Fuel						
	Warm Air Heat			Built-in		Floor, Wall		Fire-		Natural Gas	Bottled,		Fuel			
	Hydronic	Furnace	Pump	Electric	Pipeless	Room Heater	Stove	None	LP Gas		Electric-city	Oil/Kerosene	Coal/Coke	Wood	Other/None	
SOUTH																
South Atlantic																
Delaware	0.2	23	54	2	6	2	9	2	2	27	3	12	56	-	2	-
Maryland	1.6	25	54	5	5	2	6	3	-	47	1	13	36	-	2	1
District of Columbia	0.3	48	34	2	4	2	8	1	1	60	1	9	29	-	-	1
Virginia	2.0	13	42	7	12	5	13	8	-	31	2	25	34	1	7	-
West Virginia	0.7	5	42	3	11	9	19	11	-	59	2	19	10	6	4	-
North Carolina	2.2	3	41	9	11	5	20	11	-	16	6	29	40	-	9	-
South Carolina	1.1	1	41	11	8	5	24	10	-	27	12	31	23	-	7	-
Georgia	2.0	2	51	4	5	7	23	7	1	55	18	19	2	-	5	1
Florida	4.2	2	41	15	16	4	14	6	2	12	12	61	11	-	1	3
East South Central																
Kentucky	1.4	3	48	5	10	7	12	14	1	48	7	23	6	6	6	4
Tennessee	1.7	1	31	8	24	6	12	18	-	28	5	49	4	3	11	-
Alabama	1.4	2	40	7	7	8	24	12	-	48	16	26	1	1	7	-
Mississippi	0.9	1	39	4	6	5	32	12	1	45	21	23	-	-	9	2
West South Central																
Arkansas	0.9	1	43	3	3	8	27	13	2	56	16	17	-	-	11	-
Louisiana	1.5	2	51	2	4	8	28	5	-	69	7	22	-	-	2	-
Oklahoma	1.2	1	49	2	3	18	19	8	-	71	9	16	-	-	4	-
Texas	5.5	1	54	3	4	7	23	8	-	64	9	26	-	-	1	-
WEST																
Mountain																
Montana	0.3	10	52	2	11	4	11	10	-	61	7	16	6	1	9	-
Idaho	0.3	2	44	5	22	3	10	12	2	27	4	39	17	2	10	1
Wyoming	0.2	11	61	1	8	6	9	4	-	77	8	11	1	1	2	-
Colorado	1.2	17	63	2	6	3	6	3	-	82	5	10	-	-	2	1
New Mexico	0.5	2	54	1	3	15	16	9	-	76	10	7	-	-	6	1
Arizona	1.1	2	58	16	4	4	9	5	2	57	4	35	-	-	3	1
Utah	0.5	5	78	1	6	3	5	2	-	81	2	10	3	2	2	-
Nevada	0.3	3	62	10	10	3	7	4	1	48	4	38	7	-	3	-
Pacific																
Washington	1.7	5	41	4	35	2	7	6	-	23	1	53	18	-	5	-
Oregon	1.1	4	39	2	29	3	9	14	-	24	2	42	19	-	13	-
California	9.2	3	47	2	9	22	13	1	1	79	2	16	-	-	2	1
Alaska	1.5	41	21	1	12	1	8	11	1	35	1	15	39	2	7	1
Hawaii	0.1	5	-	1	2	-	-	2	90	4	1	4	-	-	1	90

Appendix D

SUPPORTING STATISTICAL TABLES ON
NORTHEAST RESIDENTIAL HEATING MARKET

Sources for statistical data are U.S. Government Census, The Air Conditioning Heating and Refrigeration News, and Sales and Marketing Management.

EFFECTIVE BUYING INCOME COMPARISON
FOR SELECTED STATES
(1982)

	1982 Total EBI (\$ Millions)	% of U.S.	Per Capita EBI	Avg. Hsld. EBI	Median Hsld. EBI	<\$10K	Hslds. by EBI Group (000)			
							\$10K - 19.9K	\$20K - 34.9K	\$35K - 49.9K	\$50K - and over
U.S.	2,169,679	100.0	9,300	25,507	22,000	17,252.9	21,230.2	26,565.8	13,109.5	6,904.6
Maine	8,923	.4112	7,770	21,423	18,659	94.6	130.1	135.3	42.3	14.2
New Hampshire	8,946	.4123	9,222	25,431	22,582	60.4	91.1	122.7	53.8	25.8
Vermont	4,214	.1942	8,055	22,331	19,361	39.0	59.0	61.4	21.1	8.2
Massachusetts	57,340	2.6428	9,946	27,230	24,171	381.1	472.1	676.0	375.6	201.0
Rhode Island	8,852	.4080	9,259	25,119	22,006	72.0	86.7	115.9	53.6	24.2
Connecticut	35,961	1.6574	11,474	31,523	27,661	159.4	223.4	361.0	233.4	163.6
New York	178,848	8.2430	10,214	27,510	23,673	1,269.2	1,467.9	1,913.8	1,124.9	725.3
New Jersey	81,003	3.7335	10,900	30,671	27,286	402.9	523.6	790.8	542.8	361.2
Pennsylvania	109,817	5.0614	9,252	25,321	22,483	832.5	1,068.4	1,448.7	677.6	309.6
Ohio	100,155	4.6161	9,241	25,292	22,860	756.4	944.7	1,348.9	641.3	268.6

* Effective buying income is personal income less personal tax and non-tax payments and is commonly known as "disposable personal income". It excludes compensation paid to military and diplomatic personnel stationed overseas. It is a bulk measurement of market potential and indicates the general ability to buy.

Source: Sales and Marketing Management

POPULATION COMPARISON FOR SELECTED STATES

State	Population (000)	% of U.S.	Median age of Pop.	Population by Age Group					Households (000)
				0-17	18-24	25-34	35-49	50 & over	
U.S.	233,298.3	100.0%	31.1	62,359.9	30,056.2	39,769.0	40,348.2	60,765.0	85,063.0
Maine	1,148.3	.4922	31.5	310.9	140.1	189.9	193.1	314.3	416.5
New Hampshire	970.1	.4158	31.0	257.5	123.2	172.5	170.3	246.6	351.8
Vermont	523.1	.2242	30.4	140.8	70.5	92.8	88.5	130.5	188.7
Massachusetts	5,765.0	2.4711	32.2	1,416.3	762.7	976.8	969.6	1,639.6	2,105.8
Rhode Island	956.0	.4097	32.8	232.0	126.9	153.5	154.3	289.3	352.4
Connecticut	3,134.1	1.3434	32.9	783.5	377.6	515.9	570.2	886.9	1,140.6
New York	17,509.6	7.5052	32.8	4,425.6	2,089.5	2,884.7	3,138.1	4,971.7	6,501.1
New Jersey	7,431.3	3.1854	33.0	1,901.3	854.4	1,196.3	1,366.9	2,112.4	2,641.0
Pennsylvania	11,869.2	5.0876	33.1	2,963.0	1,460.6	1,867.8	1,995.3	3,582.5	4,337.0
Ohio	10,838.3	4.6457	31.0	2,954.4	1,381.9	1,801.6	1,859.8	2,840.6	3,959.0
Sub-Total	60,145.0	25.780							21,994.1

Source: Sales and Marketing Management

STATE PROFILE BY MAJOR METRO AREA

Connecticut

Metro Area	Population (000)	Households (000)	Total Retail Sales (\$ 000)	Median Household EBI	Buying Power Index
Total State	3,134.1	1,140.8	15,533,996	27,661	1.5208
Bridgeport-Stamford- Norwalk-Danbury Danbury	813.2	291.7	4,604,091	31,522	.4472
Hartford-New Britain- Middletown-Bristol	1,056.8	387.2	5,196,039	27,459	.5012
New Haven-Waterbury- Meriden	766.9	283.4	3,531,810	25,701	.3484
New London-Norwich	241.3	85.5	1,132,573	26,616	.1110

HOUSING AND HEATING CHARACTERISTICS
OF SELECTED MARKETS IN CONNECTICUT

<u>BARTFORD, CT</u>	
Housing units	268,029
Central cooling	9%
Room units	42%
<u>Home heating system</u>	
Warm air furnace	22%
Hydronic	59%
Heat pump	1%
Other/none	18%
<u>Home heating fuel</u>	
Gas	25%
Fuel oil	62%
Electricity	9%
Bottled/tank/LP	1%
Other/none	3%
<u>Age of heating system</u>	
156,578 single family detached	
0-3 years	9%
4-10 years	14%
11-20 years	26%
21-40 years	38%
41+ years	13%

<u>NEW LONDON, CT</u>	
Housing units	91,196
Central cooling	2%
Room units	27%
<u>Home heating system</u>	
Warm air furnace	19%
Hydronic	54%
Heat pump	1%
Other/none	26%
<u>Home heating fuel</u>	
Gas	12%
Fuel oil	68%
Electricity	13%
Bottled/tank/LP	2%
Other/none	5%
<u>1970-1980 growth</u>	
Single family homes	19,184
Multifamily homes	7,057
Centrally cooled homes	1,647
Warm air furnaces	4,831
Hydronic systems	10,058

<u>NEW BRITAIN, CT</u>	
Housing units	53,655
Central cooling	6%
Room units	45%
<u>Home heating system</u>	
Warm air furnace	26%
Hydronic	49%
Heat pump	1%
Other/none	24%
<u>Home heating fuel</u>	
Gas	39%
Fuel oil	49%
Electricity	8%
Bottled/tank/LP	-
Other/none	4%
<u>1970-1980 growth</u>	
Single family homes	5,014
Multifamily homes	1,498
Centrally cooled homes	1,977
Warm air furnaces	2,266
Hydronic systems	2,887

<u>STAMFORD, CT</u>	
Housing units	74,793
Central cooling	12%
Room units	49%
<u>Home heating system</u>	
Warm air furnace	20%
Hydronic	65%
Heat pump	3%
Other/none	12%
<u>Home heating fuel</u>	
Gas	24%
Fuel oil	59%
Electricity	11%
Bottled/tank/LP	-
Other/none	6%
<u>1970-1980 growth</u>	
Single family homes	4,507
Multifamily homes	4,364
Centrally cooled homes	6,801
Warm air furnaces	2,765
Hydronic systems	595

<u>NEW HAVEN, CT</u>	
Housing units	156,828
Central cooling	9%
Room units	35%
<u>Home heating system</u>	
Warm air furnace	35%
Hydronic	46%
Heat pump	2%
Other/none	17%
<u>Home heating fuel</u>	
Gas	19%
Fuel oil	66%
Electricity	11%
Bottled/tank/LP	-
Other/none	4%
<u>Age of heating system</u>	
83,208 single family detached	
0-3 years	10%
4-10 years	33%
11-20 years	30%
21-40 years	16%
41+ years	9%

<u>WATERBURY, CT</u>	
Housing units	84,524
Central cooling	8%
Room units	37%
<u>Home heating system</u>	
Warm air furnace	23%
Hydronic	50%
Heat pump	2%
Other/none	25%
<u>Home heating fuel</u>	
Gas	21%
Fuel oil	62%
Electricity	13%
Bottled/tank/LP	-
Other/none	4%
<u>1970-1980 growth</u>	
Single family homes	12,414
Multifamily homes	8,996
Centrally cooled homes	5,693
Warm air furnaces	3,864
Hydronic systems	6,567

STATE PROFILE BY MAJOR METRO AREA

Maine

Metro Area	Population (000)	Households (000)	Total Retail Sales (\$ 000)	Median Household EBI	Buying Power Index
Total State	1,148.3	416.5	5,667,998	18,659	.4567
Bangor	138.4	47.6	753,655	18,752	.0561
Lewiston-Auburn	100.6	36.6	504,779	18,033	.0399
Portland	219.4	82.5	1,553,598	21,067	.1072

HOUSING AND HEATING CHARACTERISTICS
OF SELECTED MARKETS IN MAINE

PORTLAND, ME

Housing units	72,178
Central cooling	1%
Room units	14%

Home heating system

Warm air furnace	19%
Hydronic	56%
Heat pump	1%
Other/none	24%

Home heating fuel

Gas	6%
Fuel oil	75%
Electricity	13%
Bottled/tank/LP	-
Other/none	6%

1970-1980 growth

Single family homes	15,330
Multifamily homes	8,652
Centrally cooled homes	543
Warm air furnaces	4,327
Hydronic systems	6,285

STATE PROFILE BY MAJOR METRO AREA

Massachusetts

Metro Area	Population (000)	Households (000)	Total Retail Sales (\$ 000)	Median Household EBI	Buying Power Index
Total State	5,765.0	2,105.8	30,513,996	24,171	2.6472
Boston-Lawrence- Salem-Lowell- Brockton	3,656.5	1,335.1	19,337,840	25,525	1.7231
New Bedford-Fall River-Attleboro	484.9	174.1	2,319,607	21,257	.1988
Pittsfield	143.6	53.7	854,605	22,183	.0667
Springfield	582.6	208.9	3,106,013	21,824	.2527
Worcester-Fitchburg- Leominster	652.1	234.6	3,256,983	23,533	.2849

HOUSING AND HEATING CHARACTERISTICS
OF SELECTED MARKETS IN MASSACHUSETTS

<u>BOSTON, MA</u>	
Housing units	1,036,139
Central cooling	68
Room units	368
<u>Home heating system</u>	
Warm air furnace	258
Hydronic	608
Heat pump	18
Other/none	148
<u>Home heating fuel</u>	
Gas	338
Fuel oil	578
Electricity	88
Bottled/tank/LP	-
Other/none	28
<u>Age of heating system</u>	
455,942 single family detached	
0-3 years	158
4-10 years	118
11-20 years	298
21-40 years	278
41+ years	188

<u>LAWRENCE, MA</u>	
Housing units	104,486
Central cooling	48
Room units	388
<u>Home heating system</u>	
Warm air furnace	218
Hydronic	568
Heat pump	18
Other/none	228
<u>Home heating fuel</u>	
Gas	378
Fuel oil	498
Electricity	108
Bottled/tank/LP	28
Other/none	28
<u>1970-1980 growth</u>	
Single family homes	17,897
Multifamily homes	8,730
Centrally cooled homes	3,992
Warm air furnaces	7,630
Hydronic systems	10,144

<u>BROCKTON, MA</u>	
Housing units	58,167
Central cooling	58
Room units	348
<u>Home heating system</u>	
Warm air furnace	268
Hydronic	538
Heat pump	28
Other/none	198
<u>Home heating fuel</u>	
Gas	258
Fuel oil	628
Electricity	118
Bottled/tank/LP	-
Other/none	28
<u>1970-1980 growth</u>	
Single family homes	1,878
Multifamily homes	3,497
Centrally cooled homes	2,523
Warm air furnaces	3,503
Hydronic systems	1,878

<u>LOWELL, MA</u>	
Housing units	77,354
Central cooling	48
Room units	408
<u>Home heating system</u>	
Warm air furnace	288
Hydronic	498
Heat pump	18
Other/none	228
<u>Home heating fuel</u>	
Gas	548
Fuel oil	358
Electricity	88
Bottled/tank/LP	-
Other/none	38
<u>1970-1980 growth</u>	
Single family homes	10,678
Multifamily homes	4,190
Centrally cooled homes	2,672
Warm air furnaces	5,610
Hydronic systems	6,554

<u>FALL RIVER, MA</u>	
Housing units	66,464
Central cooling	18
Room units	218
<u>Home heating system</u>	
Warm air furnace	158
Hydronic	478
Heat pump	18
Other/none	378
<u>Home heating fuel</u>	
Gas	478
Fuel oil	408
Electricity	88
Bottled/tank/LP	-
Other/none	58
<u>1970-1980 growth</u>	
Single family homes	14,610
Multifamily homes	5,304
Centrally cooled homes	806
Warm air furnaces	11,099
Hydronic systems	14,610

<u>NEW BEDFORD, MA</u>	
Housing units	64,298
Central cooling	38
Room units	198
<u>Home heating system</u>	
Warm air furnace	258
Hydronic	428
Heat pump	-
Other/none	338
<u>Home heating fuel</u>	
Gas	528
Fuel oil	398
Electricity	58
Bottled/tank/LP	18
Other/none	38
<u>1970-1980 growth</u>	
Single family homes	9,293
Multifamily homes	2,184
Centrally cooled homes	1,940
Warm air furnaces	6,408
Hydronic systems	3,967

HOUSING AND HEATING CHARACTERISTICS
OF SELECTED MARKETS IN MASSACHUSETTS
(continued)

<u>SPRINGFIELD, MA</u>	
Housing units	196,348
Central cooling	6%
Room units	38%

Home heating system

Warm air furnace	28%
Hydronic	47%
Heat pump	2%
Other/none	23%

Home heating fuel

Gas	30%
Fuel oil	51%
Electricity	14%
Bottled/tank/LP	-
Other/none	5%

Age of heating system

107,845 single family detached

0-3 years	6%
4-10 years	24%
11-20 years	28%
21-40 years	32%
41+ years	10%

<u>WORCESTER, MA</u>	
Housing units	136,383
Central cooling	4%
Room units	25%

Home heating system

Warm air furnace	18%
Hydronic	54%
Heat pump	1%
Other/none	27%

Home heating fuel

Gas	31%
Fuel oil	53%
Electricity	12%
Bottled/tank/LP	1%
Other/none	3%

1970-1980 growth

Single family homes	15,413
Multifamily homes	12,945
Centrally cooled homes	4,571
Warm air furnaces	7,336
Hydronic systems	7,923

STATE PROFILE BY MAJOR METRO AREA

New Hampshire

Metro Area	Population (000)	Households (000)	Total Retail Sales (\$ 000)	Median Household EBI	Buying Power Index
Total State	970.1	351.8	5,289,996	22,582	.4335
Manchester-Nashua	290.8	104.0	1,548,628	25,675	.1322
Portsmouth-Dover- Rochester	293.9	105.0	1,702,736	24,563	.1371

HOUSING AND HEATING CHARACTERISTICS
OF SELECTED MARKETS IN NEW HAMPSHIRE

MANCHESTER, NH

Housing units	59,573
Central cooling	1%
Room units	32%

Home heating system

Warm air furnace	20%
Hydronic	49%
Heat pump	1%
Other/none	30%

Home heating fuel

Gas	19%
Fuel oil	60%
Electricity	12%
Bottled/tank/LP	1%
Other/none	8%

1970-1980 growth

Single family homes	13,784
Multifamily homes	10,036
Centrally cooled homes	993
Warm air furnaces	5,158
Hydronic systems	1,070

STATE PROFILE BY MAJOR METRO AREA

New Jersey

Metro Area	Population (000)	Households (000)	Total Retail Sales (\$ 000)	Median Household EBI	Buying Power Index
Total State	7,431.3	2,614.0	35,925,963		
Atlantic City	289.3	111.5	1,751,972	20,308	.1345
Bergen-Passaic	1,277.8	460.1	7,396,352	30,007	.6666
Jersey City	544.5	207.1	1,922,203	19,942	.2091
Middlesex-Somerset- Hunterdon	895.7	305.7	4,476,612	32,249	.4429
Monmouth-Ocean	898.0	327.2	4,211,661	26,183	.4160
Newark	1,864.6	656.7	8,449,703	28,638	.8813
Trenton	308.7	108.7	1,555,380	26,993	.1454
Vineland-Millville- Bridgeton	135.9	46.2	607,854	20,646	.0531

HOUSING AND HEATING CHARACTERISTICS
OF SELECTED MARKETS IN NEW JERSEY

<u>ATLANTIC CITY, NJ</u>		<u>JERSEY CITY, NJ</u>		<u>NEWARK, NJ</u>	
Housing units	87,601	Housing units	221,211	Housing units	705,983
Central cooling	15%	Central cooling	7%	Central cooling	14%
Room units	34%	Room units	52%	Room units	48%
<u>Home heating system</u>		<u>Home heating system</u>		<u>Home heating system</u>	
Warm air furnace	31%	Warm air furnace	11%	Warm air furnace	25%
Hydronic	46%	Hydronic	73%	Hydronic	64%
Heat pump	2%	Heat pump	1%	Heat pump	1%
Other/none	21%	Other/none	15%	Other/none	10%
<u>Home heating fuel</u>		<u>Home heating fuel</u>		<u>Home heating fuel</u>	
Gas	37%	Gas	44%	Gas	42%
Fuel oil	46%	Fuel oil	50%	Fuel oil	52%
Electricity	14%	Electricity	5%	Electricity	4%
Bottled/tank/LP	1%	Bottled/tank/LP	1%	Bottled/tank/LP	1%
Other/none	2%	Other/none	-	Other/none	1%
<u>1970-1980 growth</u>		<u>Age of heating system</u>		<u>Age of heating system</u>	
Single family homes	11,869	18,595 single family detached		345,702 single family detached	
Multifamily homes	7,931	0-3 years	16%	0-3 years	11%
Centrally cooled homes	10,468	4-10 years	10%	4-10 years	16%
Warm air furnaces	10,398	11-20 years	19%	11-20 years	25%
Hydronic systems	1,532	21-40 years	24%	21-40 years	28%
		41+ years	31%	41+ years	21%
<u>PATERSON, NJ</u>		<u>TRENTON, NJ</u>			
Housing units	158,124	Housing units	111,556		
Central cooling	9%	Central cooling	22%		
Room units	52%	Room units	45%		
<u>Home heating system</u>		<u>Home heating system</u>			
Warm air furnace	17%	Warm air furnace	44%		
Hydronic	69%	Hydronic	45%		
Heat pump	-	Heat pump	1%		
Other/none	14%	Other/none	10%		
<u>Home heating fuel</u>		<u>Home heating fuel</u>			
Gas	55%	Gas	45%		
Fuel oil	40%	Fuel oil	49%		
Electricity	4%	Electricity	5%		
Bottled/tank/LP	-	Bottled/tank/LP	-		
Other/none	1%	Other/none	1%		
<u>Age of heating system</u>		<u>Age of heating system</u>			
66,137 single family detached		53,236 single family detached			
0-3 years	10%	0-3 years	13%		
4-10 years	14%	4-10 years	19%		
11-20 years	25%	11-20 years	15%		
21-40 years	34%	21-40 years	34%		
41+ years	17%	41+ years	19%		

STATE PROFILE BY MAJOR METRO AREA

New York

Metro Area	Population (000)	Households (000)	Total Retail Sales (\$ 000)	Median Household EBI	Buying Power Index
Total State	17,509.6	6,501.1	75,334,984	23,673	7.6758
Albany-Schnectady-Troy	850.0	316.6	3,982,370	23,781	.3746
Binghamton	263.9	96.9	1,257,613	23,477	.1157
Buffalo	994.7	367.8	4,848,611	23,675	.4369
Elmira	97.5	35.3	396,244	21,260	.0385
Glen Falls	112.7	39.2	539,260	21,317	.0459
Nassau-Suffolk	2,637.4	846.1	14,018,485	35,148	1.3482
New York	8,118.3	3,225.8	30,606,626	21,211	3.4510
Niagara Falls	226.9	82.7	1,029,221	23,548	.0954
Orange County	274.0	90.5	1,245,608	25,585	.1160
Poughkeepsie	254.1	86.2	1,150,822	29,038	.1155
Rochester	982.2	358.6	4,796,794	27,035	.4580
Syracuse	648.8	232.8	3,094,866	24,835	.2871
Utica-Rome	317.6	113.7	1,408,607	21,773	.1292

HOUSING AND HEATING CHARACTERISTICS
OF SELECTED MARKETS IN NEW YORK

<u>ALBANY, NY</u>		<u>BINGHAMTON, NY</u>		<u>BUFFALO, NY</u>	
Housing units	307,688	Housing units	113,322	Housing units	471,874
Central cooling	88	Central cooling	38	Central cooling	618
Room units	298	Room units	178	Room units	168
<u>Home heating system</u>		<u>Home heating system</u>		<u>Home heating system</u>	
Warm air furnace	348	Warm air furnace	548	Warm air furnace	628
Hydronic	538	Hydronic	268	Hydronic	238
Heat pump	28	Heat pump	18	Heat pump	18
Other/none	118	Other/none	198	Other/none	148
<u>Home heating fuel</u>		<u>Home heating fuel</u>		<u>Home heating fuel</u>	
Gas	478	Gas	518	Gas	848
Fuel oil	398	Fuel oil	358	Fuel oil	108
Electricity	98	Electricity	78	Electricity	58
Bottled/tank/LP	18	Bottled/tank/LP	18	Bottled/tank/LP	-
Other/none	48	Other/none	68	Other/none	18
<u>Age of heating system</u>		<u>Age of heating system</u>		<u>Age of heating system</u>	
164,119 single family detached		70,391 single family detached		255,569 single family detached	
0-3 years	158	0-3 years	98	0-3 years	118
4-10 years	228	4-10 years	188	4-10 years	158
11-20 years	298	11-20 years	298	11-20 years	328
21-40 years	178	21-40 years	118	21-40 years	218
41+ years	178	41+ years	338	41+ years	218
<u>NEW YORK, NY</u>		<u>ROCHESTER, NY</u>		<u>SYRACUSE, NY</u>	
Housing units	3,670,386	Housing units	359,470	Housing units	237,444
Central cooling	88	Central cooling	98	Central cooling	78
Room units	428	Room units	238	Room units	238
<u>Home heating system</u>		<u>Home heating system</u>		<u>Home heating system</u>	
Warm air furnace	128	Warm air furnace	628	Warm air furnace	628
Hydronic	818	Hydronic	198	Hydronic	198
Heat pump	-	Heat pump	18	Heat pump	18
Other/none	78	Other/none	188	Other/none	188
<u>Home heating fuel</u>		<u>Home heating fuel</u>		<u>Home heating fuel</u>	
Gas	348	Gas	668	Gas	668
Fuel oil	608	Fuel oil	218	Fuel oil	188
Electricity	38	Electricity	98	Electricity	108
Bottled/tank/LP	-	Bottled/tank/LP	18	Bottled/tank/LP	18
Other/none	18	Other/none	38	Other/none	58
<u>Age of heating system</u>		<u>Age of heating system</u>		<u>Age of heating system</u>	
603,218 single family detached		255,792 single family detached		143,849 single family detached	
0-3 years	78	0-3 years	68	0-3 years	118
4-10 years	118	4-10 years	248	4-10 years	198
11-20 years	318	11-20 years	328	11-20 years	318
21-40 years	348	21-40 years	218	21-40 years	228
41+ years	178	41+ years	178	41+ years	178

HOUSING AND HEATING CHARACTERISTICS
OF SELECTED MARKETS IN NEW YORK
(continued)

UTICA, NY

Housing units	118,614
Central cooling	2%
Room units	20%

Home heating system

Warm air furnace	61%
Hydronic	20%
Heat pump	-
Other/none	19%

Home heating fuel

Gas	51%
Fuel oil	37%
Electricity	6%
Bottled/tank/LP	-
Other/none	6%

Age of heating system
68,647 single family detached

0-3 years	7%
4-10 years	12%
11-20 years	38%
21-40 years	27%
41+ years	16%

STATE PROFILE BY MAJOR METRO AREA

Ohio

Metro Area	Population (000)	Households (000)	Total Retail Sales (\$ 000)	Median Household EBI	Buying Power Index
Total State	10,838.3	3,959.9	47,760,986	22,860	4.5389
Akron	654.1	238.9	3,075,892	23,495	.2818
Canton	407.1	147.5	1,920,975	23,465	.1725
Cincinnati	1,406.6	514.9	6,622,574	23,619	.6144
Cleveland	1,852.6	697.9	9,177,773	24,265	.8398
Columbus	1,269.8	475.0	6,039,521	22,560	.5512
Dayton-Springfield	932.4	348.5	4,305,998	23,374	.4053
Hamilton-Middletown	267.4	93.5	941,865	25,373	.1071
Lima	156.9	55.6	717,405	21,964	.0635
Lorain-Elyria	279.5	95.5	1,065,834	26,048	.1126
Mansfield	131.4	48.0	669,669	21,271	.0552
Parkersburg-Marietta	160.8	58.5	912,857	20,708	.0692
Steubenville-Weirton	161.2	58.4	619,594	22,931	.0632
Toledo	620.0	226.9	3,033,709	23,016	.2696
Youngstown-Warren	528.9	191.8	2,380,565	23,609	.2222

**HOUSING AND HEATING CHARACTERISTICS
OF SELECTED MARKETS IN OHIO**

<u>AKRON, OH</u>	
Housing units	247,140
Central cooling	17%
Room units	24%
<u>Home heating system</u>	
Warm air furnace	80%
Hydronic	9%
Heat pump	1%
Other/none	10%
<u>Home heating fuel</u>	
Gas	82%
Fuel oil	10%
Electricity	6%
Bottled/tank/LP	-
Other/none	2%
<u>Age of heating system</u> 174,000 single family detached	
0-3 years	11%
4-10 years	18%
11-20 years	22%
21-40 years	29%
41+ years	20%

<u>CANTON, OH</u>	
Housing units	152,495
Central cooling	16%
Room units	20%
<u>Home heating system</u>	
Warm air furnace	77%
Hydronic	7%
Heat pump	3%
Other/none	23%
<u>Home heating fuel</u>	
Gas	75%
Fuel oil	11%
Electricity	11%
Bottled/tank/LP	-
Other/none	3%
<u>Age of heating system</u> 112,000 single family detached	
0-3 years	8%
4-10 years	28%
11-20 years	24%
21-40 years	26%
41+ years	14%

<u>CINCINNATI, OH</u>	
Housing units	530,593
Central cooling	32%
Room units	32%
<u>Home heating system</u>	
Warm air furnace	64%
Hydronic	17%
Heat pump	6%
Other/none	13%
<u>Home heating fuel</u>	
Gas	69%
Fuel oil	12%
Electricity	15%
Bottled/tank/LP	2%
Other/none	2%
<u>Age of heating system</u> 311,000 single family detached	
0-3 years	15%
4-10 years	24%
11-20 years	31%
21-40 years	15%
41+ years	15%

<u>CLEVELAND, OH</u>	
Housing units	733,034
Central cooling	20%
Room units	27%
<u>Home heating system</u>	
Warm air furnace	71%
Hydronic	17%
Heat pump	3%
Other/none	9%
<u>Home heating fuel</u>	
Gas	86%
Fuel oil	5%
Electricity	7%
Bottled/tank/LP	-
Other/none	2%
<u>Age of heating system</u> 436,000 single family detached	
0-3 years	12%
4-10 years	15%
11-20 years	33%
21-40 years	28%
41+ years	12%

<u>LIMA, OH</u>	
Housing units	79,483
Central cooling	18%
Room units	28%
<u>Home heating system</u>	
Warm air furnace	56%
Hydronic	9%
Heat pump	4%
Other/none	31%
<u>Home heating fuel</u>	
Gas	56%
Fuel oil	12%
Electricity	23%
Bottled/tank/LP	5%
Other/none	4%
<u>1970-1980 growth</u>	
Single family homes	19,013
Multifamily homes	6,331
Centrally cooled homes	11,693
Warm air furnaces	12,513
Hydronic systems	2,134

<u>LORAIN, OH</u>	
Housing units	95,841
Central cooling	17%
Room units	27%
<u>Home heating system</u>	
Warm air furnace	68%
Hydronic	14%
Heat pump	3%
Other/none	15%
<u>Home heating fuel</u>	
Gas	78%
Fuel oil	5%
Electricity	12%
Bottled/tank/LP	1%
Other/none	4%
<u>1970-1980 growth</u>	
Single family homes	13,145
Multifamily homes	6,889
Centrally cooled homes	12,838
Warm air furnaces	8,100
Hydronic systems	2,438

HOUSING AND HEATING CHARACTERISTICS
OF SELECTED MARKETS IN OHIO
(continued)

<u>SPRINGFIELD, OH</u>	
Housing units	68,822
Central cooling	19%
Room units	21%
<u>Home heating system</u>	
Warm air furnace	72%
Hydronic	6%
Heat pump	1%
Other/none	21%
<u>Home heating fuel</u>	
Gas	71%
Fuel oil	14%
Electricity	10%
Bottled/tank/LP	1%
Other/none	4%
<u>1970-1980 growth</u>	
Single family homes	14,876
Multifamily homes	3,972
Centrally cooled homes	9,922
Warm air furnaces	13,005
Hydronic systems	-

<u>TOLEDO, OH</u>	
Housing units	296,409
Central cooling	18%
Room units	29%
<u>Home heating system</u>	
Warm air furnace	66%
Hydronic	12%
Heat pump	3%
Other/none	19%
<u>Home heating fuel</u>	
Gas	71%
Fuel oil	9%
Electricity	12%
Bottled/tank/LP	6%
Other/none	2%
<u>Age of heating system</u>	
206,000 single family detached	
0-3 years	15%
4-10 years	21%
11-20 years	20%
21-40 years	23%
41+ years	15%

<u>STEUBENVILLE, OH</u>	
Housing units	61,704
Central cooling	20%
Room units	25%
<u>Home heating system</u>	
Warm air furnace	74%
Hydronic	7%
Heat pump	3%
Other/none	16%
<u>Home heating fuel</u>	
Gas	60%
Fuel oil	19%
Electricity	16%
Bottled/tank/LP	-
Other/none	5%
<u>1970-1980 growth</u>	
Single family homes	4,857
Multifamily homes	3,746
Centrally cooled homes	9,103
Warm air furnaces	5,222
Hydronic systems	-

<u>YOUNGSTOWN, OH</u>	
Housing units	196,376
Central cooling	12%
Room units	23%
<u>Home heating system</u>	
Warm air furnace	77%
Hydronic	10%
Heat pump	1%
Other/none	12%
<u>Home heating fuel</u>	
Gas	79%
Fuel oil	11%
Electricity	6%
Bottled/tank/LP	1%
Other/none	4%
<u>1970-1980 growth</u>	
Single family homes	15,075
Multifamily homes	13,593
Centrally cooled homes	18,876
Warm air furnaces	17,296
Hydronic systems	5,093

STATE PROFILE BY MAJOR METRO AREA

Pennsylvania

Metro Area	Population (000)	Households (000)	Total Retail Sales (\$ 000)	Median Household EBI	Buying Power Index
Total State	11,869.2	4,337.0	51,625,140	22,483	4.9552
Allentown-Bethlehem	647.8	241.1	3,103,184	24,576	.2885
Altoona	137.0	50.2	649,183	19,155	.0541
Beaver County	203.1	73.4	797,883	26,501	.0853
Erie	283.9	101.0	1,212,040	22,484	.1149
Harrisburg-Lebanon- Carlisle	567.9	211.6	2,952,441	24,004	.2581
Johnstown	264.6	94.4	1,059,362	19,457	.0989
Lancaster	374.1	131.3	1,672,019	23,294	.1555
Philadelphia	4,685.9	1,673.9	20,733,410	24,392	2.0272
Pittsburgh	2,181.9	826.8	10,211,133	23,706	.9696
Reading	2,385.0	900.2	1,412,682	22,748	.1340
Scranton-Wilkes-Barre	736.0	272.1	2,946,010	19,429	.2819
Sharon	128.4	46.1	559,877	22,527	.0522
State College	115.2	38.3	491,041	19,785	.0442
Williamsport	119.9	43.6	496,321	20,151	.0465
York	395.5	143.7	1,568,974	23,801	.1613

**HOUSING AND HEATING CHARACTERISTICS
OF SELECTED MARKETS IN PENNSYLVANIA**

<u>ALLENTOWN, PA</u>		<u>ERIE, PA</u>		<u>HARRISBURG, PA</u>	
Housing units	242,020	Housing units	102,935	Housing units	174,456
Central cooling	118	Central cooling	68	Central cooling	176
Room units	408	Room units	138	Room units	351
<u>Home heating system</u>		<u>Home heating system</u>		<u>Home heating system</u>	
Warm air furnace	258	Warm air furnace	778	Warm air furnace	388
Hydronic	498	Hydronic	128	Hydronic	348
Heat pump	28	Heat pump	18	Heat pump	38
Other/none	248	Other/none	108	Other/none	258
<u>Home heating fuel</u>		<u>Home heating fuel</u>		<u>Home heating fuel</u>	
Gas	208	Gas	868	Gas	198
Fuel oil	548	Fuel oil	68	Fuel oil	538
Electricity	198	Electricity	58	Electricity	208
Bottled/tank/LP	18	Bottled/tank/LP	18	Bottled/tank/LP	-
Other/none	68	Other/none	28	Other/none	88
<u>Age of heating system</u>		<u>Age of heating system</u>		<u>Age of heating system</u>	
126,563 single family detached		67,555 single family detached		96,984 single family detached	
0-3 years	118	0-3 years	78	0-3 years	118
4-10 years	198	4-10 years	268	4-10 years	238
11-20 years	298	11-20 years	278	11-20 years	308
21-40 years	188	21-40 years	198	21-40 years	158
41+ years	238	41+ years	218	41+ years	208
<u>JOHNSTOWN, PA</u>		<u>LANCASTER, PA</u>		<u>PHILADELPHIA, PA</u>	
Housing units	97,712	Housing units	129,046	Housing units	1,756,664
Central cooling	28	Central cooling	168	Central cooling	218
Room units	88	Room units	338	Room units	458
<u>Home heating system</u>		<u>Home heating system</u>		<u>Home heating system</u>	
Warm air furnace	398	Warm air furnace	368	Warm air furnace	438
Hydronic	458	Hydronic	358	Hydronic	418
Heat pump	18	Heat pump	48	Heat pump	28
Other/none	158	Other/none	258	Other/none	148
<u>Home heating fuel</u>		<u>Home heating fuel</u>		<u>Home heating fuel</u>	
Gas	388	Gas	168	Gas	568
Fuel oil	378	Fuel oil	578	Fuel oil	268
Electricity	108	Electricity	208	Electricity	98
Bottled/tank/LP	18	Bottled/tank/LP	18	Bottled/tank/LP	28
Other/none	148	Other/none	68	Other/none	58
<u>1970-1980 growth</u>		<u>Age of heating system</u>		<u>Age of heating system</u>	
10,018 single family homes		71,078 single family detached		653,303 single family detached	
Single family homes	10,018	0-3 years	78	0-3 years	118
Multifamily homes	3,818	4-10 years	188	4-10 years	168
Centrally cooled homes	1,203	11-20 years	248	11-20 years	308
Warm air furnaces	3,905	21-40 years	368	21-40 years	248
Hydronic systems	1,558	41+ years	158	41+ years	198

HOUSING AND HEATING CHARACTERISTICS
OF SELECTED MARKETS IN PENNSYLVANIA
(continued)

<u>PITTSBURGH, PA</u>	<u>READING, PA</u>	<u>YORK, PA</u>			
Housing units	873,097	Housing units	119,553	Housing units	140,830
Central cooling	15%	Central cooling	12%	Central cooling	11%
Room units	21%	Room units	34%	Room units	32%
<u>Home heating system</u>		<u>Home heating system</u>		<u>Home heating system</u>	
Warm air furnace	71%	Warm air furnace	36%	Warm air furnace	41%
Hydronic	19%	Hydronic	47%	Hydronic	34%
Heat pump	1%	Heat pump	2%	Heat pump	2%
Other/none	9%	Other/none	15%	Other/none	23%
<u>Home heating fuel</u>		<u>Home heating fuel</u>		<u>Home heating fuel</u>	
Gas	83%	Gas	23%	Gas	43%
Fuel oil	8%	Fuel oil	61%	Fuel oil	40%
Electricity	6%	Electricity	11%	Electricity	12%
Bottled/tank/LP	-	Bottled/tank/LP	-	Bottled/tank/LP	1%
Other/none	3%	Other/none	5%	Other/none	4%
<u>Age of heating system</u>		<u>Age of heating system</u>		<u>1970-1980 growth</u>	
560,633 single family detached		57,341 single family detached		Single family homes	19,774
0-3 years	11%	0-3 years	12%	Multifamily homes	12,497
4-10 years	17%	4-10 years	23%	Centrally cooled homes	10,942
11-20 years	28%	11-20 years	25%	Warm air furnaces	15,238
21-40 years	25%	21-40 years	23%	Hydronic systems	5,238
41+ years	19%	41+ years	17%		

STATE PROFILE BY MAJOR METRO AREA

Rhode Island

Metro Area	Population (000)	Households (000)	Total Retail Sales (\$ 000)	Median Household EBI	Buying Power Index
Total State	956.0	352.4	4,078,999	22,006	.3970
Providence-Pawtucket- Woonsocket	874.9	323.2	3,745,377	21,894	.0342
Newport	81.1	29.2	333,622	23,299	.3628

HOUSING AND HEATING CHARACTERISTICS
OF SELECTED MARKETS IN RHODE ISLAND

PROVIDENCE, RI

Housing units	349,906
Central cooling	4%
Room units	30%

Home heating system

Warm air furnace	20%
Hydronic	59%
Heat pump	1%
Other/none	20%

Home heating fuel

Gas	33%
Fuel oil	57%
Electricity	7%
Bottled/tank/LP	1%
Other/none	2%

Age of heating system
184,384 single family detached

0-3 years	11%
4-10 years	14%
11-20 years	30%
21-40 years	27%
41+ years	18%

STATE PROFILE BY MAJOR METRO AREA

Vermont

Metro Area	Population (000)	Households (000)	Total Retail Sales (\$ 000)	Median Household EBI	Buying Power Index
Total State	523.1	188.7	4,213,777	19,361	.2107
Burlington	122.9	42.6	666,855	23,238	.0548

Appendix E

MANUFACTURERS' REPRESENTATIVES

- E-1 Summary of Manufacturer Representatives Interviews
- E-2 Listing of Selected Manufacturer Representatives in Designated States .

APPENDIX E-1

SUMMARY OF MANUFACTURERS REPRESENTATIVES INTERVIEWS

COMPANY	GEOGRAPHIC TERRITORY	NO. OF SALES REPS	PERCENT OF BUSINESS		BASIC PRODUCT LINES	RECEPTIVITY TO CANADIAN PRODUCTS		COMMENTS
			RESIDENTIAL/COMMERCIAL			CURRENTLY CARRY	DON'T CARRY	
Altherm, Inc.	NJ	16	70	30	Plumbing equip. heating, general hardware		x	Receptive to Canadian products.
Arden Sales Assoc.	MD, E. PA, S. NJ and DE	3	5	95	Plumbing equip. gas fired infra- red heating, general hardware		x	Receptive to Canadian products, if it met US requirements.
Eastern Ohio Sales	OH, W. PA, WV	5	80	20	All heating, air conditioning dual fuel furnaces, chimney equip.	x		Feels Canadian products are superior to American, but dislikes the cus- toms delays and crossing the border.
Graham Sales Co.*	N. and S. Dakota	3	75	25	Plumbing equip., heating, hardware		x	Receptive to Canadian products.
Hayman & Carpenter	E. PA, NJ, DE, MD and Washington, DC	3	80	20	Plumbing equip., heating, air conditioning, chimney equip.		x	Feels that Canadians should have shipping point or warehouse in U.S., crossing border and paperwork is bothersome.
J and M Sales Assoc. Inc.	CT	3	50	50	Plumbing equip., heating, air con- ditioning, chim- ney equip.		x	Receptive to Canadian products. Feels customs and exchange rates a disadvantage.
Mechanical Mkting. Inc.	New England	4	50	50	Heating	x		Feels Canadian products are quality products and comparable to American. Would like a shorter lead time.
Meyer Bressen Inc.	NY, excl. NYC and W. Rockland, S. VA	4 - out 1 - in	80	20	Plumbing equip., heating, air con- ditioning and general hardware		x	Never approached to sell Canadian products and is afraid of warranty problems.
Neur and Assoc.	NJ, NY, Fairfield County CT	17	50	50	Plumbing equipment, heating		x	Never approached, would sell any product as long as it is good.
Ed Os Mfg. Reps.	MA	4	75	25	Plumbing equipment, heating		x	Never approached, would be recep- tive to Canadian products.

APPENDIX E-1 (Con't)

SUMMARY OF MANUFACTURERS REPRESENTATIVES INTERVIEWS

COMPANY	GEOGRAPHIC TERRITORY	NO. OF SALES REPS	PERCENT OF BUSINESS		BASIC PRODUCT LINES	RECEPTIVITY TO CANADIAN PRODUCTS		COMMENTS
			RESIDENTIAL/COMMERCIAL			CURRENTLY CARRY	DON'T CARRY	
Pendelton Assoc. Inc.	Connecticut	3	60	40	Plumbing equip, heating, air conditioning, chimney equipment.		x	Very receptive to Canadian products; Feels freight is a potential problem.
Pioneer Mfg.	All New England	6	50	50	Plumbing equip, general hardware, looking for a line in heating.		x	Never approached, would sell if price/quality were right.
Preferred Sales	Brookfield, Cleveland, OH, Pittsburgh, PA	5	40	60	Plumbing equip, heating, air cond. general hardware		x	Never been approached; would carry if price/quality were right.
Primary Sales	NJ, East Pa, DE, lower NY	3	90	10	Plumbing equip, heating (primarily), air conditioning		x	Would consider Canadian products.
James F. Prushankin Co.	Eastern PA, So. NJ	6	85	15	Plumbing equipment, heating		x	Receptive to Canadian products; sees duty requirements as a problem.
L. Rosenberg Assoc.	Upstate NY, all of NY except NYC	3	N/A	N/A	Plumbing equipment, heating controls, air cond. controls, general hardware		x	Interested in marketable Canadian products.
Sales Mktg & Services	New England	4	85	15	Plumbing equipment, heating, air cond.	x		Feels Canadian & US products are comparable.
Steam Economics Co.	OH, KY, WV	12	0	100	Heating - industrial heat transfer	x		Feels Canadian products are superior quality to U.S.
TMI	Metro NYC, Long Island, Hudson Valley, NY, No. NJ	10	50	50	Plumbing equip, heating mostly, air cond., chimney equip.		x	Feels Canadians currently are competitive & is negotiating to take on Canadian products.

APPENDIX E-1 (Con't)

SUMMARY OF MANUFACTURERS REPRESENTATIVES INTERVIEWS

COMPANY	GEOGRAPHIC TERRITORY	NO. OF SALES REPS	PERCENT OF BUSINESS		BASIC PRODUCT LINES	RECEPTIVITY TO CANADIAN PRODUCTS		COMMENTS
			RESIDENTIAL/COMMERCIAL			CURRENTLY CARRY	DON'T CARRY	
U.S. Consolidated Inc.	OH	4	50	50	Plumbing equip, copper fittings and water heaters		x	Perceives no problem in dealing with Canadian companies.
Wales Darby Inc.	Metro NY, L.I. No. NY	20	60	40	Plumbing equip, heating		x	Has never tried; but feels Canadians have a competitive product.
Walter F. Morris Co.	Upstate NY, New England	inside 5 road 8	60	40	Plumbing equip, heating		x	Would do business with Canadians if they had a quality product & it was profitable.
The Wrenthen Co.	MA, ME, CT, RI	5	70	30	Plumbing equip, water heaters		x	Receptive to Canadian products.

* Included because knowledgable about industry.

APPENDIX E-2

MANUFACTURERS REPRESENTATIVES

Company Name, Address & Phone	Territory Covered	Warehousing		Lines	Industry Orientation Handles lines associated primarily with:				No. of Salesmen
		Yes	No		Plumbing	Hydronic Heating	Warm Air Heating, Ducted Air Conditioning, Refrigeration & Sheet Metal	One or More of the Other Groups	
New England									
<u>ACME SALES, INC.</u> 205 S. River Rd. Bedford, NH. 03102 603-668-7210	New England		X	Dura Pump, Embassy Ind. Mansfield, Mopak, Sterline				X	3
<u>ADELSON BROS., INC.</u> 296 Newton St. Waltham, MA 02154 617-891-3904	New England	X		Acme Mat'l Refrig., Church Seat, Elkay, General Wire Spring, Hubbell Electric Master, Morca, R&G Sloane (Fuseal), Town & Country Plastics.				X	4
<u>ALDEN & DAVIS, INC.</u> P.O. Box 242 Yarmouth, ME 04096 207-774-0766	ME, NH, VT		X	Amtrol, Flint & Walling, Kalas Wire, M.W. Danton, New Yorker Steel Boiler, Omco.		X			2
<u>AMERICAN MKTG. CO.</u> Seemans Rd., P.O. Box 960 New London, NH 03257 603-526-4664/526-6000	New England		X	Alpha Metals Inc., Ferro, Suburban Mfg.				X	3
<u>ATKINSON & LAWRENCE INC.</u> 64 Summer St. P.O. Box 667 Methen, MA 01760 617-653-6422 401-245-7077	New England	X		BFS Indus., E. Keeler, Kewanee Boiler, Pear- body-Gordon-Platt, Penn Separator.					3
<u>ATLANTIC INT'L CORP.</u> 420 Union Avenue Frammingham, MA 01701 617-875-6286	New England		X					X	3
<u>BARCRAFT SALES INC.</u> 20 High Meadow Rd. Branford, CT 06405 203-488-4037	New England		X	Avon, Olderman	X				1
<u>MORRIS CO., WALTER F.</u> 425 Turnpike St. Canton, MA. 02021 617-828-5300	New England all upper NY	X		AMF Cuno, Beauce Fibre, Bock, Cash Valve, Central Brass, Epco, Grundfos, IPC, Jetglas Div., MWC, Lee Bros. Div. Phelps Dodge Brass, L.S.C., PCL Industries, Plastic Trends, Plastinetica, Pyramid Industries, Robert-Gordon Appliances, R&G Sloane, Sarco, Wood Industrial Products.				X	10
<u>WESCO</u> 1 Prestige Dr. Meriden, CT. 06450 203-238-1935	CT, W. MA.		X	Amtrol, Bryan Steam, Erwel, Federal Pump, Ted Reed Thermal, Sterling Radiator, Young Radiator.		X			3
<u>WIBCO PREFERRED MKT'G INC.</u> Bond Street Central Valley, NY 10917 914-928-9411	14 NY States	X		WIBCO				X	6
<u>BOONAN-RITZINGER ASSOC. INC.</u> 183 High Plain St. Walpole, MA. 02081 617-329-2760	New England except W. MA, CT.	X		Fiat Products, Keystone, MCC Clayton Mark, MCC Powers Process Controls, Metpar, Woodford.				X	4
<u>O'CONNELL, INC. R.F.</u> Box 78, 97 Rumford Auburndale, MA. 02166 617-969-0310	ME, NH, MA, RI	X		Applied Air, Coolen- heat Coil, Dura Steam Humidifiers, Griswold, Hume Snow Melting, Neucum, N.E. Valve, Phillips-Aire Fire Diesel, Precision Boiler, Singer, Sterling Radiator, Yelodyne-Lears.				X	7

APPENDIX E-2

MANUFACTURERS REPRESENTATIVES

Company Name, Address & Phone	Territory Covered	Warehousing		Lines	Industry Orientation Handles lines associated primarily with:				No. of Salesmen
		Yes	No		Plumbing	Hydronic Heating	Warm Air Heating, Ducted Air Conditioning, Refrigeration & Sheet Metal	One or More of the Other Groups	
<u>New England</u>									
<u>SOLTZ ASSOCIATES</u> 19 Amherst Road Marblehead, MA. 01945 617-631-6589	New England	X		Chatham Brass, C.R.P. Products, I.W. Industries, Jade Controls, Jameco Industries, Milbro Seats, Milford Tool & Die, Nemco Products, Revere Sink, Standard Nipple Works.				X	4
<u>STRATFORD ASSOC.</u> Box 43 West Roxbury, MA. 02132 617-445-3410	New England	X		Acorn Engineering, Chicago Faucet, Vulcathene.	X				4
<u>SVENDBORG CO.</u> 85 Mechanic St. Lebanon, NH 03766 603-448-5065	ME, NH, VT E. NY	X		Axeman-Anderson Boilers, Olsberg Foundry.				X	2
<u>SWARTZ CO., INC., FRED</u> 38 Fay Ln. Needham, MA. 02192 617-444-6776	New England	X		Clamp-All.				X	1
<u>URELL, INC.</u> Box 176, 86 Collidge Avenue Watertown, MA. 02172 617-923-9500	Six New England States, upper NY.	X		Anvil Products, Conbraco, Corian, Elkhart Products, Grohe, Kenco, Lasco Industries, Reading Industries, Robintec, Slant-Fin, J.F. Ward Foundries.				X	16
<u>VANCO INCORPORATED</u> 10 Oak Street P.O. Box 49 Needham, MA. 02192 617-444-2324	New England	X		Antrol, Commercial Filters, Gorton Heating, ITT Marlow, Valley Pump Group (Weirman).				X	6
<u>PRODUCT DESIGN & SALES CORP</u> P.O. Box 878 (Pilgrim Sta.) Warwick, RI. 02888 401-781-9110	New England	X		Ace Wire Brush, Benjamin, George H. Carpenter, Frost, Indiana Brass, Mastercraft, Rapid-Fit, Shook, Spring House Specialty, West Orange Brass, Zoeller.				X	3
<u>RAHEY INC., R.K.</u> P.O. Box 11 Granville, MA. 01034 413-357-8561	New England upper NYS from Albany to Plattsburgh	X		Adams, American-Energy Marketing Assoc., Ford Products, Honey Braukmann, Hydrolevel, Lynndale International, Michigan Furnace.				X	2
<u>REGAN SALES, DOM</u> 905 Meriden Road Waterbury, CT. 06705 203-575-9443	CT, W. MA, VT.	X						X	4
<u>ROBCO, INC.</u> Box 113, RT. 171 Ossipee, NH. 03864 603-539-7561	New England	X		Sim-Mar Plastics				X	1
<u>ROCHE ASSOC., INC., T.C.</u> 155 H. New Boston St. Woburn, MA. 01801 617-933-8896	New England	X		Midco International		X			3
<u>ROSENFELD ASSOC., LARRY J.</u> 10 Concord Ln. Wallingford, CT. 06492 203-265-2566	New England	X		Ace Brass, Chatham Brass, Cleanwater Int., Gorton Valves, Kissler, Neptune Stainless Steel Pumps, Omni, Scully Rubber, Standard Nipple Works, Uniprise Sales.				X	4

MANUFACTURERS REPRESENTATIVES

Company Name, Address & Phone	Territory Covered	Warehousing		Lines	Industry Orientation Handles lines associated primarily with:				No. of Salesmen
		Yes	No		Plumbing	Hydronic Heating	Warm Air Heating, Ducted Air Conditioning, Refrigeration & Sheet Metal	One or More of the Other Groups	
New England									
<u>BARNET WEINER, INC.</u> 968 Main Street Malpole, MA 02081 617-668-0730	New England	X		Amer. Valve, Basco, C.K. Systematics, Inc., Crane, Lewison Prod., Sanitary-Dash, T.D.V., Wilkins Regulator, Willoughby Indus.				X	3
<u>BARRETT ASSOC., INC. PHIL</u> 12 Cloverhill Pl. Kensington, CT 06037 203-828-5863	New England except Boston & So. Shore N.Y. Counties	X		Argo Ind., Meat Extrac- tor, Moneywell Braukman, Kam Thermal Equipment, Oneida Royal, Utica Radiator.				X	2
<u>BARTIS EQUIPMENT</u> P.O. Box 85 Meriden, CT. 06450 203-235-3144	CT. & 4 Counties in W. MA.	X		Industrial Steam, Kewanee Boiler, Owens Corning, Ricwil, Runtal Radiators.				X	1
<u>BENNETT REPS, WALT</u> 10 Ferch Pond Circle East Falmouth, MA 02536 617-548-2489/548-1247	New England	X		Hollaender				X	2
<u>BENTON & BART CO., INC.</u> 229 Binney St. Cambridge, MA 02142 617-868-1720	E. MA, RI, ME, NH	X		Airtherm, Armstrong Pumps, Burnham Steel Boilers, Erie, Flex- onics, Standard Fin-Pipe Radiator, Technical Systems.		X			6
<u>BLOTCHER LTD., GEORGE</u> 1442 Washington St. Canton, MA 02021 617-828-2927	New England	X		Alro Plumbing Specialty, American Saw, Campbell Mfg., Dayton Precision, Merit Brass, N.Y. Solder, Quick Tanks, Rapetti Faucets, Shellback, Wal Rich, Waterway.	X				3
<u>BONNETTE SUPPLY</u> Box 709 Lake Road St. Albans, VT. 05478 802-524-3806/524-9709	New England N. of NYS	X		Carlou, CertainTeed, Coil-Tube, Crestline, Fernco, Frank Piping Boilers, New Mac.				X	3
<u>BREY CO.</u> 84 State Street North Haven, CT. 06473 203-239-5389	CT.	X		Superior Combustion Industries		X			2
<u>BURKHOLDER ASSOC. INC. A.R.</u> P.O. Box 125 Simsbury, CT. 06070 203-651-3517	CT, W. MA, VT.	X		Aquarius Industries, Bradley, Chronomite Laboratories, Olsonite, Precision Plumbing Products, Symmons Industries, Woodford.				X	6
<u>CANNON, MAMROC & ASSOC.</u> P.O. Box 159 Canton, MA 02021 617-828-5150	New England	X		Rapid Engineering, York/Borg Warner.				X	5
<u>CAPARELLA & ASSOC., MIKE</u> 19 Eida Drive Norwood, MA 02062 617-762-4709	New England	X		Insta Energy Systems.		X			1
<u>CASI & BESSETTE ASSOC, INC.</u> 781 Social St. Box 79 Woonsocket, RI. 02895 401-766-5000	New England	X		Aero Burners, Brenco Zone Valves, Grundfos Pumps, Matco Valves, Mitco, New Yorker Steel Boiler, Tenkit, Thermar Tankless, Triangle Phase III, Westwood.		X			5
<u>CHALAS & SONS, JAMES</u> P.O. Box 356 47A River Wellesley Hills, MA 02181 617-235-2471	New England	X		Bow Solder Prod., Chalas Pipe Hangers, & Sand- cloth, Lavelle Rubber.				X	8
<u>COLLINS & ASSOC., BILL</u> 4 Wildwood Drive Bedford, NH 03102 603-472-3769	NH, NM, VT, E. MA	X		Argo Indus. Emerson Motor, Everhat All Copper, Samson Controls, Tuxia, Maverly, White-Rodgers Div. Emerson Electric.				X	1

MANUFACTURERS REPRESENTATIVES

Company Name, Address & Phone	Territory Covered	Warehousing		Lines	Industry Orientation Handles lines associated primarily with:					No. of Salesmen
		Yes	No		Plumbing	Hydronic Heating	Warm Air Heating, Ducted Air Conditioning, Refrigeration & Sheet Metal	One or More of the Other Groups		
New England										
<u>CONNOLLY & LAVERY ASSOC.</u> 32 Furnace Avenue Quincy, MA 02169 617-472-1441/42	New England	X		Empire Tool, Griffin Pipe Prod., Jones, Jossen & Jossen, Neptune, Realite, Wesen-Jarco.	X					2
<u>CONWAY, WILLIAM</u> 23 Lawson Drive Madison, CT 06443 203-245-9637	CT.		X	Bayonne Nipple, Dura- craft Plastics, Walter Kamich, Molykote Heater, Kannee.					X	
<u>COOPER CO., THE GARY</u> 200 Highland Terrace Orange, CT 06477 203-795-0152	New England		X	A.T.I. Acrylic Tube, American Pipe & Plastics, Aquarius, Basco Shower Doors, Centoco Toilet Seats, General Wire Spring, J.P.I. Plumbing, Kinsee, Liberty Pumps, Lyons, Multi-Fittings, Neverleak Metal.					X	4
<u>DAVENPORT ASSOC. INC.</u> 307 Washington Street Wallingford, CT. 06492 203-265-2389	CT, W. MA	X		Charlotte Pipe, Coyne & Delany, Elkhay, Fist Products, Sweetman.					X	3
<u>DEBaco</u> P.O. Box 307 Cheshire, CT. 06410 203-272-4144	CT, W. MA VT., W. NH		X	ABS Pumps, Anchor Brass, Bow Industrial, Cesco Brass, Geberit, Keystone Shower Door-Marchand, Nomaco, SOS Products, Teledyne Ansonia, WPM-Waterbury.					X	2
<u>DENBER ASSOC. INC.</u> 115 S. Colony St. Wallingford, CT. 06492 203-265-1563/4	N.E. NY, New England	X		Airco, Automag, Beacon Morris, Beaton & Corbin, Black Swan, Dunkirk Boiler & Radiation, Mirror Smoke Pipe.					X	2
<u>DOUGLAS SALES INC.</u> P.O. Box 525 78 Winn St. Woburn MA. 01801 617-935-2061	New England	X		Becker Precision, Coastal Engineering, Durabals, Fluorocarbon, Grove Valve & Regulator, Klingner Limited, Lynnwood Distributors, Reynolds Equipment.					X	4
<u>DUFFY ASSOC., INC.</u> 5 Sandrc Circle Warwick, RI 02886 401-884-9339	RI, Bristol County, MA.		X	Bryan Steam, Dravo, Sterling Radiator					X	2
<u>EASTERN NAT'L. ASSOC.</u> 27 Styles Drive Feasbody, MA. 01960 617-535-5536 617-535-2730	New England		X	LPS, Monte Glove, Trip "S" Specialities, True Craft Tools, J.S. Whitlam Chemicals.					X	2
<u>ENRICH, LOUIS S., JR.</u> P.O. Box 42 Winchester Center CT. 06094 203-379-3094	New England		X	Monarch, Webster Electric						1
<u>EMERSON-SWAR, INC.</u> 337 University Ave. Norwood, MA 02062 617-762-9000 203-563-0800	New England, E. N.Y.	X		Barnes & Jones, CCTV, Charlotte Pipe & Foundry, Hammond Valve, Harsco, Kuhns, Marshalltown, Modine, Muller Brass, Owens-Corning Fiberglas, Teco.					X	20
<u>FALVEY ASSOC., W.H.</u> 45 Saddle Brook Path Southington, CT 06489 203-529-2325	CT, W. MA VT	X		American Saw & Mfg., Brass Craft, In-Sink- Erator, Jaclo.	X					3
<u>FIA, INC.</u> 7 Sixth Road P.O. Box 2414 Woburn, MA 01888 617-938-8900	E. New England		X	Esergen, Molby Valve, Hydromatic Pump, ITT- Bell & Bossett, ITT- domestic, ITT-Moffman, ITT-Lawler, ITT-McDon- nell & Miller, Lochinvar Water Heater, Thermo Tec.					X	10

APPENDIX E-2

MANUFACTURERS REPRESENTATIVES

Company Name, Address & Phone	Territory Covered	Warehousing		Lines	Industry Orientation Handles lines associated primarily with:				No. of Salesmen
		Yes	No		Plumbing	Hydronic Heating	Warm Air Heating, Ducted Air Conditioning, Refrigeration & Sheet Metal	One or More of the Other Groups	
<u>New England</u>									
<u>FINNIN SALES CO., ROBERT E.</u> 815 Washington St. Newtonville, MA 02160 617-332-4948	ME, NH, RI, E. MA.	X		Flair, Hydrotherm, Kittling.		X			3
<u>FOULDS ASSOCIATES</u> 88 Whittin Avenue P.O. Box 111 Revere, MA 02151 617-284-2700	New England		X	Flomatic, Geberit, Kingston Hydronic, Lundt Power Burner, McGuire, Speakman, Theford, Waugh, Wilde Tool.				X	5
<u>FRANCER INDUSTRIES, INC.</u> Box 124, Wharf, E. Weymouth, MA. 02189 617-337-2882	New England	X		American Metals, Bootz, Century Engineering/ Heat Controller, Facet Glas, Industrial Dimensions, A.Y. McDonald, Peerless Pottery, National Riverside, Plastic Oddities, Teledyne-Asonia.				X	5
<u>GERAGHTY CO., INC. M.J.</u> 151 Fisk St. P.O. Box 563 Dennis, MA 02670 617-398-9255	New England		X	Crown Engineering, Dongan Electric, Duro Dyne, Facet Enterprises, General Flex, Kendall Polyken, Lau, Tjernlund.			X		2
<u>GOLDSTEIN CORP., SIDNEY</u> 3 Industrial Road Box 167 Walpole, MA. 02081-0187 617-769-8130	New England	X		American Shower Door, Asahi/America, Bufftech, Cero Copper Prod., Colon- ial Engineering, Cyclops- Cyclops-Sawhill Tubular Div., DEFCO, Dormont Rubber Co-Plastics Div., Industrial Polychemical Ser. Jensen Thorsen, NDS, Permafit, Sepco Ind., Tanner, Triangle-PWC, Volteck.				X	6
<u>GOODING, INC., DAVID</u> P.O. Box 92 Stoughton, MA 02072 617-341-1267	New England		X	Anderson Metals, Beneke Seats, Bristol Pipe, Canfield Solder, Clemmey Tank, Conn. Stamping, Empire Tool, Indiana Seal, Richmond Foundry, Smith Gates, U-Brand, Virginia Stainless Nipple.				X	3
<u>GOODYER-ZONINO, INC.</u> Box 1025 45 Bristol St. New Haven, CT. 06503 203-624-6945	CT, W. MA. VT.	X		Airtherm, Crown Ind., Danfoss, Erwell, Flomatic, Hyspan Expansion Joints, Janitrol, Reco, Rosemex, Waynesboro Pipes Prod., Zipcote.				X	5
<u>GOULD CO., FORREST L.</u> 16 A. Eaton Sq. Needham, MA. 02192 617-444-0562	New England	X						X	3
<u>COURLEY CO., INC. R.L.</u> 12 Mica Lane Wellesley Hills, MA 02181 617-235-5300	New England	X		Energy Vent, Hydronic Technology, Kaypak, Runtal Radiators, Raud Water Heater, Thermo Stak.				X	6
<u>HANEY CO., INC., W.P.</u> 11 Memorial Drive Avon, MA 02322 617-588-6464	ME, NH, MA, RI.	X		Bemis, F.E. Meyers, Utility Chemical, Waterbury Aerators, Watts, Regulator.				X	6
<u>HENRY ASSOC., INC., C.A.</u> P.O. Box 955 Acton, MA 01720 617-264-4778	East New England		X	Acc-Buehler, Bradley, International Techno- logy Sales, North American Valve, Ondine, Precision Plumbing Products, Shower Door of America, Stern-Wil- liams.				X	3

APPENDIX E-2

MANUFACTURERS REPRESENTATIVES

Company Name, Address & Phone	Territory Covered	Warehousing		Lines	Industry Orientation Handles lines associated primarily with:				No. of Salesmen
		Yes	No		Plumbing	Hydronic Heating	Warm Air Heating, Ducted Air Conditioning, Refrigeration & Sheet Metal	One or More of the Other Groups	
<u>New England</u>									
<u>HORNSBY & THORNDYKE, INC.</u> 323 Turnpike P.O. Box 159 Canton, MA. 02021 617-828-5150	New England		X	Rapid Engineering, York/Borg Warner.			X		4
<u>HYDRO ENGINEERING CO.</u> Box 161 106 Shumpke Road Cromwell, CT. 06416 203-635-1616	New England		X	Bruner, Electrical Con- ductors, Met-O-Matic, Related Products.	X				2
<u>IZEN CO., MEL</u> P.O. Box 67 Newton Center, MA. 02159 617-244-5857	New England		X	Leo Cal Industries, Champ, Sentinel Pump.	X				2
<u>J&M SALES ASSOC., INC.</u> 121 K. N. Plains Ind. Rd. Wallingford, CT 06492 203-265-7500	New England, Westchester, & Putnam-NY	X		Dornbeck Furnace, Enerjet Boilers, Flair, Heat Craft, Hold-Rite, JRD Enterprises, Leisure Steam, Mirror Stove Pipe, Noble, Pearl Baths, Richmond Foundry Safeguard Baffles, Standard Fin-Pipe, Sterling Faucet.				X	4
<u>JAMN, INC.</u> 2073 State Hamden, CT. 06514 203-562-8053	CT.		X	Ace Buehler, Bradford White, Detroit Radiant, Edwards Engineering, Thermal Concepts, Webster Engineering.				X	2
<u>KALCO SALES</u> P.O. Box 26 Holden, MA 01520 617-829-9589	MA, NH, VT		X	Ammark, Spirax/Sarco.				X	1
<u>KEM ASSOCIATES, INC.</u> 107 Water St. New Haven, CT. 06507 203-865-0584	New England, Hudson Valley, NY	X		Adams Mfg., Cox, Dynatech, Enerco, Magic-Aire, Myson, New Yorker Steel Boiler, Peerless Heater, Solar Indus. Trol-A-Temp, Van Wert.				X	7
<u>KEOUGH, INC., L.P.</u> 45 Summer P.O. Box 115 Somerville, MA. 02143 617-623-2510	ME, NH, MA, RI, 4 w/p Counties CT.		X	Eaton (Dole Valve), General Pump & Equip.				X	2
<u>KITFIELD ASSOCIATES, INC.</u> 7 Lakeside Office Bldg. Wakefield, MA. 01880 617-245-0730	ME, NH, VT, MA, E. CT.		X	Aldrich, Gas Indus./ Coates Electric, Parker Boiler.			X		2
<u>KOSTKA ASSOC., ROBERT E.</u> 27 Dover Road Brookfield Ctr., CT. 06805 203-775-6688	CT., E. NY Exclude NYC & LI		X	Crane, Energy Saver, Hydrolevel, Stonehill Tools.				X	1
<u>LANCO, INC.</u> Palmer Drive Londonderry, NH 03033 603-434-2366	ME, NH, VT, MA, CT, RI.		X	Delta Faucet, Duracraft Plastics, Keeney, Just, Little Giant, MC Coupling, PVI Indus.	X				8
<u>LEONARD INC., W.E.</u> P.O. Box 1 Ray Palmer Road Moodus, CT. 06469 203-873-8691	CT, W. MA, VT.		X	Hydromatic Pumps, Lambert, Modine, Movo Cabinet Heaters, Standard Fin Pipe Radiator, Sterling, Watts Regulator.				X	4

APPENDIX E-2

MANUFACTURERS REPRESENTATIVES

Company Name, Address & Phone	Territory Covered	Warehousing		Lines	Industry Orientation Handles lines associated primarily with:				No. of Salesmen
		Yes	No		Plumbing	Hydronic Heating	Warm Air Heating, Ducted Air Conditioning, Refrigeration & Sheet Metal	One or More of the Other Groups	
<u>New England</u>									
<u>LEWIS CO., INC., NORMAN</u> 10 Kearney Road Needham Heights, MA. 02194 617-444-9650	New England	X		Blue Angel Pumps, Bradford-White, Cadillac Cable, Cresline Plastic Pipe, Essei Indus., Ideal, Jenn, Richmond Engineering, Stemist, Sterling Faucet, Wayne Home Equipment.	X				4
<u>LIBBY CO., HARRIS</u> 21 Fairway Road Chestnut Hill MA. 02167 617-232-6933	New England	X		Cemline, Cloroben Chemical, Controlled Energy, Graff Valve & Fitting, Greenfield, Guardian Equipment, Jonas Haies, Hitachi Metals USA, Hudson Nipple, Phoenix, Royal Brass, Sharon Piping & Equipment, Southeastern Specialty, Weiss Metal.				X	2
<u>LINGEL CO., EDWARD B.</u> P.O. Box 373 Wellesley, MA. 02181 617-235-8044	New England except CT.	X		Brass Craft, Highfield, INCOA Insulation, Krupp Quakertown Foundry, Rectorseal, Waynesboro Pipe.	X				2
<u>MANCUSO SALES CO.</u> 36 Arden Road Watertown, MA. 02172 617-923-1410	New England	X		Arfco Product, Clamp- All, Hydro-Flex, Red & White Valve, Silver King, Cleanweld Turner.				X	2
<u>MEANEY & ASSOC., INC., JACK</u> 40 Stickney Ter. Hampton, N.H. 03842 603-926-5356	New England & Upper NYS	X		American Stove, Applied Ceramics, Atlanta Stove Products, Bentley- Marris, Chimfex, Conda, Dacon, Dampney, Funk, G&L Enterprises, Hastings, Heat Dome, Hugert, Johnson Energy, Kestune, Orville Lester, Minuteman, Modern Method, Pyramid, RAR, Severence Boiler, Serris, Worcester Brush.	X				2
<u>MECHANICAL MARKETING, INC.</u> 282 Woodmont Road Milford, CT. 06460 203-877-7615	CT, W. MA., Westchester & Putnam-NY	X		Aerco Heat Exchangers, Armstrong Pumps, Drayton, Erie Controls, Hydrolevel, Hydrotherm, Rittling Commercial Fin-Tube, Spence Engineering.		X			3
<u>METROPAC INDUSTRIES, INC.</u> 15 Henderson St. Box 111 Everett, MA. 02149 617-387-2660	NE, VT, NH, CT, RI.	X		Becharach, Bell & Cossett, Hoffman, Moneywell, McDonnell & Miller, Sunstrand, Thrush, White Rogers.				X	3
<u>MILARDO ASSOCIATES, INC.</u> 10 Flintlock Road P.O. Box 1007 Madison, CT. 06443 203-245-7497	CT, RI, MA, VT, NH, ME.	X		Carlson, Endot, Fernco, Sherwood, Trident, Webtrol, Wheeler.				X	3

MANUFACTURERS REPRESENTATIVES

Company Name, Address & Phone	Territory Covered	Warehousing		Lines	Industry Orientation Handles lines associated primarily with:					No. of Salesmen
		Yes	No		Plumbing	Hydronic Heating	Warm Air Heating, Ducted Air Conditioning, Refrigeration & Sheet Metal	One or More of the Other Groups		
<u>New England</u>										
<u>MORRIS CO., WALTER F.</u> 425 Turnpike St. Canton, MA. 02021 617-828-5300	New England all upper NY	X		AMF Cuno, Besace Fibre, Bock, Cash Valve, Central Brass, Epro, Grundfos, IPC, Jetglas Div., BWC, Lee Bros. Div. Phelps Dodge Brass, L.S.C., PCL Industries, Plastic Trends, Plastinetica, Pyramid Industries, Robert-Gordon Appliances, R&G Sloane, Sarco, Wood Industrial Products.					X	10
<u>NESCO</u> 1 Prestige Dr. Meriden, CT. 06450 203-238-1935	CT, W. MA.		X	Amtrol, Bryan Steam, Ervel, Fedetal Pump, Ted Reed Thermal, Sterling Radiator, Young Radiator.		X				3
<u>NIBCO PREFERRED MKT'G INC.</u> Bond Street Central Valley, NY 10917 914-928-9411	14 NE States	X		NIBCO					X	6
<u>NOONAN-RITZINGER ASSOC. INC.</u> 183 High Plain St. Walpole, MA. 02081 617-329-2760	New England except W. MA, CT.	X		Fiat Products, Keystone, MCC Clayton Mark, MCC Powers Process Controls, Metpar, Woodford.					X	4
<u>O'CONNELL, INC. R.P.</u> Box 78, 97 Rumford Auburndale, MA. 02166 617-969-0310	ME, NH, MA. RI	X		Applied Air, Coolen- heat Coil, Dure Steam Humidifiers, Griswold, Hume Snow Melting, Neucom, N.E. Valve, Phillips-Aire Fire Damper, Precision Boiler, Singer, Sterling Radiator, Teledyne-Laars.					X	7
<u>OLIVER CO., ARTHUR E.</u> 47 Park Hill P.O. Box 101 Milbury, MA. 01527 617-755-8942	New England		X	Atlas Minerals, Chesco Screwdrivers, ES Specialty Products, Mephisto Tools, Quad Six Thermostats, simer Pump, Tri Star Teflon Products.					X	4
<u>OMINIA ENGINEERING INC.</u> P.O. Box 146 Needham, MA. 02194 617-444-6151/444-2834	New England NY, NJ		X	Burnham Steel, Laclede Stokers.		X				2
<u>OS MANUFACTURER'S REPS, ED</u> 112 Asheret St. Granby, MA. 01033 413-467-3460/786-5020	New England		X	Anderson Copper & Brass, Aker Plastics, Efron of Penn., Gerber Plumbing Fixtures, Guy Gray, Mico Flex, Key Technologies, Magna, New England Smelting Works, Novi-American, Spersel Industries, utility, Wonder King.					X	3
<u>PACKTOL CO., THE BERNARD M.</u> M/O & Warehouse 21 Pershing Mandem, CT. 06514 203-288-5241 518-459-1060	CT, V. MA, E. NY, W. VT.	X		Aoaconda Pump Conner- tors, ITT Bell & Gossett, ITT Domestic, ITT Hoffman, ITT Lawler, ITT McDonnel & Miller, Marley Cooling Towers, Thermo Tech Pump Connectors.		X				7
<u>PARAD CO., SIDNEY</u> 556 Ward St. Newton Center, MA. 02159 617-527-2702	E. MA.		X	Century Shower Door, Midland Doors, Thermal Steam Gen- Whirlpool Tubs.		X				1

APPENDIX E-2

MANUFACTURERS REPRESENTATIVES

Company Name, Address & Phone	Territory Covered	Warehousing		Lines	Industry Orientation Handles lines associated primarily with:				No. of Salesmen
		Yes	No		Plumbing	Hydronic Heating	Warm Air Heating, Ducted Air Conditioning, Refrigeration & Sheet Metal	One or More of the Other Groups	
<u>New England</u>									
<u>PECK CORP., E.T.</u> 6 E. Manshaw St. Woburn, MA. 01801 617-935-0030	New England	X		Cherne Industries, Hercules Chemical, Holsclaw Brothers, Perfecto Products, Reading Gas Tester.	X				2
<u>PENDLETON ASSOC., INC.</u> 280 Tolland Pk., P.O. Box 647 Manchester, CT. 06040 203-646-4411	New England	X		Ametek Filters, Bemis, Canco, Messco, Mission Rubber, F.E. Myers, Ondine/Interbath, Rectorseal, Seekonk, S.J. Electro Systems, U-Brand, Westaflex Industries.				X	3
<u>PHILLIPS WATER CONDITIONING</u> 954 American Legion Hwy. Westport, MA. 02790 617-636-8251	Fall River, MA.		X	Lancaster Pump		X			
<u>PIONEER SALES CO.</u> 66 Woerd Avenue Waltham, MA. 02154 617-891-0480	New England	X		Alsons, American Dispenser, Bridgport Brass, Frohock Stewart, William Harvey, Holyoke Heater, Peabody Barnes, Pioneer, Smitty Fan, Swan, Thermal Materials, ThermaSol, United Elchem, Vance, ZinFlas.		X			6
<u>POKORNY ASSOC., J.H.</u> 260 Hillside Avenue Needham, MA. 02194 617-449-2240	ME, NH, VT, E. MA.		X	Duriron, Leonard Valve, Metcraft, Sloan Valve, Halsey Taylor.		X			3
<u>PRODUCT DESIGN & SALES CORP</u> P.O. Box 876 (Pilgrim Sta.) Warwick, RI. 02886 401-781-9110	New England		X	Ace Wire Brush, Benja- min, George H. Carpen- ter, Frost, Indians Brass, Mastercraft, Rapid-Fit, Shook, Spring House Specialty, West Orange Brass, Zoeller.				X	3
<u>RAMEY INC., R.K.</u> P.O. Box 11 Granville, MA, 01034 413-357-8561	New England upper NYS from Albany to Plattsburgh		X	Adams, American-Energy Marketing Assoc., Ford Products, Honey Braukmann, Hydrolevel, Lynndale International, Michigan Furnace.				X	2
<u>REGAN SALES, DON</u> 905 Meriden Road Waterbury, CT. 06705 203-575-9443	CT, W. MA, VT.		X					X	4
<u>ROBCO, INC.</u> Box 113, Rt. 171 Ossipee, ME 03864 603-539-7361	New England	X		Sin-Mar Plastics				X	1
<u>ROCKE ASSOC., INC., T.C.</u> 155 N. New Boston St. Woburn, MA 01801 617-933-8896	New England	X		Midco International		X			3
<u>ROSENFELD ASSOC., LARRY J.</u> 10 Concord Ln. Wallingford, CT. 06492 203-265-2366	New England		X	Ace Brass, Chatham Brass, Cleanwater Int., Gortoo Valves, Kissler, Neptune Stainless Steel Pumps, Omni, Scully Rubber, Standard Nipple Works, Uniprise Sales.				X	4

APPENDIX E-2

MANUFACTURERS REPRESENTATIVES

Company Name, Address & Phone	Territory Covered	Warehousing		Lines	Industry Orientation Handles lines associated primarily with:				No. of Salesmen
		Yes	No		Plumbing	Hydronic Heating	Warm Air Heating, Ducted Air Conditioning, Refrigeration & Sheet Metal	One or More of the Other Groups	
<u>New England</u>									
<u>SALES MGTG. & SVC. INC.</u> P.O. Box 540 Randolph, MA. 02368 617-821-1770	New England	X		Duo-Matic/Olson, Eastman Central D, Maydon Thermogetic, Heat Sealer, MorFlo, Oil Creek Plastics, Tekton (H.S. Tarn), Thermonic, Valliant/ Rapco, Valley Faucet.		X			4
<u>SCAMMON ASSOC., JAMES P.</u> 331 Point Road New Harbor, ME 04554 207-677-2131	New England		X	Automag Zone Valve, Crown Boilers, Trol-A- Temp.				X	1
<u>SELLS & SONS, INC., BERT</u> 16 Crook's way Mattapoisett, MA. 02739 617-758-2969	New England	X		Beacon Valve, QMCO Fusible Valves, SOS Pro- ducts, Starbuck Tools, Thermalok-Allanson Products, Ware Coupling & Nipple.				X	4
<u>SERPA CORP., THE</u> 635 Massachusetts Ave. Ste. 10 Arlington, MA. 02174 617-648-2001	New England		X	Anaheim Foundry, Eastern Foundry, Fluid- master, Milwaukee Valve, Olsonite, The Plumbing Group, Raychem.				X	5
<u>SMITH, JANIKIES</u> & EISENBAER, INC. 28 Sycamore Avenue Medford, MA. 02155; Palmer, MA. 01069 617-396-0842/413-283-3990	New England	X		Bobrick Washroom Equip- ment, Potter-Romer, Shamrock Industries, Jay R. Smith, Sunroc Water Coolers, T&S Brass & Bronze, Watrous, Western Drinking Fountains, Western Emergency Equipment.	X				5
<u>SOLTZ ASSOCIATES</u> 19 Amherst Road Marblehead, MA. 01945 617-631-6589	New England		X	Chatham Brass, C.R.P. Products, I.W. Indus- tries, Jade Controls, Jameco Industries, Milbro Seats, Milford Tool & Die, Nemco Products, Revere Sink, Standard Nipple Works.				X	4
<u>STRATFORD ASSOC.</u> Box 43 West Roxbury, MA. 02132 617-445-3410	New England		X	Acorn Engineering, Chicago Faucet, Vulcathene.		X			4
<u>SVENDBERG CO.</u> 83 Mechanic St. Lebanon, NH 03766 603-448-5065	ME, NH; VT. E. NY.		X	Axeman-Anderson Boilers, Olsberg Foundry.				X	2
<u>SWARTZ CO., INC., FRED</u> 38 Fay Ln. Needham, MA. 02192 617-444-6776	New England		X	Clamp-All.				X	1
<u>URELL, INC.</u> Box 176, 86 Collidge Avenue Watertown, MA. 02172 617-923-9500	Six New England States, upper NY.	X		Anvil Products, Conbraco, Corien, Elkhart Products, Grohe, Kenco, Lasco Industries, Reading Industries, Robintec, Slant-Fin, J.P. Ward Foundries.				X	16
<u>VANCO INCORPORATED</u> 10 Oak Street P.O. Box 49 Needham, MA. 02192 617-444-2324	New England	X		Astrol, Commercial Filters, Gorton Heating, ITT Marlow, Valley Pump Group (Weirman).				X	6

APPENDIX E-2

MANUFACTURERS REPRESENTATIVES

Company Name, Address & Phone	Territory Covered	Warehousing		Lines	Industry Orientation Handles lines associated primarily with:				No. of Salesmen
		Yes	No		Plumbing	Hydronic Heating	Warm Air Heating, Ducted Air Conditioning, Refrigeration & Sheet Metal	One or More of the Other Groups	
<u>New England</u>									
WALSH CO., JAMES D. 164 C. Brittany Farms Road New Britain, CT. 06053 203-229-3822	CT, W. MA VT.		X	CT. Stamping & Bending, Jones Mfg., Marco Products, Red-White Valve, U.S. Brass Corp.,/Valley-Eastman- Quest.				X	2
WRENTHAM CO., THE 5 Norfolk Drive Easton, MA. 02375 617-843-0990	MA, ME, CT, RI.		X	Endot Pipe, Expert Pumps, Kane Water Softener, Polar Ware, Polycel/W.R. Grace, Price Pfister, State Industries, U/R, Whirlaway Disposers.				X	5
YOST ASSOCIATES, RAY 3011 Main Street Glastonbury, CT. 06033 203-659-0301	W. MA, CT, RI.		X	Acorn Engineering, Duriron, Dwyer Kitchens, Halsey Taylor, Karp Assoc., Powers Regulator, Sloan Valve.	X				3
<u>New York City, The Boroughs, Westchester, Long Island</u>									
ACTIVE SALES CORP., DAVID BENI 1412 E. 16th Street Brooklyn, N.Y. 11230 212-998-0461/376-2682	Metro NYC, L.I. West.		X	American Pipe Supply, Industrial Equipment, Pyramid Rubber.				X	3
AGNEW ASSOC., INC. 10-50 50 Avenue L.I.C., NY 11101 212-786-3180	Metro NYC		X	Acorn Engineering, Chicago Faucet, Maws Drinking Faucet, Just, Leonard Valve, Milwau- kee Valve, Stoneman Engineering, Zurn Ind.	X				3
ALTHERM, INC. 255 Humphrey St. Englewood N.J. 07631 212-795-7010/201-871-4400 800-526-0413	Metro NY, NJ		X	Bock, Charlotte Pipe, Delta Faucet, Grundfos Pumps, Utica Radiator.				X	7
AMANTE, LAMAURO, POLK & ROTHENBERG 104 Rushmore St. Westbury, NY 11590 R.D. 3, Box 496 Sussex, NJ 07461 212-347-7667/ 516-334-3688/ 201-875-3127	Metro NY, N. NJ.		X	B-Line Systems, Bradford White, Peabody Barnes, Turbo Torch, Universal Bundle, Webstone.				X	5
ARNOFF, INC., LEON 10 Rose Lane Chappaqua, NY 10514 212-083-8290	Metro NY		X	Ametek, Beckitt, Centoco, Francor, Greenfield, Molyoke, Kitz Valve, Mordonia, NYPCO, Richmond Foundry, Royal Brass, S.O.S., Spring House, Wheeling Machine.				X	2

APPENDIX E-2

MANUFACTURERS REPRESENTATIVES

Company Name, Address & Phone	Territory Covered	Warehousing		Lines	Industry Orientation Handles lines associated primarily with:				No. of Salesmen
		Yes	No		Plumbing	Hydrolic Heating	Warm Air Heating, Ducted Air Conditioning, Refrigeration & Sheet Metal	One or More of the Other Groups	
<u>New York City, The Burroughs, Westchester, Long Island</u>									
<u>ASSOCIATED SALES</u> P.O. Box 64 Pleasantville NY 10570 914-769-4838	Metro NY	X		Automag, Firepower Div. PVF, Louisville Tin & Stove, New England Valve, Northland Boiler, Termopower Div. PVI.				X	4
<u>ATLANTIC REPRESENTATIVES INC.</u> P.O. Box 183 Woodbury, NY 11797 516-921-7571	NYC, L.I. West.	X		Consulting Engineers, Milldale Industries, Industrial Louvers, Sylro Products.			X		3
<u>BERGER, GEORGE</u> 740 Tuckahoe Road Yonkers, NY 10710 914-779-5802	Metro NYC	X		Dorsey Clapp, Epco Sales, Harris, Murray, Sure Seal.				X	1
<u>BOCKSTEIN ASSOC., JERRY</u> 573 Norman Way Woodmere, NY 11598 516-374-3180/5343	Metro NY, N. NJ., West. Nassau, Suffolk	X		All-American, American Metal, Anaheim Foundry, L.F.L., Merco, Perma- fit-Colonial Engin., Reading, Robert.				X	2
<u>BOIG AND HILL, INC.</u> 591 W. Merrick Road Valley Stream, NY 11580 516-561-1105/212-591-5990	Metro NYC	X		Farris Engineering, Keye & McDonald-D'Este, Richmond Engineering, M.O. Trerice, Worcester Controls.				X	4
<u>BROWER ASSOC., SIDNEY</u> 95-46 72 Avenue Forest Hills, NY 11375 212-275-9367	Metro NYC	X		Rabbit Development, Dick Brothers, Olsonite, Sharoo Valve.				X	2
<u>BRUDERMANN & SON, INC., J.A.</u> 450 Smith St. Farmingdale, NY 11735 516-293-8190/212-343-3832	Metro NY West., L.I.	X		Bristolpipe, J.P.I. Plumbing Products, Lee Brace, Plum Brand Fittings, M&C Sloan, Stratello, Willard Lead Products.				X	3
<u>BURACK CO., FRED</u> 98 DeHaven Drive Yonkers, NY 10703 914-423-2473	NY, NJ, CT	X						X	2
<u>CALISOFF SALES CORP.</u> P.O. Box 374 New City, NY 10956 914-634-1770	NY, NJ, Metro PA, New England States	X		Major lines to the refrigeration, air conditioning, appliance parts, control and oil burner wholesalers.			X		3
<u>CLOSTER BROS., INC.</u> 195 South Fehr Way Bay Shore, NY 11706 516-242-0002	NJ, NY, all New England	X		Ametek, Colonial Plumbing Products, Clos-True, Febco Sales, Industrial Polychemical Services, Little Giant Pump, A.Y. McDonald, M&PFCO/Uni-Flange, Oil Capital Valve, Royal Coach/Buckner.				X	5
<u>CURTIS-WARD CORP.</u> 10-39 47th Road L.I.C., NY 11101 212-837-9797	NYC and surrounding area	X		Evans, Pinnacle Equip., World Refrigeration.			X		3
<u>CUSHING EQUIPMENT LTD.</u> 150 Westminster Road West Hempstead, NY 11552 516-483-2062/483-3162	NY, LI, NYC lower 5 counties of NY, N. NJ	X		Azeman-Anderson, Castratherm, Ener-Quip, Midco International, Peabody-Gordon-Piatt, Reypak.		X			2

APPENDIX E-2

MANUFACTURERS REPRESENTATIVES

Company Name, Address & Phone	Territory Covered	Warehousing		Lines	Industry Orientation Handles lines associated primarily with:				No. of Salesmen
		Yes	No		Plumbing	Hydronic Heating	Warm Air Heating, Ducted Air Conditioning, Refrigeration & Sheet Metal	One or More of the Other Groups	
<u>New York City, The Burroughs, Westchester, Long Island</u>									
<u>DAMAR SALES COMPANY, INC.</u> P.O. Box 619 Bronxville, NY 10708 914-793-4719	Greater NY area, West- county, CT.	X		Arias Minerals & Chemical, Carpenter & Patterson, Cesco Brass, Empire Ace Insulation, Gruener Brass, Howell Metal, J.C. Whitlam, Mario, Melard, Monaco, Standel Products, Star Supply, Lanner.				X	3
<u>DAVIS SALES CORP., ROBERT J.</u> P.O. Box 86 Bronx, NY 10470 914-476-1245	Metro NYC, NJ, CT	X		Barrett Fasteners, Dupage Hose Clamps & Threaded Rod, Dura Pump, Kent Medicine Cabinet, Moldex, Kule Saw Blades, Sure Fire Torch.				X	3
<u>DELLON SALES CO., INC.</u> 38-19 108 St. Corona, NY 11368 212-672-1140	Metro NYC N. NJ, CT.	X		Crane, Coro Copper, Griffin Pipe, Mor-Flo Industries, Sterling Faucet, Triangle Home Products, Vance Industries.	X				6
<u>EDWARDS, PLATT & DEELY INC.</u> 1 Stone Place Bronxville NY 10708 914-337-5511	NYC, West. to Orange, NY, N. NJ.	X		Church Seat, Eastern Foundry, Fiat Products, Halsey Taylor, Josam, Metpar, Metcraft, Sloan Valve.	X				6
<u>ELLIE SALES CO.</u> Concord House, Ste. 2B P.O. Box 625 Scaradaie, NY 10583 914-725-5570	NJ, CT, LI, X metro NYC-no- to Albany, W. MA.		X	Allenson Transformers, American Brass & Foundry, Bard, M.E.D. Electronics, Poven Pony Pumps, Quality Ref. Parts, Rho Signal Controls, S.O.S. Chemical Products, Surgeonics Fuel Saver, Thermolock Covers.			X		5
<u>ENVIROSALES, INC.</u> P.O. Box 79 Gedney Station White Plains, NY 10605 914-949-5447	Metro NYC	X		Abel Pumps, ASC International, C-E Bauer Bros, Calgon Carbon, Euramco Systems, Force Flow Equipment, Hydroflo, Passavant, Ultraviolet Purification Systems, U.S. Filter Fluid Systems.				X	5
<u>FELDMAN ASSOC., CARL</u> 10 Oakwood Ln. Plainview, NY 11803 516-938-3075	Metro NYC	X		Amoco Industries, B-K Industries, Bow Holder, Jones, Liberty Pumps, Mission Rubber, State Metals, Tincum Metals.				X	3
<u>GOODWIN ASSOCIATES</u> 154 Greystone Road Rockville Center NY 11570 516-764-1637	N. NJ, S. NY, CT.	X		Ameri-Flow, Auto Flo, Crown Engineering, Field Draft Controls, Hi-Tech, Malco Products, Pullman/MoIt, Trol-A-Temp, Webster Electric.			X		2
<u>GOTSCHALK-ALEXANDERSON, INC.</u> 26 Burling Ln. New Rochelle, NY 10801 914-576-3034	Metro NY, N. N.J., Fairfield CT.	X		Amrec, Auburn Brass, Carlton, General Marble, Kinhead, Pozzi-Cinori, Republic Sink.	X				2
<u>MARCO STEEL</u> 37-37 Hunterspoint Ave. L.I.C., NY 11101 212-784-0140	Metro NY	X		American In-Fra, Dunkirk, Marco Steel, Hitachi.				X	3

MANUFACTURERS REPRESENTATIVES

Company Name, Address & Phone	Territory Covered	Warehousing		Lines	Industry Orientation Handles lines associated primarily with:					No. of Salesmen
		Yes	No		Plumbing	Hydronic Heating	Warm Air Heating, Ducted Air Conditioning, Refrigeration & Sheet Metal	One or More of the Other Groups		
<u>New York City, The Boroughs, Westchester, Long Island</u>										
<u>HUGHES SALES MARKETING CO., G.F.</u> P.O. Box 130 Roslyn, NY 11576 516-621-6813	Metro NYC, N. NJ.	X		Anderson Copper & Brass, Ener Jet, Graff Valve, Mico Flex Brass, Lambro Industries, Oatey, Southeastern Specialties, Spersel Industries, Wayne Home Equipment.					X	2
<u>HUTCHER ASSOC., IRV</u> 1295 Northern Blvd. Manhasset, NY 11030 516-627-4449/212-895-3606	Metro NY, Nassau, Suffolk, NJ, West., NY.		X	Anvil Products, Aquatius, ATL Acrylic Tubs & Showers, Gerber Plumbing Fixtures, Priar Brass, Trenton Pipe Nipple, UNR Home Products, U.S. Pipe & Foundry.					X	3
<u>JR ASSOCIATES</u> 50 Glen St. Glen Cove, NY 11542 516-671-6880	Metro NY Lower NYS		X	Colton-Wartsila, Fluidmaster, Grohe, Raychem, Unipriss.	X					3
<u>J.N.S. SALES CORP.</u> P.O. Box 1-5 Goshen, NY 10924 914-294-7277	NY, NJ.		X	Bradford-White, Brown Stove, Chem-Trol, Locke Stove, Roberts- Gordon.						3
<u>JAY DEE SPECIALTY CO., INC.</u> Box 325 1075 Quentin Pl. Woodmere, NY 11598 516-374-5799 Beeper: 516-542-7097	Metro NY	X		Acme Brass, Action Chemicals, Beneka, Jay Dee Specialty, Kenite Laboratory, Paymer Metal, West Orange Brass.					X	4
<u>KALTMAN & ASSOCIATE, ARNOLD</u> 26-05 Astoria Blvd. L.I.C., NY 11162 212-721-5757	Metro NYC, West., L.I.		X	Anderson Metals, Basco, Gerber Plumbing Fix- tures, Keystone Filters, Matter/Redy Hot, Matter, Pelham Metals, Silkauf Products of CA, Thermal Materials.	X					2
<u>KIMZLER SALES, IRWIN</u> 750 Lark Ct. Woodmere, NY 11598 516-295-4782	NYC, Nassau Suffolk, Lower West.		X	Atlas-Brodco, Baterek- Karpel, Carpenter- Patterson, Gruner Brass, Melard, Star Tubular, Tanner Valve, Wal-Rich, Whitlam.					X	
<u>KORNSTEIN, MARTIN L., INC.</u> 76-09 34th Avenue Jackson Heights, NY 11372 212-458-2264	Metro NY, NJ, L.I., Lower, NY.		X	Bayonne Nipple, Clam- pette, Epco Sales, Fehr Bros., Murray, Norca, Quality Lead Plug, Taracorp Evans, Taracorp Imaco.					X	4
<u>KRAVITZ & ASSOCIATES</u> 235 Lincoln Plaza Brooklyn, NY 11217 212-783-4022	Metro NY, Nassau, Suffolk, Westchester		X	Cambridge/Lee, Cloroben, Frost, Hudson Pipe & Nipple (LI only), Indiana Seal, Jumbo, Lasco/Phillips Ind., Multi-Fittings, Ticoma Industries.					X	3
<u>LAUDIN ASSOCIATES, INC.</u> 88-71 195 Place Mollis, NY 11423 212-683-9221	Metro NY, N. NJ.	X		Ciracco, Stanco Metal Products, Tanco Prod.	X					2
<u>LEVITT, JACK</u> 2950 137th Street Flushing, NY 11354 212-359-1445	Metro NY		X	Chatham Brass, Gruner Brass Fittings, Jameco Industries, Standard Nipple Works.					X	
<u>MARIN & GOLDSTEIN ASSOC.</u> 613 Jericho Tpse. New Hyde Park, NY 11040 516-488-4700	NY, NJ, CT.	X		Anderson-Barrows Metals, Dole Vale/Eaton, Expert Pumps, Fee & Mason, Honeywell Braukman, JP Ward Foundries, Mari- gold, Neptune Water Meter, OEM, Scotch Erica, Wilkins Tempstat.					X	5

APPENDIX E-2

MANUFACTURERS REPRESENTATIVES

Company Name, Address & Phone	Territory Covered	Warehousing		Lines	Industry Orientation: Handles lines associated primarily with:			One or More of the Other Groups	No. of Salesmen
		Yes	No		Plumbing	Hydronic Heating	Warm Air Heating, Ducted Air Conditioning, Refrigeration & Sheet Metal		
<u>New York City, The Buroughs, Westchester, Long Island</u>									
<u>MEVAKER ORGANIZATION,</u> <u>THE NORMAN</u> 619 Elvira Avenue Far Rockaway, NY 11691 212-327-6817	Metro NY, CT, PA.		X	Energy Technology Labs, Erickson Drain Cleaner, Fernco, Globe Fire Equipment, Hoover Uni- versal, Illinois Faucet, Kissler, Mill-Rose, Forc-A-Fix, Samar, Tridon.				X	8
<u>NET PLUMBING TOOL</u> <u>SALES, INC.</u> 26 Court St. Brooklyn, NY 11242 212-852-6373	Metro NY, N. N.J., L.I., Lower NY	X		General Wire Spring, G.T. Water Products, Hydromatic Pump/Marley Co., Jackel, Neptune Pump, S.J. Electro Systems.	X				5
<u>MORCO SALES, INC.</u> 350 Cantor Ave. Linden, N.J. 07036 201-925-8888	NJ, NY.		X	Aqua-Flo, BGP, Bootz, Eppo Pumps, Facetglas, Peerless Pottery, Polar Ware, Regency, Royal Seats, Sterling Faucet.				X	4
<u>NEAR & ASSOCIATES</u> <u>LTD., WM. K.</u> 95 Pondfield Road Bronxville, NY 10708 212-295-1409/ 201-569-2662/ 914-779-1181	Metro NY, NJ, Fairfield CT.	X		Alson, American Valve, Antrol, Beacon-Morris, Bemis, Cash Acme Valves, Filterite, In-Sink-Erator, Jade Controls, Keeney, Moer/Standadyne, Radiator Specialties, State Industries, Sterling Radiator, Thermasol, Zoeller Pump.				X	11
<u>NIBCO PREFERRED MFG., INC.</u> Bond St. Central Valley NY 10917 914-928-9411	12 N.E. States		X	NIBCO, Inc.				X	16
112 North 12 St. Brooklyn, NY 11211 212-387-5400				Empire Stoves, IDI, Middlefield, Stainless Steel Sink.					
<u>P.M. SALES, CO.</u> 214-10 Waters Edge Drive P.O. Box 528 Bayside, NY 11360 212-631-3933	Metro NY		X	CT. Stamping & Bending, Coast Foundry, U.S. Brass.				X	3
<u>PENNICO SALES, A.T., INC.</u> 5 Lincoln Dr. Kings Park NY 11754 516-724-4628	Metro NY			Conine, Bergen, Guardian Fire Equip., MCC Powers Process Controls, T-Drill, Teladyne-Laars.				X	
<u>PLATSKY COMPANY, INC.</u> 801 Willis Avenue Albertson NY 11507 212-364-2498 516-742-1212	Metro NY, Westchester, Rockland- Dutchess.	X		Bootz, Brasscraft, Elkhart Products, Eppo Pumps, Healey Brass, E.L. Mustoe & Son, Peerless Pottery, Robintech, U-Brand.				X	6
<u>RATHE ASSOCIATES, INC.</u> 271 Robbins Lane Byssset, NY 11791 516-433-8100 212-347-4747	Metro NY, LI, Lower NY	X		Armstrong Pumps, Continental, Shertrol, Flair, Hydrolevel, Hydrotherm, ITT Reznor, Ted Reed Ther- mal, Sanitary-Dash, Sterling.				X	6
<u>REINER SALES CO., INC.</u> 2109 Matthews Ave. Bronx, NY 10462 212-863-1333	Metro NY		X	American Machine, Beneke, Brugger, Camco, CNC Metal Flair, Heat Tuner, Industrial Petrolic, New York Solder, Oni, Savoy Brass, Scully Rubber, Valley Candle, Waynesboro Pipe, West Orange Brass.				X	4

MANUFACTURERS REPRESENTATIVES

Company Name, Address & Phone	Territory Covered	Warehousing		Lines	Industry Orientation Handles lines associated primarily with:				No. of Salesmen
		Yes	NO		Plumbing	Hydronic Heating	Warm Air Heating, Ducted Air Conditioning, Refrigeration & Sheet Metal	One or More of the Other Groups	
<u>New York City, The Burroughs, Westchester, Long Island</u>									
<u>RCF SALES, INC.</u> P.O. Box 1141 Flushing, NY 11354 212-359-2158/59/62	NYC, L.I., Westchester Fairfield- counties, NJ.	X		Elkhart Brass, Kinastock/ Fibersheen, Larsen's Cabinets, O-1/Schott- Kinax, Sunner Pipe Supports, Metrous.				X	3
<u>RUTHENBERG ASSOC., BUD</u> 104 Rushmore St. Westbury, NY 11590 Phone: ck. infor.	NYC, Nassau Westchester, N. NJ.	X		B-Line, Bradfore-White, Embassy, Flair, Peabody Barnes, Turbotorch, Universal Rundle, Web- stone.				X	5
<u>SALSBERY SALES CO. INC.</u> 33-09 37th Avenue L.I.C., NY 11101 212-786-8260	Metro NY, Nassau, Suffolk, Westchester, N. NJ.	X		Clamp-All, Crete Sleeves, Dupont Corian, Duriron, Jay R. Smith, Speakman, Stern Williams.				X	10
<u>SHAR ASSOC., INC. ROBT.</u> P.O. Box 329 Larchmont NY 10538 914-834-6600	Metro NY, L.I., NJ, West. Rockland.	X		Beneke, Elkey, Lab Resin, Microphor, Potter-Romer Fire Protection, Red-White Valve, T&S Brass & Bronze.				X	5
<u>STEARNS ASSOC., JOHN H.</u> P.O. Box 166 Main St. Mineola, NY 11501 516-431-4666	S. NY, NJ, N. PA. DE.		X	Dornvack Furnace & Foundry, General Filter, Mastercraft, Stully Signal, Wm. Steinen, Van Wert.			X		5
<u>SOMMER CO., MIKE</u> Box E Woodmere, NY 11598 516-295-0046	Metro NY, Nassau Suffolk Westchester		X	Canfield, Embassy, Franklin Machine, Thyssen Pipe & Tube, Utility.				X	2
<u>SWENSON-MALTER SALES, INC.</u> 12 Eagle Ln. Farmingdale, NY 11735 516-538-3757	Metro NY N. NJ.		X	Arfo Products, Carbon- rundum Filters, Berite Pump, Pyramid Indus. Rain Jet, Rockford- Eclipse, Union Brass & Metal.				X	3
<u>TANEN ASSOC., INC., PAUL</u> Box 35 Roslyn Heights, NY 11577 516-621-0823	NYC, L.I. West. N. NJ.		X	Alloy Piping Products, Eilon Thermoplastics, Mech, Nupek, Piping Products, Speedline/APP, Standard Fittings, Sunweld Fitting/Div. of APP, Texas Metal Works.				X	3
<u>TASH SALES CO., INC.</u> 25 Nancy St. W. Babylon, NY 11704 516-643-TASH	Metro NY	X		Ford Products, A.O. Smith, Sparco, Wood Industrial Prod.				X	5
<u>THT SALES CORP.</u> 843 Merrick Road Baldwin NY 11510 516-223-4000 212-520-1990	Metro NYC, L.I., Hudson Valley NY, N. NJ.	X		R.W. Beckett, Century, Heat Controller, Columbia Boiler, Erie Valves, Peerless, Thermal Concepts.				X	10
<u>UTILITY ENTERPRISES CO., INC.</u> 700 Main St. Westbury, NY 11590 516-997-6300	Metro NY, L.I.	X		Utility	X				2
<u>VIDEO SERVICE CO. INC.</u> 56-30 Maspeth Avenue Maspeth, NY 11378 212-894-8313	Metro NY	X		Air Temp, Carrier, Friedrich, General Electric, York.					10
<u>WALES-DARBY, INC.</u> 102 New South Road Hicksville, NY 11801 516-938-2600/895-0410 Telex 96-1465 1084 Rte. 22 W. Mountainside NJ 07092 201-654-5110	Metro NY, L.I., & Lower counties NY, N. NJ.	X		Anchor Brass, Barnes & Jones, Fairbanks Morse, Governale Ind., Hammond Valve, Hydor Tube & Foundry, Hersey Prod., Kerflex, Lochinvar Water Heater, MG Coupling, Modine, PACO, RPS Valve, Selector, Taco, Watson-McDaniel.				X	12

APPENDIX E-2

MANUFACTURERS REPRESENTATIVES

Company Name, Address & Phone	Territory Covered	Warehousing		Lines	Industry Orientation Handles lines associated primarily with:				No. of Salesmen
		Yes	NO		Plumbing	Hydronic Heating	Warm Air Heating, Ducted Air Conditioning, Refrigeration & Sheet Metal	One or More of the Other Groups	
<u>New York City, The Burroughs, Westchester, Long Island</u>									
<u>WALLACE-EANNACE ASSOC. INC.</u> 555 Fifth Avenue New York, New York 10017 50 Newton Road Plainview, NY 11803 779 Susquehanna Avenue Franklin Lakes, NJ 07417 212-490-0052/ 516-454-9300/ 201-891-9550	N. NJ, NYC Lower NY, L.I., West.	X		A.P.T., Bell & Gossett, Omline, Danfoss, Domes- tic Pump, Flexonics, Hoffman Specialty, O.C. Keckley, Lawler, Marshall- town Instruments, McDonnell & Miller, Noland Tanks, State Industries, Watts.				X	23
<u>WALSH SALES ASSOC. LTD.</u> 2188 Jackson Avenue Seaford, NY 11783 516-783-7800	NYC, Nassau, Suffolk, West., Putnam	X		American Dispenser, Benjamin, Indiana Brass, KBI, McGuire, Orion Industries, PHD, Sierra Fire, Equipment, Sunroc/Western, Symons, Tyler Pipe, Wade, Waugh.				X	4
<u>New York</u>									
<u>BAESTLEIN CO., RICHARD</u> P.O. Box 5174 Albany, NY 12205 518-489-5439	NYS, excl. NYC	X		Designer's Choice, M.W. Dunton, Elinger, Elkhart Brass, General Partitions, Gorton, Just, Larsen's, Marblecraft Products, McGuire, Pennco. Royal Brass, Spertzel, Symons, Waugh, Wonder King.	X				2
<u>BAKER ASSOCIATES, INC., J.R.</u> 6901 Herman Road Syracuse, NY 13209 315-638-2516	Central NYS	X		Aqueduct, Autoflow, Bard, Burnham, Omline, Coltrane, Gerlock, Gerand Engineering, Guardian Industries, Hase, JMC Energy, OERTLI, Paco Pumps, Polyflex, Powerflame, Rate Engineering, Sterling, Buscon Stacks, Ted Reed Thermal, Therman Engineering, Walton Laboratories.		X			2
<u>BLUNT ASSOCIATES, R.E.</u> 174 Belcoda Drive Rochester, NY 14617 716-266-1080	Upstate NYS		X	Grundfos Pumps, Haws Drinking Faucet, T&S Brass & Bronze.				X	1
<u>BRANLEY SALES AGENCY INC., W.A.</u> 1039 Monroe Avenue Rochester, NY 14620 716-244-7530/0496	NYS excl. metro NYC, Brie, Bradford, PA.		X	Capital, Cresline Plastic Pipe, Hitachi Metals of America, Phoenix Forge, The Plumbing Group, Speak- man, Waterman Machine, Wayne Home Equipment.				X	3

MANUFACTURERS REPRESENTATIVES

Company Name, Address & Phone	Territory Covered	Warehousing		Lines	Industry Orientation Handles lines associated primarily with:				No. of Salesmen
		Yes	No		Plumbing	Hydronic Heating	Warm Air Heating, Ducted Air Conditioning, Refrigeration & Sheet Metal	One or More of the Other Groups	
New York									
<u>BRESSEN, INC., MEYER</u> 733 Broadway Albany, NY 12207 518-465-0066	NYS excl. Metro NYC & Westchester, VT.	X		Alsons, Hootz, Filterite, Fluidmaster, Hercules Chemical, L.C.P. Plastics, Mor-flo, E.L. Mastee, Peerless heater, Pyramid Indus., Square "D", Sterling Faucet, ThermoSol, Wayne Home Equipment, Wood Industrial.				X	4
<u>BRIGGS ASSOCIATES</u> 128 Oxford Road New Hartford, NY 13413 315-732-3244	NYS except metro NY		X	American Metal, Auto- Flo, C&K Industries, Kendall Polyken, Lynn, Malco Products, Marco Products, Murray Corp.				X	2
<u>C&C MARKETING</u> 101 Louise St. Rochester NY 14606 716-326-1919	Upper NYS		X	American Pipe & Plastics, Anderson metals, Dornbeck, Grohe, Multi-fittings, F.E. Myers, Onni, Semi- noie Tubular, Smith Gates, ThermoSol/Homaco.				X	3
<u>CULLINS ASSOCIATES</u> 642 Kresg Road P.O. Box 253 Pittsford, NY 14534 716-248-2442	W. NYS		X	Hemis, Delta, In-Sink- Erator, Owens-Corning Fiberglass.				X	2
<u>DEALER SALES AGENCY INC.</u> 987 High St. Victor, NY 14564 716-924-3289	NYS excl. Metro NY & L.I.		X	Athens, Carborundum, Danforth, Genova, Lippert, Master Prod., Raychem.				X	4
<u>DEMARCO-MCCLEUNG ASSOC.</u> Box 396 Liverpool, NY 13088 315-451-5500	NYS excl. metro NY		X	American Valve, Argo Industries, Clayton Mark, ChloroGen Chemi- cal, Eastman/US Brass, Empire Stove, Ford Products, Keeney, Kinzee, Utsey, Valley Faucet.				X	3
<u>DISTRIBUTOR SERVICE, INC.</u> 6901 Herman Road Syracuse, NY 13209 315-635-7107/800-962-3200	Upstate NY		X	Brown Glas, Carlon, CT. Stamping & Bending, Efron, General Wire Spring, Greenfield, Liberty Pumps, Mansfield Sanitary, Radiator Specialty, U-Brand, Voltak.				X	3
<u>EASTERN HYDRONIC SPEC., INC.</u> 906 Niagara St. Buffalo, NY 14213 716-885-9225	W. & Central NYS	X		Ace Buehler, American Vicarb, Barnes & Jones, Beacon Morris, Osoline, Columbia Boiler, Fed- eral Pump, Humid-Aire, Kackley, PACO Pumps, Southeastern Hose, Sterling Radiator, Taco.		X			4
<u>ENGINEERED AIR DIV.</u> 2185 Fillmore Avenue Buffalo, NY 14214 716-836-4500/271-8130	W. NYS, N. PA.		X	Airstream, Amark, Brundage, Casco, Clow, Construction Spec., Continental Aire, Etko, Embassy, Envirofan Hastings, Hersey-Beece, Keflex, King, Nevco, Pate, Proco, Reco, Skidmore, Solaronics, Suacon, Syncroflo, Turbonics, Tuttle & Bailey, Valley Industries, Vulcan, Watson-McDaniel.				X	4

APPENDIX E-2

MANUFACTURERS REPRESENTATIVES

Company Name, Address & Phone	Territory Covered	Warehousing		Lines	Industry Orientation Handles lines associated primarily with:				No. of Salesmen
		Yes	No		Plumbing	Hydronic Heating	Warm Air Heating, Ducted Air Conditioning, Refrigeration & Sheet Metal	One or More of the Other Groups	
<u>New York</u>									
<u>PELZ, A.H.</u> Box 51 Colden, NY 14033 716-941-3298	W. NY, NW PA.		X					X	
<u>FITZ-AIR, INC.</u> 1271 Harlem Buffalo, NY 14206 716-893-3444	W. NYS, NW PA.		X	Progressive Equipment, Reypak, Roberts-Gordon Appliance, TETCO.				X	2
<u>GALLEY ENERGY LTD.</u> P.O. Box 7477 Rochester, NY 14615 716-254-2223	W. NY		X	Hydrotherm, IIT Reznor, Midco, RSS Systems, Rapid Engineering.				X	3
<u>GDAPER, INC.</u> P.O. Box 182 Clifton Park, NY 12065 518-877-7185	NYS, New England	X		Air Jet, ATCO, Century, Herrimodifier, Monarch, Mueller Brass, Robin- air, Trion, Vermette, Williams Furnace.				X	3
<u>HONE AGENCY, LLOYD</u> 448 Ontario St. Buffalo, NY 14207 716-873-1235	Upstate NY		X	Amerc, Energy Conserva- tion, Heat Timer, Honeywell Braukmann, Rhylich International, Ranco Industries, Vita- climate Control Systems.				X	2
<u>HYDRONIC SALES, INC.</u> 137 Skyview Terr. Syracuse, NY 13219 315-638-0402	Upstate NY		X	Danfoss, U.S. Stove, Utica Radiator, Van Wert.				X	2
<u>JACOBS & SONS, INC., W.P. L.</u> 2307 2 Street Schenectady, NY 12303 518-355-8781	N.E. NY, VT.	X		Flanders Filters, Flex- master, Glasfloss, Hastings Industries, Safe-air, Titus/Phil- lips Industries, United Sheet Metal, Vent Products.		X			2
<u>JOHN CO., WESLEY H.</u> Mountain Road Samsonville, NY 12476 914-657-8839	Upper NYS W. NY.		X	American, Coleman, Emuch, Jumbo, Lambro Industries.	X				1
<u>KNOLL CO., AARON A.</u> 470 Parker Avenue Buffalo, NY 14216 716-838-2772	NYS excl. metro NY, Erie PA.		X	B&K Industries, Bridge- port Brass, Wm. H. Harvey, Lavelle Indus., Olsonite, Sterling Sink, Teledyne Mono-Thane, Woodford.				X	2
<u>KOLSTAD ASSOCIATES, INC.</u> 875 Atlantic Avenue Rochester, NY 14609 716-288-2080; 716-834-1445 518-785-5654	NYS excl. metro NY, M. PA.	X		All American Metals, Aquarius Industries, B&A, Bradley, Bruner, Chicago Faucet, Church, Halsey-Taylor, Imperial Marble, Just, Leonard Valve, Mec-O-Matic, Mullford/Magna, Porta-Tools, Power Strut, Rawlplug, Stern-Williams.				X	8
<u>LE VALLEY MC LEED, INC.</u> 151 E. 5th Street Elmira, NY 14902 607-734-6163								X	30
<u>MANIER, INC., J.R.</u> 322 Kumber Road Syracuse, NY 13224 315-446-9533	Upstate NY		X	Anchor Brass, Aquarius, Automatic Valve, Basco, Cress, Berpure, Heat Extractor, Miami-Carvey, Michigan Furnace, Morca, Steinen, Wanda, Wheeler.				X	2

MANUFACTURERS REPRESENTATIVES

Company Name, Address & Phone	Territory Covered	Warehousing		Lines	Industry Orientation Handles lines associated primarily with:					No. of Salesmen
		Yes	No		Plumbing	Hydronic Heating	Warm Air Heating, Ducted Air Conditioning, Refrigeration & Sheet Metal	One or More of the Other Groups		
New York										
<u>MARBRIST SALES INC.</u> P.O. Box 215 Syracuse, NY 13209 315-488-2870	Central NYS	X		Chronomite Lab, Croker Standard, Flockhart Foundry, McGuire, Microphor, Murphy Door Bed, Persing, Sunroc, Symons Industries, Town & Country Plastics, Western Drinking Fountains.					X	2
<u>MARGRATTEN-NORRIS-MARTIN ASSOC.</u> P.O. Box 487 Newark, NY 14513 315-331-2829	All upper NYS and Erie, PA.	X		Anvil Products, Brass Craft, Charlotte Pipe, Bhdot Plastic Pipe, Permco, Gerber Plumbing Fixtures, Hays Fluid Controls, Reading Tube, Rectorseal, J.P. Ward.					X	3
<u>MC CRODY & SON, W.R.</u> Box 52 West Webster, NY 14580 716-671-3120	W. NY	X		Axeman Anderson Boilers, Hastings Industries, Interburners, Raypak Boilers, Thermo Prod.					X	2
<u>MINIC SALES, INC.</u> 1039 Monroe Avenue Rochester, NY 14620 716-442-0606	Upstate NY	X		Elkay, Pee & Mason, Josam, Maid-O-Mist, Mustee & Son, Paloma-Pak Boilers.					X	3
<u>MORCO SALES, INC.</u> 350 Cantor Avenue Linden, N.J. 07036 201-925-8888	NJ, metro NY, NY State	X		Representing the finest lines in the plumbing piping and heating industries.					X	5
<u>NEVIN & ASSOCIATES, INC. CHARLES</u> P.O. Box 56 34 S. Cayuga St. Union Springs, NY 13160 315-889-7757	NYS incl. metro NY, L.I., West., Rockland	X		American LaFrance, Elco Industries, LPS, Meta-bo Power Tools, Rule Industries, Universal Fastenings, Waterloo Industries, Wright Tool.						4
<u>NIBCO PREFERRED MFG. INC.</u> bond St. Central Valley, NY 10917 914-928-9411	12 NE. states	X		Nibco, Inc.					X	18
<u>NOROMARK, LTD.</u> 23 East Main St. Victor, NY 14564 716-924-2521	Upstate NY excl. metro NYC	X		Artistic Brass, Atlanta Stove Heating Products, Gaylan Oak Vanities, General Marble Vanities, Kinkead Bath Products, Sterling Hose Clamps, Triangle Medicine Cabinets, Waste King Food Waste Disposers.				X		3
<u>O'BRIEN CO., GERALD B.</u> Box 625, 2 Eberle Rd. Newtonville, NY 12128 518-785-1401	E. & Central NY, W. MA. W. VT.	X		Babcock-Davis, Elcom metal Products, Guardian Fire Equip., LeBaron Foundry, Neenah Foundry.	X					1
<u>ORON SALES ASSOCIATES</u> 88 Straley Avenue Buffalo, N.Y. 14211 716-893-1827	W. NYS	X		Burnham, Crane, King Refrigerator, McGuire, Swan Fiberglass, Symons.					X	2
<u>OLDACH, EDWARD C., INC.</u> 5555 Main St. Buffalo, NY 14221 716-634-0024	W. & Central NYS, N.W. PA.	X		Duriron, Elkay, Guardian Fire Equipment, Lochinvar Water Heaters, M.G. Coupling, Charles Parker, Sloan Valve, Zurn Industries.					X	2
<u>REPCO SALES, INC.</u> 2500 Brewerton Road Mattydale, NY 13211 315-454-4414	NYS excl. metro NY	X		Baneko, Coyne & Delany, Fiat Products, Elkay, Keystone, MCC Powers Process Controls, Met-par Steel Products.	X					2

APPENDIX E-2

MANUFACTURERS REPRESENTATIVES

Company Name, Address & Phone	Territory Covered	Warehousing		Lines	Industry Orientation Handles lines associated primarily with:				No. of Salesmen
		Yes	NO		Plumbing	Hydronic Heating	Warm Air Heating, Ducted Air Conditioning, Refrigeration & Sheet Metal	One or More of the Other Groups	
<u>NEW YORK</u>									
<u>ROBOD SPECIALTIES, INC.</u> 103 N. Lake Avenue Albany, NY 12206 518-463-6607	VT, W. MA, E. NY.	X		Bradley, Church Prod., Elkay, General Wire Spring, Sloan Valve.				X	4
<u>ROSENBERG ASSOCIATES, INC., L.</u> 56 Commerce Drive Rochester, NY 14623 716-334-2530	NYS excl. metro NY	X		Bradford-White, Cerro Copper, Chatham Brass, Franklin Brass, Jaclo, Jade Controls, Jameco Industries, Lee Brass, Polar Ware, Schual, Thermal Materials, Union Brass, U.S. Pipe & Foundry, Utility, Willard Lead Products, York Industries, Zoeller.				X	4
<u>SOHLLER CORP., GEORGE A.</u> 75 College Avenue Rochester, NY 14607 716-271-0535	NYS	X		Engineering Resources, Farr, Flexonics, Gris- wold, Gulf Valve, Vibration Eliminator.				X	4
<u>SCHMIDT ASSOCIATES</u> 10 Woodshire Ct. Ballston Lake, NY 12019 518-889-2078	NYS except metro NYC, NE states		X	Flomatic, Gerberit, Merrill, Presto Parts, Thetford, Webstone, Westomatic, Zipcote.				X	2
<u>SHAW INC., ALBERT W.</u> 527 Charlie Avenue Syracuse, NY 13209 315-488-5425	Central NY		X	Air Thera, Control Air, Delta Flo, Dynaforce, Fan Exchanger, Howden, Mars, Standard Fin Pipe, Tjernlund.			X		1
<u>SMITH, TED</u> Sunset Road RD 1 Rensselaer, NY 12144 518-286-2404	E. NY, VT		X	Barnes & Jones, Flexonics, Halsey Tay- lor, Indiana Seal, Josan, Speakman Brass, Swan Fiberglass, H.O. Trerice.				X	2
<u>SHANSON & ASSOC., J.W.</u> 3147 Delaware Avenue Buffalo, NY. 14217 716-877-6900	Upstate NY., PA.		X	Acme Fans, Aeronca/ Buensoc, Airthem, Barco, Computer Controls, Farr, Federal Pacific, Indeeco, Link Seals, Mammoth, Pipe Shields, Ric Mill, Semco, Standard Fin Tube, TSI, York.				X	8
<u>SYRACUSE THERMAL PROD. INC.</u> Box 398, 6750 Old Collamer E. Syracuse, NY. 13057 315-437-7321	Central New York		X	Alfa-Laval, American Standard, Bremen, Car- ver Pump, Coates Electric, Ebergen, Flexonics, Griswold Controls, ITT Bell & Gosset, ITT Domestic, ITT Hoffman, ITT Lawler, ITT McDonnell & Miller, Richmond Engineering, Thermo Tech, Weil Pump, John Wood.			X		5
<u>TOBIN CO., R.J.</u> PO Box 403 Clifton Park, NY 12065 518-877-5060	E. NY., VT., Berkshire County MA.		X	Coyne & Delany, Red- white Valve, Sunco, Tyler Pipe Industries, Wade.				X	1
<u>TWIN "D" ASSOCIATES</u> 465 Albany-Saker Road, PO Box 11-160 Loudonville, NY 12211 800-462-4400	Central & E. NYS.		X	Bemis, Delta Faucet, In- Sink-Drator, Kitz Valve, KRC-7.	X				3
<u>URELL INC.</u> Box 176 86 Coolidge Avenue Watertown, MA. 02172 617-923-9500	New England, Upstate NY.		X	ACV Dynatherm, Dunont Heat Saver, Elkhart Products, Kenco Products, Lasco Plastics, Martinson, Tanner, Trenton, Turbonics.				X	16

MANUFACTURERS REPRESENTATIVES

Company Name, Address & Phone	Territory Covered	Warehousing		Lines	Industry Orientation Handles lines associated primarily with:				No. of Salesmen
		Yes	No		Plumbing	Hydronic Heating	Warm Air Heating, Ducted Air Conditioning, Refrigeration & Sheet Metal	One or More of the Other Groups	
New York									
<u>VERCH, HAROLD C.</u> 606 Cherry Road Syracuse, NY. 13219 315-488-0000	Central & W. NYS.		X	Cash Valve, Eastern Foundry, Indiana Seal, Plastic Oddities, Precision Plumbing Products, Rockford Sanitary Systems, Sierra Fire Equipment.				X	1
<u>WALSH INC., JOSEPH A.</u> 3122 Grant Blvd. Syracuse, NY. 13208 315-474-1089	Upstate NY.	X		Duriron, Joann, Michigan Manger, Richmond Foundry, Sloan Valve.	X				3
<u>WATER TREATMENT ASSOC.</u> Box 367 Latham, NY. 12110 518-785-5654	Upstate NY. VT., N. PA.	X			X				3
<u>WEST & ASSOC., T.D.</u> Box 96 Henrietta, NY. 14667 716-482-5042	Upstate NY.	X		Aero Environmental, Ondine, Surgeonics, Tana...				X	1
<u>WMS SALES INC.</u> 160 Sugg Road Buffalo, NY. 14225 716-632-5790	Upstate NY. Eire, PA.	X		Acorn Engineering, B-Line Systems, Fiat Products, Hydromatic Pumps, O-I/Schott, Potter-Roemer, Powers Regulator, E P & C Valve Turbortorch, Watts Regulator.				X	5
<u>Z ASSOCIATES, GUS</u> 45 Colvin Avenue Albany, NY. 12206 518-489-5433	Upstate NY. NY., VT.		X	Amtrol, Danfoos, Duo- Matic, Hydrotherm, Midco Burners, New York Boiler, Thrush Products, United Shower Door.				X	3
New Jersey									
<u>ALTHERM, INC.</u> 255 Humphrey St. Englewood, NJ. 07631 212-795-7010 201-871-4400 800-526-0413	Metro NY., NJ.	X		Bock, Charlotte Pipe, Delta Faucet, Grundfos Rups, Utica Radiator				X	7
<u>AMANTE, LOMALTO & FOLK, INC.</u> R.D. 5, Box 496 Sussex, NJ. 07461 201-875-3127	Metro NY., No. NJ.	X		B-Line Systems, Bradford White, Embassy, Flair, Grohe-America, Universal Rundle, Webstone.				X	5
<u>ARCHERS SALES</u> PO Box 138 Spring Lake, NJ. 07762 201-449-7635	NJ.		X	Centra, Enerjet, ES Specialty, Hesaco Industries, Standard Fin-Pipe Radiator, Tripple "S" Specialties, Whitlam.				X	2
<u>ARCHITECTURAL- ENGINEERING SALES</u> PO Box 139 Wickatunk, NJ. 07765 201-566-0220	Metro NY., N. NJ.		X	Henco, T & C Pipe, Valve & Fittings, T & C Plastic Drain Co., Town & Country Plastics, Wolverine.				X	3
<u>ASSOCIATED AIR PRODUCTS</u> 168 S. Valley Road West Orange, NJ. 07052 201-736-4242	N. NJ.	X		Cambridge Filter, Carnes, Havens Cooling Tower, Koppers Sound Products, Roof Products & Systems, Safe-Air, Wirmold.				X	5
<u>BECKER MFGG. REPRIS.</u> Box 442 Old Bridge, NJ 08857 201-679-6576	N. NJ., Staten Island, NY.		X	Action Chemicals, Centco, I.W. Industries, Kitz Valve, Lovell Industries, Liberty Pumps, Mission Rubber, Spring House, X-Pando, Zin-Plas.				X	1

APPENDIX E-2

MANUFACTURERS REPRESENTATIVES

Company Name, Address & Phone	Territory Covered	Warehousing		Lines	Industry Orientation Handles lines associated primarily with:				Nc. of Salesmen
		Yes	No		Plumbing	Hydronic Heating	Warm Air Heating, Ducted Air Conditioning, Refrigeration & Sheet Metal	One or More of the Other Groups	
New Jersey									
<u>BELL SALES CO., INC. HARRY</u> PO Box 267 Fort Lee, NJ. 07024 201-791-2500	Metro NY., NJ.		X	DuPont Teflon Tape, Eagle Industries, Great Neck Saw, Green Garden, Lydall, O'Malley Valves, PK Tool, Sinkmaster, Wbedon Products.				X	5
<u>CALTO, INC.</u> 314 Lacey Drive New Milford, NJ. 07646 201-641-5550	USA, Canada, Europe	X		Atlas Minerals & Chemicals, Calfonex Products, Expando Seal Tools, Safe T-Grip Hammers, Visiball Lubricators.	X				40
<u>CAPPETO INC., ROCCO W.</u> 83 Hicatory Tavern Road Gillere, NJ. 07933 201-647-0591	NJ., NYC., LI., DE., CT., Orange & Rockland, NY.		X	Channellock, 4-In-One Screwdrivers, Kenyon, Sisco P/T Plugs, Tjernlund Products, Uniprise Sales.				X	2
<u>CONAN SALES COMPANY</u> Box 96 310 W. 1st. Avenue Roselle, NJ. 07203 201-245-4200 212-732-8019	Metro NY., N. NJ.		X	All American Products, Plumbers Woodwork, Reichert Stamping.	X				2
<u>CULLEN ASSOCIATES, HUGH</u> 3464 Bloomfield PO Box 2128 Ocean, NJ. 07712 201-531-5120	Metro NY., N. NJ	X		Fiberbasin, Hydro-Aerobics International, Weil Pump.	X				5
<u>DOLAN & TRAYNOR INC.</u> Box 1837 14 Circle Avenue Clifton, NJ. 07015 201-772-3500	N. NJ., Rockland City, NY.	X		Bradley, Cordley, DuPont-Corian, ITT Lewler, O-1/Schoit, PHD Hangers, Potter-Roemer, RAR Enterprises, Sinco Plastic Sleeves, Jay R. Smith, Speakman.	X				6
<u>EPEC SALES INC.</u> 700 Main Road Towaco, NJ. 07082 201-263-1200	N. NJ., Metro NYC Poughkeepsie, LI.	X		Dickson Recorders, Flo-Lok Valves, Flow-Tech, M & M Rego, Signet Scientific, Telnar, Veriflow.				X	3
<u>FELSER & CO., INC., ALEX</u> 5 Indian Run Scotch Plains, NJ. 07076 201-757-3250	N. NJ., N.E. Pa.,		X	Central Water Heater, Chatham Brass, Gorton Heating, Jameco Industries, Nemco Products, Silver King, Style-Rite of America.				X	3
<u>FORE-KAST SALES CO.</u> 1411 Memorial Drive Asbury Park, NJ. 07712 201-776-6265	N. NJ., Metro NY., LI.	X		Cherne Industries, 4-In-One Screwdrivers, Kirkhill, Plumbers Specialty, Specialty Products.	X				2
<u>FRIEDLAND & CO., M.</u> PO Box 224 Cliffside Park, NJ. 07010 201-662-1776	NY., NJ., Pa., New England, OH., WV., DC., MD.		X	Russel Pipe & Foundry.				X	12
<u>GEPCO SALES INC.</u> PO Box 256 Rancoc, NJ. 07446 201-327-8816	N. NJ., Metro NY. LI.		X	Astrol, Campbell, Chem-Tech International, Cresine Plastic Pipe, Martinson, Midwest Well Supply.	X				1
<u>H.V.A.C. EQUIPMENT SALES CORP.</u> 10 Spring Street Red Bank, NJ 07701 201-530-8410	N. NJ.		X	Check it Electronics, Climate Control, Dynelco, Energizer, Enerstat, Heat Trierer, Independent Energy, Trox America, Whitehall.			X		2

APPENDIX E-2

MANUFACTURERS REPRESENTATIVES

Company Name, Address & Phone	Territory Covered	Warehousing		Lines	Industry Orientation Handles lines associated primarily with:					No. of Salesmen
		Yes	No		Plumbing	Hydronic Heating	Warm Air Heating, Ducted Air Conditioning, Refrigeration & Sheet Metal	One or More of the Other Groups		
<u>New Jersey</u>										
HALL, KEN 7 Hickory Pl., U. Saddle River, NJ. 07458 201-327-0275	NYC, LI, NJ., E. PA.	X		Acme-Miami, Airfilco Industries, Climate Control, Danfos, ICO Rally, United Electric, Universal Enterprises.			X			1
HANSON & BLAKENEY PO Box 57 Rockelle Park, NJ 07662 201-845-9050	N. NJ., Seton Island, Rockland to Orange, NY.	X		Ford Products, General Fittings, JPI Plumbing Products, Maid-O-Mist, P.E. Myers, Pennco Industries, Phelps Dodge/ Lee, Willard Lead, Wood Industrial Products.				X		4
MITCHBEN, INC., C.R. 225 Belleville Avenue Bloomfield, NJ. 07003 201-743-9770	N. NJ., Rockland to Ulster, NY.	X		Aeroacoustic, Air Control Products, Air Filter, Breidert Fans, Ewel Steam Specialties, Humidair, Johnson Electric Controls, KHD Cabinet Heaters, LBC Cooling Towers, Modine, Standard Pin Pipe Radiator, United Air Filter, Vulcan Louvers, Witco Underground Insulation.				X		4
HYDROFLOW SALES CO. 12 Patricia Ct., Wayne, NJ. 07470 201-696-2625	N. NJ., Rockland to Sullivan NY.	X		Marlo				X		2
K W SALES 312 Linwood Avenue Ridgewood, NJ. 07450 201-444-6363	NJ., Metro NY.	X		Wolverine Brass Works.				X		1
LAVINE SALES 236 High Street Newark, NJ. 07102 201-642-8020	NY., NJ.	X		B & K Industries, Babbitt Development, Beacon Valves, Bergis Products, Dick Bros., Duracraft Plastics, Expert, Keaney, West Orange Brass, Wilkins Regulator, "X" Laboratories.				X		5
MAP SALES PO Box 2064 Clifton, NJ. 07013 201-881-0763	N. NJ., Metro NYC, LI	X		Air Jet/General Products, Baron Wire & Cable, Clecon/Atco Flex Ducts, Halstead Indus- trial Products, Leigh Grill, Registers & Vents, Thoratron Air Cleaners, Turbotorch, Union Ducts, Williams Furnaces.				X		1
RACK-ALLIED SALES CO., INC. 1012 Goffle Road Hawthorne, NJ. 07506 201-423-1101	N. NJ, NYC and lower counties, Nassau, Suffolk	X		Continental Pipe Products, Sherco, W. R. Grace, Guardian Equipment, Thermalink Elements, Watts Regulator, West Orange Brass.				X		7
MANUFACTURERS GENERAL SALES, INC. PO Box D 170 Algonquin Pkwy. Whippany, NJ 07981 201-386-1313	NJ., NY., PA., DE., New England	X		Catalytic Damper, Chambrik & Stone, Harper-Wyman, Martin Industries.			X			5

APPENDIX E-2

MANUFACTURERS REPRESENTATIVES

Company Name, Address & Phone	Territory Covered	Warehousing		Lines	Industry Orientation Handles lines associated primarily with:				No. of Salesmen
		Yes	No		Plumbing	Hydronic Heating	Warm Air Heating, Ducted Air Conditioning, Refrigeration & Sheet Metal	One or More of the Other Groups	
<u>New Jersey</u>									
<u>MITCHELL LOVE COMPANY</u> Whitemarsh Plaza PO Box 321 Plymouth Meeting, PA. 19462 215-828-6700	Central & South NJ.	X		A.K. Industries Basins, Aker Plastic, Eaton/ Dole Valve, Incoa Pipe Insulation, Peabody Barne Pumps, Picoma, Pittsburgh Nipples, Sanitary-Dash, Sweetapple Plastic Pipe, Tinicum Metal, Yardley Pipe.	X				6
<u>MORCO SALES INC.</u> 350 Cantor Avenue Linden, NJ. 07036 201-925-8888	NJ., Metro NY, NY State	X		Aqua-Flo, BGP, Bootz, Epo Pumps Facetglas, Peerless Pottery, Polar Ware, Regency, Royal Seats, Sterling Faucet.				X	4
<u>MISCO PREFERRED MFG. INC.</u> Bond Street Central Valley, NY 10917 914-928-9411	12 North- eastern States	X		MISCO, Inc.				X	18
<u>NOV-ELL SALES CORP.</u> 42 Prospect Street Midland Park, NJ. 07432 201-444-4140 201-444-2020	N. NJ.	X		Acme Brass, Gruner Brass Fittings, Highfield, Howell Metal, Rapetti Faucets, S. E. C., Skuttle, Valvmatic.				X	4
<u>PAYSON, ALLEN</u> 54 Burroughs Way PO Box 96 Maplewood, NJ. 07040 201-762-2063	N. NJ.	X		Aqua-Mist, Bufftech, Beckett/Irident, Danfoss Shower Valve, Greenfield, Jumbo, McGuire, Oatey, Plastic Trends, Royal Brass, Shoe-Taylor, Teledyne Ansonia.	X				2
<u>PRINCE, JOSEPH</u> 35 Academy Road Caldwell, NJ. 07006 201-228-0172	NJ., Lower NY. State, E. PA.		X	Allied Enterprises, Controlled Energy, Hot- Tech, Intelli-Tech, Ista Energy Systems Controls, Swathmore Enterprises, Van Wert.				X	1
<u>R. & J. SALES, INC.</u> 1533 Stuyvesant Avenue Union, NJ. 07083 201-964-5890	N. NJ. Rockland & Staten Island, NY.	X		Benjamin, Orion Fittings, Seekonk, Sierra Fire Equipment, T-Drill, Tyler Pipe, Wade Products.	X				2
<u>SALES ASSOCIATES</u> 1878 Springfield Ave. Maplewood, NJ. 07040-2593 201-762-0858	N. NJ.	X		Chicago Faucet, Just, Metcraft Securityware, Olsonite, A.O. Smith Specialties, Sunroc/ Western, Taylor Cultured Marble.	X				4
<u>SEGLAR PLBG. & HTG. SALES, P. E.</u> 26 W. McClellan Ave. Livingston, NJ. 07039 201-992-2554 201-992-2617	NJ., Staten Island, Brooklyn, LI, metro NYC.	X		Alson, Anderson Copper & Brass, APSCO of Indiana, Beaton & Corbin, Duro Crafts, Filtex/Metter, Kiasler, Olsonite, Silver King, Prier Brass.	X				3
<u>BOROKACH SALES</u> Box 291 Howell, NJ. 07731 201-367-8320	NJ.	X		Dallas Specialties, Francor Industries, King Brothers, Omni Filters, Plastic Oddities, Radiator Specialties, Sevco Brass.				X	2
<u>BUTUNG, W.A.</u> 299 Whiteoak Road Union, NJ. 07083 201-686-4376	N. NJ., NY counties of Orange, Rockland	X		Ace Engineering Heat Seal, Marco Products, Holaronics, William Furnace.				X	1

MANUFACTURERS REPRESENTATIVES

Company Name, Address & Phone	Territory Covered	Warehousing		Lines	Industry Orientation Handles lines associated primarily with:				No. of Salesmen
		Yes	NO		Plumbing	Hydronic Heating	Warm Air Heating, Ducted Air Conditioning, Refrigeration & Sheet Metal	One or More of the Other Groups	
New Jersey									
<u>SPEIGEL, SIDNEY</u> 1 Avon Drive PO Box 73 Springfield, NJ. 07081 201-376-8463	NJ.		X	Clover, Frost, Harris, Imperial Bolt, Jones, Sterline, J.P. Ward Foundries.	X				1
<u>SPRAITFORD SALES ASSOC.</u> 120 West 7 St. PO Box 1445 Plainfield, NJ. 07061 201-757-9121	NJ., Rockland County, NY.		X	Acorn Engineering, Cam Industries, Chicago Faucet (Export), Fee & Hess, Haws, Leonard Valve, Sigma Piping, Stem-Williams, Stoneman, Zurn Industries.				X	3
<u>TECHNICO</u> PO box 214 Elmwood Park, NJ. 07470 201-797-1665	N. NJ. Rockland to Ulster, NY.		X	Acme div. G & W, Acme Engineering Products, Applied Air Systems, Brasch, Contempo, Duo- Aire, Governair, International Environmental, Pure Steam, Temp-X-Changer, Testrol.			X		2
<u>THERMATIC INC.</u> 90 Rte. 23 Roverdale, NJ. 07457 201-838-8282	N. NJ.	X		Armstrong Pump, Drayton, Faborotech, Hispan, Illinois Steam Specialty, Josam, Milwaukee Valve, Repack Gas Boilers, Skidmore Pumps.				X	4
<u>THERMO</u> 81 19 Ave. Paterson, NJ. 07513-1499 201-523-0050	N. NJ.		X	Airchem, Des Champs Laboratories, Erie, E.P. Products, Floorlevel, Grundfos, Holby, Hydrothem, ITT Reznor, Liskey Aire, Solar-flo, T.E.C., Thermal Pipe, Weather-Rite, Zip-Cote.		X			6
<u>VAN KAMPEN, B.C.</u> 235 Van Houten Avenue Wyckoff, NJ. 07481 201-891-2266	N. NJ.		X	Lambert heaters			X		1
<u>"VIRGENS" AGENCY, THE</u> PO Box 2191 So. Hackensack, NJ. 07606 201-343-0600	N. NJ., metro NYC and lower counties, E. PA.		X	Milwaukee Valve, William E. Williams Valve, TL- Certified Ball Valves, Larkin Fittings-Div. Joy Anvil-forged Steel Fittings-Valves, Bolt- Pak, Lavalco, Bradley/ Safety Fixtures, Michigan Hanger.				X	3
<u>WALES-DARBY INC.</u> 102 New South Road Hicksville, NJ. 11801 516-938-2600/895-0410 Telex: 96-1465 1084 Rte. 22 W. Mountainside, NJ. 07092 201-654-5100	Metro NY., & lower counties NY., N. NJ.		X	Anchor Brass, Barnes & Jones, Fairbanks Morse, Governale Industries, Hammond Valve, Haydon Tube & Foundry, Hersey Products, Reflex, Lochinvar Water Heater, M G Coupling, Modine, PACD, R P & C Valve, Selector, Taco, Watson- McDaniel.				X	12
<u>WALLACE-DANNACE ASSOCIATES, INC.</u> 555 Fifth Avenue New York, NY. 10017 50 Newtown Road Plainview, NY 11803 212-490-0052; 516-454-9300 779 Susquehanna Ave. Franklin Lakes, NJ. 07417 201-891-9550	N. NJ., lower NY., LI., Westchester NYC.		X	Bell & Gossett, Camline, Danfoss, Domestic Pump, Flexonics, Hoffman Specialty, O.C. Kackley, Lawler, Marshalltown Instruments, McDonnell & Miller, Noland Tanks, Stata Industries, Watts Fluidair.				X	4

APPENDIX E-2

MANUFACTURERS REPRESENTATIVES

Company Name, Address & Phone	Territory Covered	Warehousing		Lines	Industry Orientation Handles lines associated primarily with:				No. of Salesmen
		Yes	NO		Plumbing	Hydronic Heating	Warm Air Heating, Ducted Air Conditioning, Refrigeration & Sheet Metal	One or More of the Other Groups	
<u>New Jersey</u>									
WALLIN ASSOC., EDWIN A. 364 Stuart Pl. New Milford, NJ. 07647 201-261-4128	NJ. Staten Island, NY.	X		Aetek, Bayonne Nipple, Holyoke, Pectorseal, Richmond Foundry, Wm. Steinen, R.D. Werner.				X	2
WARD-KAHN CO. 7 Franklin Terr. South Orange, NJ. 07079 201-763-1420	N. NJ., Rockland, NY.	X		American Valve, Bemis, Bow Solder, Eastman Supplies, Griffin Pipe, Lambro Industries, Mordonia, Oest, Valley Faucet, Wheeling Machine Products.				X	3
MASON INC., ALEX J. PO Box 1 Rover Edge, NJ. 07661 201-265-1265	N. NJ.	X		Malco Airconditioning & Heating, Tibex Hand Tools.			X		1
WHEELER & WILLIAMS SALES, INC. PO Box 403 Martinsville, NJ. 08836 201-444-8575	NJ., S.E. NY.	X		Afrco Products, Anchor Brass, Anvil Products, Canco, Clayton Mark, Ehdot Industries, Hydro- Flex, Michigan Hanger, S.O.S. Products, Spears, #Triangle/PWC, Wbl-Rich.				X	3
<u>Mid-Atlantic</u>									
ABRAMS, JACK W. 408 Society Hill Cherry Hill, NJ. 08003 201-742-8205	E. PA., S. NJ., DE., MD.	X		Central Brass	X				2
ALLIED SALES CORP. PO Box 3146 Catonsville, MD. 21228 301-465-8088	E. PA., S. NJ., MD., DE., VA., DC., E. NC.	X		Cole-Sewell, Cox Heat Tapes, Mephisto Tool, Thermalink.	X				4
ALT CO., INC. LEE 2230 Clements Avenue Pennsauken, NJ 08110 609-662-1054	E. PA., S. NJ., DE., MD., DC.	X		Acetylene Supply, American Air Filter, Arfco Products, Bayonne Nipple, Beacon Valve, Can-Tex Industries, Coast Foundry, M.W. Dunton, Hindley, Kinkead Industries, Lapco Industries, Shock, Waywick, Zin-Plas.				X	3
ALYAN CORP. L.J. 303 S. 69th St. Upper Darby, PA. 19082 215-352-9000	E. PA., S. NJ., DE.	X		Ace Tank, Alyan Pumps, Bpo Cornell, Holby Valves, O.C. Keckley, Marlow Pumps, Neptune Meter, Peabody Barnes, Pneumercator Tank Gauges, Resistoflex Pump Connectors, Taco Pumps, Grand Venturis Flow Measurement, John Wood Tanks, Xeroes Fiberglass Oil Tanks.				X	5
ARDEN SALES ASSOCIATES INC. PO Box 832 King of Prussia, PA 19406 215-525-7672	E. PA., S. NJ., DE., MD., DC., metro VA.	X		CDC Chemical, Clow/Water Management Div., Dura- last Products, Energy Conservation, Flair, Goss, Hersey (BEEDU) Products, Jade Controls.				X	4

APPENDIX E-2

MANUFACTURERS REPRESENTATIVES

Company Name, Address & Phone	Territory Covered	Warehousing		Lines	Industry Orientation Handles lines associated primarily with:				No. of Salesmen
		Yes	No		Plumbing	Hydronic Heating	Warm Air Heating, Ducted Air Conditioning, Refrigeration & Sheet Metal	One or More of the Other Groups	
<u>Mid-Atlantic</u>									
<u>ARNOLD SALES CO.</u> Box 219 Arlington, PA. 19001 215-886-2200	E. PA., S. NJ., DC., VA., MD., DC.		X	American Valve, American Whirlpool, Oasco Brass, Facetglas, Keeney, Lead Fabricators, Steamist, Therma-Cel, U.S. Brass, Waste King.				X	5
<u>ASSOCIATED MARKETING</u> Ridge & Leigh Avenue Philadelphia, PA. 19132 215-227-6200	S.E. PA., S. NJ., DC., MD., DC.		X	Chatham Brass, Colton- Wartalla, C.P. Industries, Flo Control, General Wire Spring, Jameco Industries, Mission Rubber, Ondine Personal Showers, Seekonk, S.O.S. Products, Spears, Tanner, Wilkins Regulator.				X	5
<u>ATLANTIC L/S SALES, INC.</u> 511 Old Lancaster Ave. Bryn. PA. 19312 215-647-7090	E. PA., S. NJ., DC., MD., DC.		X	American Machine, Commercial Filters, Danfoss, Kane Inter- national, King Bros., Little Giant Pump, Polycel/Grace, Related Products, Scully Rubber, Shellback Pump, Spring House Specialty	X				2
<u>BMC MANUFACTURERS REPS., INC.</u> Box 977, RD 1 Reading, PA. 19607 215-775-2001 215-544-6022	E. PA., S. NJ., DC.		X	Beneke, Clamette, Efron of PA., Buns Metal, Just, Portrait Kitchens, Prior Brass, Slocomb Plastic Pipe, Supreme Products, Teledyne Ansonia, U-Brand, XL Brass.				X	4
<u>BALDWIN CO., INC., H.E.</u> 6010 Corewood Ln. Bethesda, MD. 20816 301-229-1646	MD., VA., DC.		X	Eastern Foundry, Moldex Seats, Mueller Steam Specialty.				X	2
<u>BARNARD ASSOCIATES, INC.</u> R.U. 9304 Rock Meadow Ellicott City, MD. 21043 301-621-4299 Baltimore 301-465-8213	MD., VA., DC.		X	Argo Industries, Beaton & Cortin, Cash Valve, Church Seat, Keystone Shower Door, Leonard Valve, Resources Con- servation, Teledyne- Ansonia, Town & Country Plastics, Universal Rundle, Whiloughby Industries.	X				2
<u>BALTZ ASSOCIATE, RALPH R.</u> 143 Filford Road Somerville, NJ. 08083 609-783-8898	E. PA., S. NJ., DC., MD., DC., N. VA.		X	A&B Epoxy, Almar Hand Showers, Bathroom Jewelry, CRP beacon, Cloroben Chemical, Deflecto, 4-In-1 Screwdrivers, Gelgloss, Plandseal Caulking, Metalics, National Seat, Novi American, Sentinel Pump, West Orange Brass.				X	2
<u>BAY DISTRIBUTING CO., INC.</u> 1432 Front Avenue Lutherville, MD. 21093 301-825-6616	E. MD., DC., VA., DC.		X	Armstrong Pumps, Bay Controls, Brasco, Cooper Valve, Filtrine, General Valve, Hols Rubber, Myfore-Wells, Hubbell/Electric Heaters, Hyspen Precision Products, Keckley, Lunitorque, Marvin Valve, PVI Industries, Resun, Rockford Sanitary Systems, Saunder, Speak- man, Sperzel, Tec Valve, Texteam, WCM, Div. of CAF Industries, Water Guard Controls.				X	5

APPENDIX E-2

MANUFACTURERS REPRESENTATIVES

Company Name, Address & Phone	Territory Covered	Warehousing		Lines	Industry Orientation Handles lines associated primarily with:				No. of Salesmen	
		Yes	No		Plumbing	Hydronic Heating	Warm Air Heating, Ducted Air Conditioning, Refrigeration & Sheet Metal	One or More of the Other Groups		
Mid-Atlantic										
<u>BEACO INC.</u> 771 Ellsworth Drive Silver Spring, MD. 20910 301-587-6644	DC., E. MD., N. VA.	X		Beacon Valves, Bridgeport Brass, Lansdale Mipple, Matco Products, Plumbers' Woodwork, Polar Ware, Rectorseal, Union Brass & Metal.					X	1
<u>BITZER CO., R.D.</u> 1330 Willow Ave. Philadelphia, PA. 19126 215-224-2112	E. PA., S. NJ., DE.	X		ITT Bell & Gossett, ITT Domestic Pump, ITT Hoffman Specialty, ITT Lawler, ITT McDonnell & Miller, ITT Pneumatic.					X	10
<u>BLANKIN EQUIPMENT CORP.</u> 34 St. & Indiana Philadelphia, PA. 19132 215-229-7400	E. PA., S. NJ., DE.	X		Airthera, Barnes & Jones, Car-Mon, Economy, Delaval, Hydrolevel, Klinger Valves, Mueller, New England, Sarco, Sav-A-Them, Van Packer, Watson McDaniel, White Rodgers.					X	7
<u>BRADLEY-SCIOCCHETTI INC.</u> 705 Moore Station Indust. Park Prospect Park, PA. 19076 215-532-5373	NJ., DE., PA.		X	Cain, Cleveland Controls, Detection System, Power-Flame, Tour and Anderson, Whitty.					X	3
<u>BRENNAN INC., JOHN F.</u> 5233 Oxford Avenue Philadelphia, PA. 19124 215-831-9595	E. PA., S. NJ., DE.	X		American Dispenser, Laboratory Fume Hood, Jamestown Metal.	X					6
<u>BURNICK & WALTON SALES, INC.</u> Box 423, N. Warren Ave. Malver, PA. 19355 215-644-9319	PA., S. NJ., DE., E. shore MD., E. VA.	X		Adams, Beacon Morris, B-Line Systems, Danfoss, Duo-Matic, Multi-Fuel Furnaces, Floor Level Baseboard, Heat Controller, Hydrotherm, Wonder King Chemical, Zip Cote Pipe Insulation.					X	6
<u>BURNS ASSOCIATES, INC.</u> 1521 Ritchie Hwy. Arnold, MD. 21012 301-974-0123 301-261-2216	MD., DE., N. VA.		X	Delta Faucet, Durion, Olsonite, PGL, Richmond Foundry.					X	3
<u>CATHELL ASSOCIATES INC., W.E.</u> 1206 Goucher Blvd. PO Box 19096 Towson, MD. 21204 301-321-7990	MD., DC., VA., DE.		X	Boetz Plumbing Fixtures, Frost, Maid-O-Mist, Fearless Pottery, Rapid Fit Enterprises, Specialty Products, Swan, Triangle-PWC, U.S. Brass.					X	3
<u>CENTRAL SALES, INC.</u> 4811 Market Drive Newport News, VA. 23607 804-244-3333	MD., DC., VA.		X						X	3
<u>CLARK ASSOCIATES, JOHN F.</u> 450 Colwell Ln. Conahocken, PA 19428 215-828-8090	E. PA., S. NJ., DE., MD., VA., DC	X		MuPak Ockum, Reading Industries, Wood Industrial Products.					X	3
<u>CLENDENNING CO., J.R.</u> PO Box 127 Bridgeport, PA. 19405 212-277-6480	E. PA., S. NJ., DE., MD., VA.	X		Bufftech, Colonial Engineering, Febco Sales, Flomatic, Hayward, Mitachi, J.P.I. Plumbing Products, Kitz Valve, Lee Brass, Parr Plastics, PCI Industries, Plastic Trends, Sanymetal, Uni-Flange.					X	4

MANUFACTURERS REPRESENTATIVES

Company Name, Address & Phone	Territory Covered	Warehousing		Lines	Industry Orientation Handles lines associated primarily with:					No. of Salesmen
		Yes	No		Plumbing	Hydronic Heating	Warm Air Heating, Ducted Air Conditioning, Refrigeration & Sheet Metal	One or More of the Other Groups		
Mid-Atlantic										
<u>COPE-GARDELL ASSOCIATES, INC.</u> 711 Irish Hill Road PO Box 39 Bunnemeade, NJ. 08078 215-WA3-3045 609-WA3-3045	Middle Atlantic	X		Acme National Refrigeration, Bridgeport Brass, Elkay, Lansdale Nipple, Richmond Foundry, Zoeller.	X					3
<u>DERBYSHIRE, MACK AND MORGAN, INC.</u> 302 Industrial Hwy. Essington, PA. 19029 215-521-1778 215-729-6878	E. PA., S. NJ., DE., MD., DC.	X		Amflo Products, Century Brass Works, Kunkle Valve, Telasco Industries, U.S. Gauge.						3
<u>DISTRIBUTOR ASSOCIATES, INC.</u> 2828 Fiddlers Green Road Lancaster, PA. 17601 717-569-8835	E. PA., S. NJ., DE., MD.		X	Herd, Benjamin, Bremen Glass, Continental Regiser, Envirofan Systems, Heasco Industries, Pro Jet Chimney, Tencor Heaters, Wiremold, Zone Air.					X	2
<u>DUMART CO.</u> 400 K. Southlake Blvd. Richmond, VA. 23236 804-379-0150	MD., VA., WASH. DC., W. VA.		X	Aqua Glass, Besis, Bradford-White, Central Brass, Griffin Pipe, Jones, Mansfield Plumbing Products, Marco Products.	X					3
<u>DWYER CO. INC., E.J.</u> 809 K Barewood Ct. Linthicum, MD. 21090 301-636-5820 301/261-1075	MD., DC., N. VA., DE.	X		Bradley, Chicago Faucet, Coyne & Delany, Fulflo Filters, Josam, F.E. Myers, Powers, Weben/Jarco.	X					4
<u>EFKAY SALES & ASSOCIATES</u> 408 Silver Hill Road Cherry Hill, NJ. 08002 609-667-6368 609-667-2266	E. PA., S. NJ., MD., DE., DC.	X		Holyoke Heater, Jaclo, Lavelle Rubber, Liberty Pumps.	X					3
<u>EKLOF & ASSOCIATES INC.</u> HARRY 3401 Pennay Drive Lundover, MD. 20785 301-772-1700	MD., VA., DC., DE.	X		Amtrol, Elkhart, Hercules Chemical, Hydrotherm, Kinkead, Lasco, National Pipe, Sterling, Tait, Trojan, Molding.					X	6
<u>ELCO SALES</u> PO Box 11289 Elkins Park, PA. 19117 215-242-5871	E. PA., S. NJ., DE., MD., DC., N. VA.,		X	Aqua Flo, Drainage Industries, E.S. Specialty, Globe Fire Equipment, Jones Sales, Hoover Universal, Illinois Faucet, D'Malley Valve, Samar, Tridon.					X	3
<u>ELLSTROM & ASSOCIATES, JOHN R.</u> PO Box 288 Collegeville, PA. 19426 215-478-7744	E. PA., S. NJ., DE. E. shore of MD.	X		Alton, Century Engineering, Doucette Industries, Fiaht Products, Hubbell & McKinnies, Magi Coll, Marlo Coll/Nuclear Cooling, McCormick Engineering, Precision Heat Exchanger.				X		3
<u>EQUIPMENT SALES CO.</u> Newset Road West Chester, PA. 19380 215-793-1005	E. PA., S. NJ., DE., MD., DC., VA.		X						X	5
<u>ETC SALES, INC.</u> 638 Lancaster Avenue PO Box 235 Paoli, PA. 19301 215-296-3527	E. PA., NJ., DE., MD., DC., VA.	X		Crown Electrodes & Terminals, Fel-Pro Industrial Chemicals, IPC Chemicals, Jan-Air Blowers, Monarch Burner Nozzles, Webeter Pumps & Transformers.					X	3

MANUFACTURERS REPRESENTATIVES

Company Name, Address & Phone	Territory Covered	Warehousing		Lines	Industry Orientation Handles lines associated primarily with:				No. of Salesmen
		Yes	No		Plumbing	Hydronic Heating	Warm Air Heating, Ducted Air Conditioning, Refrigeration & Sheet Metal	One or More of the Other Groups	
Mid-Atlantic									
<u>FEHR INC., D.A.</u> Box 89 Friedensburg, PA. 17933 717-739-4422	PA., DE., MD., NJ., VA., WV., NY.	X		Bagdad Plastics, Bristol Products, Cal Am, Goodall Rubber, Industrial Polychemical, Keystone Plastics, Merrill, Polar Ware, R&G Sloane, Sioux Chief, Vassallo, Watco Plastics, Wayne Home Equipment.				X	-10
<u>GOLDSTEIN CO., E.</u> 1802 Tustin St. Philadelphia, PA. 19152 215-742-0149	E. PA., S. NJ., DE., MD., DC.		X	Anderson Copper & Brass, Bramac, Ebinger, Field Control, Heat Seal, Lobb Humidifier, Myco Products.				X	2
<u>GRAY ASSOCIATES, INC.</u> WILLIAM B. 201-11 E. Venango PO Box 14711 Philadelphia, PA. 19134 215-739-3355	E. PA., S. NJ., DE.		X	Boetz Plumbing Fixtures Dura-Vent, Lyons Industries, Never-Leak Roof Flanges, Peerless Fixtures, Swan, Taylor Industries, Unarco- Home Products, Union Brass & Metal, R.D. Werner, Zenith Products.				X	3
<u>GRIFFITH MFG. REP.</u> GENE A. 69 Tulip Ct. Shillington, PA. 19607 215-777-9794	Central & E. PA.		X	Radiator Specialty.	X				1
<u>GROTHAUS SALES INC.</u> Box 1150 Bryn Mawr, PA. 19010 215-527-8560	E. PA., S. NJ., DE.		X	Aquarius, Brass Craft, Church Seat, Clayton Mark, Cresine Plastics, Fulflo Commercial Fil- ters, Jones.				X	2
<u>GROTT & CO., FRANK S.</u> 7525 Belair Road Baltimore, MD. 21236 301-668-8550	MD., DC., VA.		X	Bard, Chelsea Fans, Easy Heat Wirekraft, Emerson-Chromalox, Miniveil Air Curtains, Rittenhouse/Pryne/ Emerson.			X		3
<u>H & H SALES</u> 129 Sandstone Drive Willow Street, PA. 17584 717-464-4540	E. PA., MD., DE., S. NJ., N. VA.		X	Astro-Vac, Atlantic Ultraviolet, Gast, General Ionics, Treatment Technologies, Vacu-Maid.					2
<u>HAYES ASSOCIATES</u> PO Box 10980 Baltimore, MD. 21234 301-882-6766	MD., S. DE.		X	Esport, Michigan Furnace (Effikal), Stern- Williams, Sunroc, Thermonic, Western Drinking Fountain, Zurn Industries/Flushtrol.				X	1
<u>HAYMAN & CARPENTER ASSOC. INC.</u> 1864 E. Marlton Pike OFC 25 Cherry Hill, NJ. 08003-2092 215-331-5800 609-424-2855	E. PA., S. NJ., DE., MD., DC.		X	American Metal, Auto-Flo, Chicago Specialty/Wrightway, Dearborn Brass, Janitrol/Div. Ted Reed Thermal, Louisville Tin & Stove, Malco Tools, E.L. Maste, Robert, Turner.				X	3
<u>KENNY-MC LAREN INC.</u> 3512 Billiger Road Montingdon Valley, PA. 19006 215-947-0850	E. PA., S. N.J., DE.		X	Bowie, Blue Ridge Pipe & Nipple, Greenfield, Sterling Faucet.				X	3
<u>NETZLER, JOHN F.</u> J Forage Ln. Cherry Hill, NJ. 08003 609-424-1348	E. PA., S. NJ., DE.		X	Ace Wire Brush, Anderson Copper & Brass, Indiana Brass, Industrial Petrolac, Mastercraft Industries, State Wire & Cable, Wm. Steinen.				X	1

MANUFACTURERS REPRESENTATIVES

Company Name, Address & Phone	Territory Covered	Warehousing		Lines	Industry Orientation Handles lines associated primarily with:				No. of Salesmen
		Yes	No		Plumbing	Hydronic Heating	Warm Air Heating, Ducted Air Conditioning, Refrigeration & Sheet Metal	One or More of the Other Groups	
<u>Mid-Atlantic</u>									
<u>HILDEBRAND CO., JOSEPH C.</u> 613 Nottingham Road Baltimore, MD. 21229 301-566-1822	MD., DE., DC.	X		American Brass, Connecticut Stamping & Bending, Flexible Fabricators, Foamedge, Greenfield, Kuhns, Johnson Abrasives, Murray, Royal Seats, U.S. Pipe & Foundry.				X	2
<u>IZBICKI & ASSOCIATES, ED</u> 21 N. Montford Avenue Baltimore, MD. 21224 301-732-4960	MD., DE.	X		Gas Conversion Burners, Hydronic Heating, Space Heaters, Tools, Plumbing Specialties.				X	3
<u>JOHNSON ASSOCIATES, BILL</u> 2-5 Warrior Road Drexel Hill, PA. 19026 215-446-4723	E. PA., S. NJ., DE.	X		Canova, "J" Hook Industries, Raychem, Woodford.				X	2
<u>JORDAN SALES INC.</u> 9520 Lee Highway Fairfax, VA. 22031 703-352-1440	MD., DC., N. VA.	X		Aquarius, Cash-Acme, M & H Products, In-Sink- Erator, JPI Plumbing Products.				X	1
<u>K-L-B, INC.</u> 23 Walker Avenue Suite 205 Baltimore, MD. 21208 301-486-7034	DC., MD., VA., parts of WV.	X		Aquaent, Bally Case & Cooler, Dean Industries, Flexstrip, Holman Group, Midco International, Normandie, Progressive, Shelley.			X		4
<u>KFVOC CO., THE</u> 320 Woodland Downtown, PA. 19335 215-269-5459 301-797-7491	NJ., PA., MD., DE., VA., WV.	X		Engelhard-Silvaloy Pro- ducts, Gem Products, Johnson Metal Hose, Standard Refrigeration, TIF Instruments.			X		2
<u>KIELY ASSOC., INC.</u> PO Box 245 Lansdale, PA. 19446 215-362-0521 215-855-7771	E. PA., S. NJ., DE., MD., DC., VA.	X		Beckett, Coleman, Erie, France, Hamilton-Kent, Mitco, New York Steel Boiler, Scully Signal, Sparco, Sterling Radi- ator, Tringle Tube, Vermette Machine.			X		4
<u>KING MARKETING, INC.</u> 304 Montgomery St. Suite 2B Laurel, MD 20707 301-953-1620	S. DE., MD., E. WV., DC., N. VA.	X		Danfoss, Fairbanks Morse Fire Pumps, Guardian Fire Equipment, Haws Drinking Faucet, Micro- phor, Neptune Water Meter, Penn Construction Industries, A.O. Smith, Zurn Industries/Fluehtrul Div.				X	2
<u>KROBERGER INC., WM. C.</u> 2080 E. Dauphin St. Philadelphia, PA. 19125 215-739-6340	Phila. E. PA., V. PA., S. NJ., DE.	X		Elkhert Products, Oatey, Trenton Pipe Nipple.				X	4
<u>KURTZ CO., M.E.</u> 20 E. 7 Street Pottstown, PA. 19464 215-323-6090	E. PA., NJ., DE., MD., NY.	X		Master Water Conditioner, Tanner.				X	2
<u>L & R ASSOCIATES, INC.</u> 1919 Main & Park West Point, PA. 19486 215-699-3592 215-643-3666	E. PA., S. NJ., DE., MD., D.C.	X		Amark, Amtrol, Bruner, Clamp-All, Clow/Wo. Hager, I.T.S. Keflex, Mac-OMatic, Midco International, Noble, Peerless Heater, Pressure Vessels, Ravenco, Tjernlund Products.				X	6

MANUFACTURERS REPRESENTATIVES

Company Name, Address & Phone	Territory Covered	Warehousing		Lines	Industry Orientation Handles lines associated primarily with:				No. of Salesmen
		Yes	No		Plumbing	Hydronic Heating	Warm Air Heating, Ducted Air Conditioning, Refrigeration & Sheet Metal	One or More of the Other Groups	
<u>Mid-Atlantic</u>									
<u>LITE-AIR PRODUCTS</u> 5 N. Cannon Avenue Landsdale, PA. 19446 215-855-9538	E. PA., S. NJ., DE.	X		Acme, Engineering, American Warming & Vent, Brundage, Cleveflex, KentMoore, Metalbestos, Pate, Peabody Spunstrand, Phillips-Aire, Titus.			X		9
<u>MANUFACTURER'S SALES</u> & DIST. CO. 4415 N. Phillips St. Philadelphia, PA. 19140 215-455-5700	E. PA., S. NJ., DE., MD., DC.	X		Auburn Brass, Jumbo, Kinzee Industries, Leisure Steam, Monarch Metal Products, Norca, Pace Industries, Pearl Baths, Swanson, Vance Industries.				X	3
<u>MARTIN CO., INC., JAMES</u> Union Hill Bldg. W. Conshohocken, PA. 19428 215-825-6920	E. PA., S. NJ., DE.		X	Coyne & Delany, Cherne, Merlo, Metcraft, Multi- Fittings, Spersel, Stern- Williams, T-Drill, Tyler, Wade.	X				3
<u>MIDDLE ATLANTIC MARKETING</u> 845 Lilac Ln. Reading, PA. 19606 215-582-8062	N. E. PA., NJ., DE., MD.		X	Aqua Treatment Service, Crosstech Torches, Equipment & Control Sales, General Regulator, Virginia S.S. Pipe Nipple.				X	2
<u>MILLER-STROH ASSOCIATES</u> 1425 Rhoades Dr. Huntington Valley, PA. 19006 215-947-3363	E. PA., S. NJ., DE.		X	ABS Pumps, Frost Co., Wm. H. Harvey, Mansfield Plumbing Products, Olsonite.				X	2
<u>MUCHA CO. INC., STEVE</u> 7918 Corbett Road Pennsauken, NJ. 08109 609-665-5322	Phila- training area		X	Air Monitor, Energetic, Science, King Air Cur- tain, Parametrics, R-M Air Blenders, Vaportex.				X	2
<u>LAMP ENGINEERING CO., THE</u> 105 W. Jopps Road Baltimore, MD. 21204 301-321-0525	MD., Adjacent Counties in WV., DE.	X		Airtemp, Applied Machinery, Airtherm, Brundage, E.K. Campbell, Combustion Research, Delta-Flo, Detroit Stoker, Federal Pacific Electric, Flexonics, Industrial Air, Kewanee Boiler, P.M. Lattner, Louvers & Dampers, Medro Systems, Peerless Heater, Pipe Shields, Power Line Fan, Savonair, Slant/Fin, Stacks, Sternvent, Twin City Fan & Blower.			X		5
<u>LATCHAW, MONTGOMERY</u> & PECK, INC. 166 Penna. Ave. Malvern, PA. 19355 215-647-4640	E. PA., S. NJ., DE., MD., DC., VA.	X		Brok, Camco, Campbell, Chem-Tech International, Filterite, Martell, Hydro-O-Matic, Ideal, Jackel, Lake Chemical, Marco Products, Martinson, S.J. Electro, Structural Fibers, Turbo Torch, Water Guard.				X	5
<u>LEVITT ASSOCIATES, N.E.</u> 4030 Westaway Drive Lafayette Hill, PA. 19444 215-828-5333	Mid- Atlantic	X		Bergie Products, Black Swan Chemical, Bow Soldier, Ernst Gege, Flexible Plumbertool, Intercon Drain, I.W. Industries, Kinstock, Matco Valves, Merit Brass, Milbro Toilet Seats, Nova Shower Head, Rapetti Faucets, Villeroy & Boch, Waterway.				X	3

MANUFACTURERS REPRESENTATIVES

Company Name, Address & Phone	Territory Covered	Warehousing		Lines	Industry Orientation Handles lines associated primarily with:				No. of Salesmen
		Yes	No		Plumbing	Hydronic Heating	Warm Air Heating, Ducted Air Conditioning, Refrigeration & Sheet Metal	One or More of the Other Groups	
<u>Mid-Atlantic</u>									
<u>MUNDER CO., INC. E.A.</u> Washington & Ash PO Box 412 Conshohocken, PA. 19428 215-825-5666	E. PA., S. NJ., DE., MD., DC.	X		Ametek, Asahi Valves, Bow Plastics, Centoco, Caberit, GPK, Hays, Lasco, National Pipe, Oil Creek Plastics, Plastics Oddities, Plastinetics, Trans Global Metals, Wheeling Machine Products, J.C. Whitlam.				X	3
<u>MYERS SALES AGENCY, H.E.</u> 7 Boeing Road New Cumberland, PA. 17070 717-774-0362	PA., S. NJ., DE., VA., MD., DC.	X		Engineered Refrigeration Systems, Hupp, Kingman, Industries, McQuay (Refrigeration Div.), Porto Blast, Sund Dial- Square D.			X		3
<u>NIBCO PREFERRED MGTG. INC.</u> PO Box 321, Whitmarsh Pl. Plymouth Meeting, PA. 19462 215-828-6700	12 N.E. states	X		NIBCO, Inc.				X	18
<u>PERLEY & MALLADAY ASSOCIATES</u> RD 4, Box 16 Phoenixville Malvern, PA. 19355 215-296-5800	E. PA., S. NJ., MD., DE., DC. OH.	X		Belly Case & Cooler.			X		8
<u>PRIMARY SALES, INC.</u> PO Box 87 Bryn Mawr, PA. 19010 40 W. Main Rockaway, NJ. 07866 215-525-6109 201-625-3504	NJ., E. PA., DE.	X		Astrol, Cleveland Dorn- beck, Dyttron, Hayden Thermogenic, Resources Conservation, Tankless Heater, Sterling, Vaillant, Wayne Home Equipment.				X	4
<u>PRUSHANKIN CO., JAMES F.</u> 801 Old York Road, Ste. 217 Jenkintown, PA. 19046 215-234-5657 215-224-5657	E. PA., S. NJ., DE.	X		Guy Gray, Omni, Slant/ Fin, State Industries.	X				6
<u>QUAKER STEAM SPECIALTY</u> 1428 (C) Ford Road Cornwells Heights, PA 19020 215-289-2500	E. PA., S. NJ., DE.	X		Adaco, Coil, Dri-Steam, Elison Instruments, Griswold Controls, Kate & MacDonald, Metraflex, Pick Heaters, A.A. Weiss.				X	7
<u>RASA & CO., EMIL</u> 3532 Chiswick Ct. Silver Spring, MD. 20906 301-598-7070	DE., MD., DC., VA.	X		Commercial Filter, DeSoto, United States Stove.				X	
<u>REA & ASSOCIATES, INC.</u> R. FORD 135 E. Market Street Bethlehem, PA. 18018 215-868-6310	E. & central PA., cen- tral & S. NJ., DE., MD., DC, N. VA.	X		Calber, Mase, Miracle Map, Taco, United.			X		3
<u>RENNER ENERGY INDUSTRIES</u> PO Box 217 Oaklyn, NJ. 08107 609-848-7488	S. NJ., E. PA., N. DE.	X		Automated Controls & Systems, Bayley, Berner Industries, Stetavent, Ultratech.			X		3
<u>RICH-FORM ASSOCIATES</u> 2022 W. Hancock St. Philadelphia, PA. 19122 215-425-0193	NJ., E. PA., DE.	X		Corning Counter Saver, Crown Stoves, Dyer Kitchen Units, Iron-A- Way, Marvel Undercounter Refrigeration, Milbrook Cabinets, Murphy Beds, Morcold.				X	2
<u>RICH-TOMPXINS CO., INC.</u> 2401 Ellsworth St. Philadelphia, PA. 19146 215-735-0132	E. PA., S. NJ., DE.	X		Bradford/White, Cash Acme Valves, Delta Faucet, Hammond Valve, Howell Copper Tube, Teledyne-Laers Mini Boilers.				X	6

APPENDIX E-2

MANUFACTURERS REPRESENTATIVES

Company Name, Address & Phone	Territory Covered	Warehousing		Lines	Industry Orientation Handles lines associated primarily with:				No. of Salesmen
		Yes	No		Plumbing	Hydronic Heating	Warm Air Heating, Ducted Air Conditioning, Refrigeration & Sheet Metal	One or More of the Other Groups	
Mid-Atlantic									
<u>SCA MARKETING, INC.</u> 129 S. Broad St. Lanedale, PA. 19446 215-584-1800	E. PA., S. NJ., DE., WASH. DC.	X		C.G.M., Commodore Vanities, Easy Heat, Phillip Metal Cabinets, Lambro Industries, Polyseamseal Caulk, Price-Pfister, Rockford- Eclipse, Sentinel Pipe Insulation, Universal Water Systems.				X	5
<u>SFS SALES</u> Gross Bldg., 225 Righter's Mill Road Marberth, PA. 19072 215-667-2316	S. NJ., E. PA., DE., MD., DC., VA.		X	Marco, Commercial, Research Laboratory, Custom Rubber, Du-All, Eagle Industries, Hose Central, Ray Lewis & Son, Linmax, Matco Products, Norco Foundry.				X	6
<u>SHEFFLER-CROSS CO., INC.</u> 501 Fourth St. Voorhees Twp., NJ. 08043 609-428-7064 215-923-4600 201-672-9100	NJ., DE., E. PA.		X	Acme Engineering, Arrow, Asco, Barnes Engineering, C.C. Bredert, Exitaire, HMK, Hersey Products, Mars Air Doors, National Environmental Products, Pennsylvania Separator, Piliotron, Powermatic, Strobic Air, Tempmaster Enter- prises, Vent-Axia.				X	2
<u>SOTER-MARTIN & ASSOCIATES, INC.</u> PO Box 245 Millersville, MD 21108 301-987-5115	MD., DC., VA., WV.		X	Alsons, American Pipe & Plastics, Anaheim, Basco, Cherne Industries, Gerber Plumbing Fixtures, Jameco Industries, Mor- Flo, Republic, U-Brand, U.S. Pipe & Foundry.	X				6
<u>STECK SALES CO. INC.</u> 1213 Downs Drive Silver Springs, MD. 20904 301-622-3404	DC., S. MD., N. VA.		X	W.D. Allen, Duriron, Imperial Marble, Marlo, T-Drill, Tyler Pipe Industries/Wade.	X				3
<u>STRANIX CO., R.E.</u> PO Box 997 Southampton, PA. 18966 215-322-4010	E. PA., NJ., DE., MD.			Camco Fittings, Capitol, Carpenter & Paterson, Drum-Oven, Falcon Line Products, Swageco.				X	3
<u>STROH SALES, ROBERT W.</u> 801 Windermere Avenue Drexel Hill, PA. 19026 215-789-9467	E. PA., S. NJ., DE., MD., VA.	X		Capitol Coolers, Ever- pure, Gem Refrigeration.				X	2
<u>TAZE & REMITT, INC.</u> 33 East 21 St. Baltimore, MD. 21218 301-752-1810	MD ex- cluding metro DC counties		X	American Coolair, Bayley/ Propellair, Friedrich/ Climate Master, Hastings Industries, Krueger, Thermaflox, Weil-McLain.				X	3
<u>TERRONI CO., INC. B.J.</u> 744 Walnut Avenue Andalusia, PA. 19020 215-639-3600	E. PA., S. NJ., DE.	X		Paco Pumps, Iaco, Teledyne Laars Commer- cial Boilers.		X			4
<u>TOPPING ASSOCIATES, LTD.</u> 9568 Deereco Road Timonium, MD. 21093 301-541-3656	MD., VA., WASH. DC.		X	Aerofin, Aitken, Ameri- can Air Filter, American Infra-Blower, Bailaco, Barbrook, Barron Inds., Chicago Blower, Creco, Environmental Air Prods., Mauck, Interna- tional Industrial Fan, IPF, Janitrol/Sterling, Kent-Moore, King, National Environmental, Swartout Inds., Temp-X- Changer, United Air Specialist, U.S. Smelting, Vent Products.			X		2

APPENDIX E-2

MANUFACTURERS REPRESENTATIVES

Company Name, Address & Phone	Territory Covered	Warehousing		Lines	Industry Orientation Handles lines associated primarily with:				No. of Salesmen
		Yes	No		Plumbing	Hydronic Heating	Warm Air Heating, Ducted Air Conditioning, Refrigeration & Sheet Metal	One or More of the Other Groups	
<u>Mid-Atlantic</u>									
TUSTIN & CO. PO Box 501 Havertown, PA. 19083 215-449-0770	E. PA., NJ., E. Shore of DE. & MD.	X		Bourbon Tapes, Brooke Products, Flexible Fabricators, U.S. Pipe & Foundry, U.V. Inter- national.				X	3
VALENTE ASSOCIATES, INC., P.F. 1173 E. Landis Avenue Vineland, NJ 08360 609-692-3370	E. PA., Central & S. NJ., DE.	X		R.W. Beckett/Trident Pump Div., Cambridge- Lee Industries, Carlon, Connecticut Stamping & Bending, Grohe-America, Indiana Seal, Lippert- Molded Marble, Rector- seal, Smith-Gates, Standard Nipple, Tri- angle-PVC, U.S. Pipe & Foundry.				X	4
WILSON ASSOCIATES, ED Box 371 Pennsville, NJ. 08070 609-678-8016	E. PA., S. NJ., DE., E. Shore of MD.	X		Anvil Products, Thermal Materials.				X	1
WOLDOFF ASSOCIATES, JACK 7 Round Hill Road Levittown, PA. 19056 215-946-5184	E. PA., S. NJ., DE., MD., VA., DC.	X		American Stabilite, Bristol Tank & Welding, Heatrae Water Heaters, Interstate Electric, M.G. Couplings, Tankit- Aero Burners, Thermasol, Thermiser, Westwood Products.				X	3
WORTHINGTON CO., J.W. 8128 Pulaski Highway Baltimore, MD. 21237 301-574-3413	E. PA., S. NJ., DE., MD., DC., VA.	X		Active Tool, Amtrol, Denier, Hydro-Air, Indiana Seal, Mill Rosa, Murdock, Normac, Orange - burg Industries, Para Bond Cements, Simmons, Superior.				X	4
<u>Mid-Atlantic</u>									
YATES & CO., N.H. 117-C Church Ln. Cockeysville, MD. 21030 301-667-6300	MD., lower DE., DC., N. Va.	X		Hersey/Beeco, Modine, Skidmore, Sloan Valve, H.B. Smith, Solar Systems, Symmons Industries, Taco, Halsey Taylor, Zurn Industries.				X	9
YENDALL, QUAY S. PO Box 586 Sparks-Glencoe, MD. 21152 301-771-4823	MD.	X		Cloroben Chemical, In- Sink-Erator, Kenco Pumps, Tyler Pipe Industries, Tyler Pipe Industries/Wade Div.				X	2

APPENDIX E-2

MANUFACTURERS REPRESENTATIVES

Company Name, Address & Phone	Territory Covered	Warehousing		Lines	Industry Orientation Handles lines associated primarily with:				No. of Salesmen
		Yes	No		Plumbing	Hydronic Heating	Warm Air Heating, Ducted Air Conditioning, Refrigeration & Sheet Metal	One or More of the Other Groups	
<u>Western-Pennsylvania -</u>									
<u>West Virginia</u>									
AIR INDUSTRIAL, INC. 8150 Ohio River Blvd. Pittsburgh, PA. 15202 412-761-4550	W. PA., N. WV. bordering counties, OH.		X	Air Plastics, Bayley/ Propellair Fans, Dowco, Industrial Air, Miller Picking, Swartwout Industries, Tri-Dim Filter, Trion.			X		3
ANGERT SALES, J.L. 404 W. Wayne St. Butler, PA. 16001 412-287-8488	W. PA, W. NY, WV		X	Castle Industries, Craig Plastics, Hydro Valve Vents.				X	2
BARR CO., THE LARRY 3518 Pinewood Drive W. Homestead, PA. 15120 412-462-0657	W. PA, portion of OH		X	The Coil Co., Remcor Chillers, Russell Coil.			X		2
BARRETT SALES AND ASSOCIATES, SAM 282 1/2 Capitol St. McKeesport, PA. 15131 412-672-2700	OH, WV, W. PA.		X					X	3
BUSCH CO. 904 Mt. Royal Blvd. Pittsburgh, PA. 15223 412-487-7100	W. PA, portions of OH, WV, MD.		X	Airguard, American Warming & Ventilating, Clow, Cooperheat, Energy Flow, Filterite, Greenheck, Hydro-Ash, Jackson & Church, Joy, Munters, New York Blower, Peabody Floway, Techno, Tuttle & Bailey, Warman.			X		14
DARRISON CO., JOHN I. 1014 N. Canal St. Pittsburgh, PA. 15215 412-781-9221	W. PA., W. NY, WV.		X	Beacon-Morris, E-P Products, Steinen/ Steinen of Carolina, Swan, Thrift Products, Wonder-King.				X	2
DEANE & ASSOCIATES Box 123 Hurryville, PA. 15668 412-327-1620	WV, W. PA. S. OH		X	M&B Energy, Bard, Barnes & Jones, Danfoss, Embassy, Enerco Infra-Red, Exergen/Microscanner, General Machine, Grundfos Pumps, Heat Timer, Lundt, Makorode, Oneida Royal, P.S.G./ Storts, Riello, T.C.I., Utica Radiator, Van Wert, Walton.				X	2
DISMAR & ASSOCIATES, INC., D. J. Box 52 Ashland, OH. 44805 419-289-3206	OH., W. PA., WV.		X	B/W Valves, Cloroben Chemical, Flomatic, Jackel, Mass Adaptors, F.E. Myers, Noland Tank, Norwesco, Parr Plastic Pipe, Poly-Ark Pipe, Seminole Nipple, S.J. Electro, Water Soft.				X	4
ECHO SALES & SERVICE, INC. 949 Behran St. Pittsburgh, PA. 15233 412-321-1161	W. PA., N. WV., E. OH., W. MD.		X	American Air Duct, Amersman, Construction Metal Products, Esaick, Metal Industries.			X		3
FITZGERALD ASSOCIATES INC. 4234 Verona Road Verona, PA. 15147 412-241-7770	W. PA., WV., parts of MD., OH.		X	Bradford-White, Bradley, Bruner, Chicago Faucet, Coyne & Delany, Duriron, Dwyer Products, Elay, Farnco, Fiat Products, Tyler.	X				4
GODSCHALK & ASSOCIATES, INC. 1006 Euclid Pl, Box 1679 Muntington, WV. 25717 304-523-4637	WV., border counties KY., VA.		X	Bradley, Church Seat, Enpo Pump, Enfield Industrial, Global Steel, Grundfos Pumps, Morton McMurray, Peer- less Pottery, A.D. Smith, Weil McLain, World Dryer,				X	2

MANUFACTURERS REPRESENTATIVES

Company Name, Address & Phone	Territory Covered	Warehousing		Lines	Industry Orientation Handles lines associated primarily with:					No. of Salesmen
		Yes	No		Plumbing	Hydronic Heating	Warm Air Heating, Ducted Air Conditioning, Refrigeration & Sheet Metal	One or More of the Other Groups		
<u>Western-Pennsylvania - West Virginia</u>										
JOHNS CO. R.F. 193 Sheldon Ave. PO Box 16091 Pittsburgh, PA. 15242 412-279-6900	W. PA., WV.		X	Casco Brass, Cemco Controls, Exeter, Ford Products, Frost, Liberty Pump, Macon Controls, Odine, Pennco, Williams Furnace.					X	2
KEYSTONE/MOUNTAINEER SALES CO. 84 Stonehenge Dr. Washington, PA. 15301 412-228-5770	W. PA., WV. Cumberland, MD.		X	Alson, Bemis, Franklin Brass, Jones, IDI Vanities, Kinkead, Lasco Fiberglass, Sterling Faucet.	X					4
LUTLEY CO., R.F. 2781 Noblestown Road Pittsburgh, PA. 15205 412-921-4291	W. PA., WV. parts of MD., OH.		X	Bridgeport Brass, Cherox, Maisey Taylor, Jayco, Kinax, Metcraft, Speakman, Watts, Zurn Industries/Hays Div., Zurn/Myromechanics Div.					X	4
MEEHAN & WILSON, INC. PO Box 1014 Mansfield, OH 44910 419-756-0060 216-273-5900	OH., W. PA., WV.		X	Benjamin, Canco, Central Brass, Clampette, Clostrue, Fulflo, Heatrae, Sentinel Pump, Waynesboro.					X	2
MUSILLO SALES AGENCY 20 Summerfield Drive Pittsburgh, PA. 15120 412-61-4544	W. PA., N. WV. Cumberland, MD.		X	Haws Drinking Fountain, Josam, L.K. Pipe Hanger, Stern-Williams, Symmons Industries.					X	1
NASH CO., R.B. 211 Beverly Road Pittsburgh, PA. 15216 412-341-1250	W. PA., WV., W. MD.		X	Calloekills/Girton, Centra, Chief Industries, Dell Solar, Erie Controls, Modern Hanger, Spronx Steel King Industries, Time Tech Industries, Walton Labs.					X	4
NEGLE CO., W.I. 112 Grant Avenue Pittsburgh, PA. 15223 412-781-5488	W. Central PA., WV.		X	Acme, Appalachian Piping Products, Arco, Cerro Copper Products, Charlotte Pipe & Foundry, Charlotte Plastics, McGuire, Triangle, PWC.					X	2
MUNES ASSOCIATES, PAUL C. 1544 W. 26th St. Erie, PA. 16508 814-453-5011	W. PA., W. NY., M. E. OH.		X	Croker-Standard, E.B., Kaiser, King/National, Sunrco-Western, Zurn Industries.					X	6
O'CONNOR CO., INC. J.B. 120 Union St. Bridgeville, PA. 15017 412-221-5300	W. PA., WV., border cities of OH., KY., MD.		X	Aqua Glass, Creoline Plastic Pipe, Hercules, Chemical, Imco, Indiana Brass, Mansfield Plumbing Products, Richmond Foundry, Sanitary Dash, Spersel Seats.					X	3
OUTPUT SALES CORP. 2545 Mossie Blvd. Ste. A-3 Monroeville, PA. 15146 412-856-5600	W. PA., OH., WV.		X	Bremen Glass, Hitachi Metals, Keeney, LCP Plastics, Lee Brass, Orangeburg, Rectorseal, Siocomb, Taledyne Ansonia, Trenton Pipe Hipple, Union Brass, U.S. Pipe.					X	4
PHILLIPS CO. INC. JAMES CO. 5020 Kuer Ln. Charleston, WV. 25313 304-776-1479	WV. except N.E. penhandles parts of VA., KY., OH.		X	Acorn Engineering, Armstrong, Acno, Boiler Feed Systems, Cam. Ind., Dri-Steem, Elkhart Brass, Haws Drinking Faucet, Hydromatic Pumps, Kinax, Fearless Pump, Kaypak, Royal Brass, Symmons Ind., Systecon, Thermal Pipe System, Tyler Industries, Wade.					X	2

APPENDIX E-2

MANUFACTURERS REPRESENTATIVES

Company Name, Address & Phone	Territory Covered	Warehousing		Lines	Industry Orientation Handles lines associated primarily with:				No. of Salesmen
		Yes	No		Plumbing	Hydronic Heating	Warm Air Heating, Ducted Air Conditioning, Refrigeration & Sheet Metal	One or More of the Other Groups	
<u>Western-Pennsylvania - West Virginia</u>									
<u>REP-LINE SALES</u> PO Box 69 698 E. Smithfield St. Greenrock, PA. 15047 412-751-2700 412-751-2701	W. PA., WV. OH.	X		Janitrol, Lau Indus- tries, Malco, Midco, Slant/Fin.				X	3
<u>SCHEIN, CODISH & ASSOCIATES</u> PO Box 911 2808 Liberty Way McKeesport, PA. 15133 412-672-5107	W. PA., WV., E. OH.	X		Anderson Brass, A.W. Cash Valve, General Wire Spring, E.L. Mustee, Tanner, Water- way.				X	5
<u>SCHMITT & ASSOCIATES, INC., W. H.</u> Box 326 Plummer School Rd. West Newton, PA. 15133 412-872-5007	WV., W. PA., OH.	X		Aitken Products, American Polywater, Cordley/Temprite, Cox, CRC Chemicals, Delta-Therm, Electro- Therm, Environmental Systems, Martin, Nu-Air Patton Electric, Kittenhouse-Fryne, Stewart-Aire, Thermalink-Therm Coil.		X			6
<u>SCHWARTZEL CO., DON</u> 2210 Mercer Road New Brighton, PA. 15066 412-846-1640	W. PA., WV.	X						X	3
<u>SQUIBBS OWEN SALES INC.</u> PO Box 11125 Pittsburgh, PA. 15237 412-931-1400	W. PA., WV., E. OH. N. W., MD.		X	Aquarius Industries, Capital, Coupling Systems, Handley Industries, Indiana Seal, In-Sink-Erator, Oil Creek Plastics, R.W. Lyall, State Industries, Wayne, Wilinks Regulator.				X	4
<u>STAMMER & ASSOCIATES</u> 1218 Grandview Avenue Pittsburgh, PA. 15211 412-488-3100	W. PA., WV., MD. panhandle		X	Acorn, Hersey/Beeco, Orion, PHD, Sloan Valve, Sunroc/Western, TPS Brass.				X	3
<u>THERMEQUIP INC.</u> PO Box 277 Nitro, WV. 25143 304-755-0134	E. WV. surround- ing counties of OH., KY.	X		Criswold Controls, Patterson Kelley, Peer- less, Sterling Radiator, Taco, Thunderline.		X			2
<u>TRI-STATE MECHANICAL SALES</u> 814 Main St. Pittsburgh, PA. 15215 412-782-4740	W. PA., WV.		X	Beacon-Morris, Burnham, Just, Lochinvar, Mico- phor, Oasis, Sterling Radiator.				X	4
<u>UNIVERSAL SUPPLY & ENGINEERING</u> PO Box 418 Dunbar, WV. 25064 304-768-5391	WV., E. VA., W. OH., PA.		X	Brook Tools, Cory Controls, M.H. Controls, R.K. Stove, Vogt, United S/M Duct.				X	3
<u>WATER HEATER SPECIAL- ISTS, INC.</u> 3219 Liberty Avenue Pittsburgh, PA. 15201 412-471-6984	W. PA., N. WV., E. OH.		X	Beacon Valves, Magic Heat, Robertshaw Con- trols, A.O. Smith.				X	2

MANUFACTURERS REPRESENTATIVES

Company Name, Address & Phone	Territory Covered	Warehousing		Lines	Industry Orientation Handles lines associated primarily with:				No. of Salesmen
		Yes	No		Plumbing	Hydronic Heating	Warm Air Heating, Ducted Air Conditioning, Refrigeration & Sheet Metal	One or More of the Other Groups	
Ohio									
<u>A P SUPPLY CO.</u> Box 3641 Akron, OH. 44310 216-762-8626 216-382-8833	N.E. OH.		X	Nebraska Boilers, Stuartwout Industries, Tempmaster, Young Radistor.			X		4
<u>AERO-CHEM INC.</u> 741 McClurg Road Youngstown, OH 44512 216-756-8131	N.E. OH., W. PA., WV.	X		Continental Air Filters, Dustop, Fiborbond/Ulok, Classfoss Industries, Mafco, Vishon-Aire.			X		4
<u>AIR CONTROL PRODUCTS</u> 10035 Broadview Road Cleveland, OH. 44147 216-526-3020	N. E. OH.	X		American Warming, Broan, Cesco, Cleveflex, Farr, Greenheck, Krueger, Purafil, Safe Air.			X		7
<u>ALLEN CO.</u> 2195 S. Green Road Cleveland, OH 44121 216-382-4747	OH., MI., W. PA.		X	Allen, B&K Industries, Bristol Products, Lapco Industries.	X				2
<u>ALLIED EQUIPMENT CO.</u> PO Box 314 Hudson, OH. 44236 216-686-1622	N.E. OH.	X		Alpha/Laval, Autoflow, Microflex, Mueller Steam Specialty, Pete's Plugs, Revere Solar Panel, Skidmore, Sterl- ing Radistor, Taco, Weben Industries, Weirman Pumps, Wessels.				X	5
<u>ANDERSON-BOLDS INC.</u> 17701 Shaker Cleveland, OH. 44120 216-229-4700	OH., KY.	X		Asco, Chromalos, Deflecto, Rush-Hampton, Slant/Fin.				X	20
<u>ANTEAU & ASSOCIATE, R.L.</u> 433- W. Central Avenue Toledo, OH. 43615 419-531-1038	N.W. OH.		X	Air Enterprises, Clarge Fan, Duall Industries, Flakt Products.			X		1
<u>BAKER & ASSOCIATES, WILLIAM G.</u> 814 Carini Ln. Cincinnati, OH. 45218 513-825-2617	S. OH., KY., IN.		X	Auer Register, Halstead, Hartell, Imperial-Eastman, Lau Industries, Master- fit, Tjernlund.			X		2
<u>BALLENGER CO., J.H.</u> 3915 Oak St. Cincinnati, OH. 45227 513-271-3915	S. W. OH., E. KY., S.E. IN.	X		Acero International, Am- trol/Thrush, Cleaver- Brooks/Aqua-Chem, Costes Electric/Cam Industries, NYDAE, Marlo, J.W. Moon/W.D. Allen, Neotronics N.A., Penn Separator, Weben- Jarco, Weil Pump.				X	4
<u>BARRETT SALES, SAM</u> 1577 Lynlee Drive Bellbrook, OH. 45305 513-848-2408	OH., WV., W. PA.		X					X	3
<u>BARRETT-RUFF, INC.</u> 1554 Hamilton Ave. Cleveland, OH. 44114 216-861-1235/6	N.E. & CENTRAL OH.	X		Griffin Soil Pipe, FMD, Potter-Romer, A.O. Smith, Jay R. Smith, Sunroc/Western.				X	3
<u>BASTL & ASSOCIATES, INC., J.A.</u> 26410 Center Ridge Road Westlake, OH. 44145 216-871-2827	N. OH.		X	Chicago Faucet, Dole Valve, Fee & Mason, Gaberit, Halsey/Taylor, Powers Process Controls, Sarco, Universal Water Systems.	X				4
<u>BOLINO-BICKART CO, INC.</u> 2430 Central Pkwy. Cincinnati, OH. 45214 513-381-1966	S. OH, KY.		X	Acorn Engineering, Frost, MCC Powers Process Controls, Ondine/Inter- bath, FVI Industries, Spersel Industries, Zoeller, Zurn Industries.				X	2

APPENDIX E-2

MANUFACTURERS REPRESENTATIVES

Company Name, Address & Phone	Territory Covered	Warehousing		Lines	Industry Orientation Handles lines associated primarily with:					No. of Salesmen
		Yes	No		Plumbing	Hydronic Heating	Warm Air Heating, Ducted Air Conditioning, Refrigeration & Sheet Metal	One or More of the Other Groups		
Ohio										
<u>BOROSH ASSOCIATES INC.</u> 5100 W. 164th St. Cleveland, OH. 44142 216-433-4550	OH.	X		Epcor Sales, Haws Drink- ing Faucet, MC Coupling, Marco Products, Noble, Olsonite, Stern-Williams, Symons Industries, T&S Brass.	X					5
<u>BUSHMAN-KERR & ASSOCIATES</u> 4916 Spruce Hill Drive Colorado Bldg, Ste. 300 Canton, OH. 44718 216-499-1991	OH., W. PA., MI.		X	Charles M. Bailey, Drum/ Owen Valve, Febco Sales, Hammond Valve, Homestead Valve, Larkin/Joy, Tubeline.					X	3
<u>CAMPBELL EQUIPMENT CO.</u> 3050 Lakeside Avenue Cleveland, OH. 44114 216-696-1155	N. OH.	X		Church Seats, Croker/ Standard Fire Equipment, Metcraft, Oasis Water Coolers, Rectorseal, Speakman, Ste-Rite, Zurn Industries.	X					4
<u>CKA SALES INC.</u> Box 16160 Cleveland, OH. 44116 216-333-6935	W. PA., OH., WV., KY., TN.		X	Acme, Adams, Atco Flexair, Bando Belts, Century, Diversitech, Effikal Dampers, Elgen, Herraid- ifier, Leigh, Menomene Boilers, Metal Fab, Newmac, Polyken, Union Poly Duct, Williams Furnace.				X		4
<u>CLINES SALES CO.</u> 22700G Shore Ctr. Dr. Euclid, OH. 44123 216-731-1695	OH.	X		Coupling Systems, Mid- American Industries, Norton-McMurray, Plastic Trends, Raimor Products.					X	2
<u>CROSS CO., CLIFF</u> Ed. No. 1 Box 91, Chennango New London, OH. 44851 419-929-1582 1-800-543-3000 ext. 3333	OH.	X		Independent Energy, Lau Industries, Little Giant Pump, Telectronic Products.					X	2
<u>CURNAY SALES INC.</u> 1545 W. 130th St. Minckley, OH. 44233 216-273-5200	OH., KY.	X		Bemis, Cresline Plastics, Efron (PA), Imperial Marble, JPI, Molded Plastics, Pioneer Pump, Republic Sinks.					X	4
<u>DAVIES & CO., R.C.</u> 1241 E. 286 St. PO Box 32009 Cleveland, OH. 44132 216-261-3700	N.E. OH.	X		Erie Controls, Everhot All-Copper Heat Exchangers, Ford Tanks, Hydrolevel, Hydrotherm, ITT Rexnor, Rupp Indus- tries, Mercoide Controls.					X	4
<u>DISHER & ASSOCIATES INC., D.J.</u> PO Box 52 Ashland, OH. 44805 419-289-3206	OH., W. PA., WV.		X	B/W Valves, Chloroben Chemical, Flomatic, Jackel, Mass Adapters, F.E. Myers, Nolsnd Tank, Norwesco, Parr Plastic Pipe, Poly-Ark Pipe, Seminole Wipple, S.J. Kleetro, Water Soft.					X	4
<u>DISNEY-MC LAWE INC.</u> 2704 Colerain Avenue Cincinnati, OH. 45225 513-541-1682	S. OH., KY.		X	Beneke, Cherne Indus- tries, Commercial Filters, Noble, Rectorseal, Siner Pump, A.O. Smith, Speakman, Wade, Watts, Woodford.					X	4
<u>EASTERN OHIO SALES</u> Box 61 Lovellville, OH. 44436 216-536-6809	OH., W. PA., WV.	X		American Stabilis, Duo- Metric, Dunham-Bc, Hako, Humid Aire, Luk- jan Metal Products, Thermiser.				X		5
<u>ELCO SALES INC.</u> 1895 Colman Road Cleveland, OH. 44106 216-231-7070	OH., W. PA.	X		Abco Industries, Elec- tric Boiler, Federal Boiler, Parker Boiler, Pennco Industries, Webster Combustion.		X				3

MANUFACTURERS REPRESENTATIVES

Company Name, Address & Phone	Territory Covered	Warehousing		Lines	Industry Orientation Handles lines associated primarily with:				No. of Salesmen
		Yes	No		Plumbing	Hydronic Heating	Warm Air Heating, Ducted Air Conditioning, Refrigeration & Sheet Metal	One or More of the Other Groups	
Ohio									
<u>EMAX INC.</u> 2701 Indianola Ave. Columbus, OH. 43202 614-263-0090	National	X					X		2
<u>FAIRVIEW SALES CO.</u> 5185 W. 220th St. Fairview Pk., OH. 44126 216-226-3113	OH., Wheeling, W.V.		X	Artic Refrigerants, Embassy Industries, Utica Boilers.				X	1
<u>FELTY & ASSOCIATE, GEO. E.</u> 3428 Memphis Cleveland, OH. 44109 216-749-4080	N. OH.		X					X	1
<u>FIVE STAR SALES INC.</u> 598 Old Coach Road Westerville, OH. 43081 614-890-7923	OH., W. PA., WV.		X	Anco Products, BEC, Imperial Clevite, Malco, Monarch, Simpson, Dura- Vent, Skuttle, Sun Dial Div. of Square D., Trion.			X		2
<u>FLAHERTY SALES CO.</u> 710 N. Court St. Medina, OH. 44256 216-723-5757	OH., KY., W. PA., WV.		X	Berkley Tool, Champion Cutting Tools, Knaack, Lidseen "Chicago" Bender, M.X. Morse, Roco Tool Group, Vermette Lifts, Weatherguard Truck Boxes.				X	2
<u>FREY & ASSOCIATES, INC., RALPH C.</u> 1781 Buena Vista Dr. Cleveland, OH. 44117 216-692-0080 614-766-2431	OH.		X	Anderson Copper & Brass, Coyne & Delany, Dole Valve, Frost, Just, Keystone/Marchand, Michigan Hanger, Precision Plumbing Products, Shamrock Industries, Sperzel Industries, Teledyne Ansonia, Town & Country Plastics, Water Saver Faucet, Zoeller.				X	3
<u>GAMBILL CO., INC.</u> 18 Laurel-Moscow Road Moscow, OH. 45153 513-553-2048	Oh., KY., WV.		X	Alson, Feroco, Fiore- stone, Keaney, Tanner, U-Brand, U.S. Brass.				X	5
<u>GREAT LAKES SALES CO.</u> 11801 Clifton Blvd. Cleveland, OH. 44107 216-228-4200	OH., WV., W. PA., IN., KY.		X	Amtrol, R.W. Beckett, Benia, Delta Faucet, Electrical Conductors, In-Sink-Erator, Lobb, Martinson.				X	12
<u>GROVE, F.E.L.</u> 291 E. Broad P.O. Box 43 Westerville, OH 44107 614-882-0307	Central & S. OH		X	Epcos Sales, Hava Drinking Faucet, Orion, Symons, Zurn Indus.				X	2
<u>HANDEL-DAVIES CO.</u> Box 39488, 29015 Solon Cleveland, OH 44139 216-248-8383	OH, WV, W.PA.		X	Curlee, Easy Heat, Electromode Climate Control, Kupke, Phasemaster, Universal Enterprises, Vanguard Heat Pumps.			X		4
<u>HOULISTON CO., C.B.</u> 2260 Park Avenue P.O. Box 6538 Cincinnati, OH 45206 513-861-3301	S. OH, N.KY.		X	Adaco, Dri-Steam, Holby, Patterson-Kelley, Ric Wil.				X	1
<u>HURLEY & ASSOCIATES, ROBERT F.</u> P.O. Box 201 Aurora, OH 44202 216-562-6159	OH		X	Allen, Ametek, Cosco Brass, Chatham Brass, Fastway, Nyco, Peer- less Pottery, Rule- Planetor, John Wood.				X	2
<u>JOHNSON CO., D.B.</u> 4900 N. Breckeville Road P.O. Box 295 Richfield, OH 33286 216-659-9295	N.E. OH		X	Cannon Boiler, Clever- Brooks, Hydrosteam, King National, Patterson Kelley.				X	4

MANUFACTURERS REPRESENTATIVES

Company Name, Address & Phone	Territory Covered	Warehousing		Lines	Industry Orientation Handles lines associated primarily with:					No. of Salesmen
		Yes	No		Plumbing	Hydronic Heating	Warm Air Heating, Ducted Air Conditioning, Refrigeration & Sheet Metal	One or More of the Other Groups		
Ohio										
<u>KAISER & ASSOCIATES INC., BILL</u> 22215 Lake Road Rocky River, OH. 44116 216-331-4887	OH	X		Gas fired heating equipment.	X					1
<u>KOZAN CO., W.R.</u> 4634 S. Lynn Cir., South Euclid, OH 44121 216-381-9110	N. OH	X		American Pipe & Plas- tics, Cal-Am, Indiana Seal, Mephisto Tool, R&G Sloane, Singer.				X		2
<u>LOWDER SALES, INC.</u> 1490 Old W. Henderson Road Columbus, OH 43220 614-451-7255	Central & S. OH.	X		Coupling Systems, R.W. Lyall, Mission Rubber, Oil Creek Plastics, PHD, A.D. Smith, Jay R. Smith, Sunroc- Western, Telco Indus.				X		2
<u>MC SERVICE SALES CO.</u> 2571 Babcock Road Minckley, OH 44233 216-225-1442	OH, W.PA., Upper NY.	X		Representing quality plumbing manufacturers.				X		4
<u>MW ASSOCIATES, INC.</u> 8728 Shag Bark Dr. Cincinnati, OH 45242 513-791-6655	OH, KY	X		Anvil Products, Basic Engineers, Flow-Flex Engineering, Hoover Fabricators, Midland- Ross, Newman Mattersley, Navco, Unitacor.					X	4
<u>MADSEN-BAYER & ASSOCIATES, INC.</u> 2840 Fisher Road Columbus, OH. 43204 614-274-3097 216-331-3840	OH.	X		Bagdad Plastic, Hub- bell, Leonard Valve, Keystone Filter, Marlo, Metcraft, Ondine, Charles Parker, Royal Brass, Techno, Watts.				X		4
<u>MARTIN & ASSOCIATES, FRANK</u> 27101 E. Oviatt Road Bay Village, OH 44140 216-871-0888	N. OH.	X		Roberts-Gordon Appli- ances.						7
<u>MATHES-FRISCHMANN & ASSOCIATES</u> 28349 Chargin Blvd. Cleveland, OH 44122 216-831-2030	OH, bordering area of KY	X		American Valve, Boots Flumbing Fixtures, General Wire Spring, Hercules Chemical, Jones, Merit Brass, E.L. Mustee, Vance Industries.	X					2
<u>MEERAN & WILSON, INC.</u> P.O. Box 1014 Mansfield, OH 44901 419-756-0060	OH, W. PA., WV	X		Benjamin, Camco, Central Brass, Clam- pette, Clos-Truec, Fulflo, Heatrac, Sentinel Pump, Waynesboro.				X		2
<u>MILLER COMPONENT SALES, INC.</u> 7428 Warwick Ln. Chesterland, OH 44026 216-729-4313	OH, MI, IN, KY, WV, W. PA.	X		Acme-Miami, Air Filco Industries, Baron Wire & Cable, Danfoss, Magic Aire, Packard, Universal Enterprises, Uniweld, Watsco.				X		3
<u>MUSSUM SALES, INC.</u> 1545 E. 18th St. Cleveland OH 44114 216-621-5088	N. & Central OH	X		Acorn Engineering, W.D. Allen, Electro-Air/ Emerson Electric, Lablinc/Enfield, Modine, Syncro Flo, Tyler Pipe/Wade, Vanguard.	X				X	15
<u>MUSSUM SALES, INC.</u> 1500 W. Third Avenue Ste. 112 Columbus OH 43212 614-486-6791	OH except trade areas of Toledo & Cinn.	X		Acorn Engineering, W.D. Allen, Loren Cook, Econovent Systems, Miross, Jayco, Kopper's Lablinc/Enfield, Metal- bestos Systems, Modine, Pate, Proset Systems, Sunstrand, Syncro Flo, Titus Products, Tyler Pipe/Wade, Valley Industries, Vanguard Plastics, Watrous.				X		8

APPENDIX E-2

MANUFACTURERS REPRESENTATIVES

Company Name, Address & Phone	Territory Covered	Warehousing		Lines	Industry Orientation Handles lines associated primarily with:				No. of Salesmen
		Yes	No		Plumbing	Hydronic Heating	Warm Air Heating, Ducted Air Conditioning, Refrigeration & Sheet Metal	One or More of the Other Groups	
Ohio									
<u>MYERS & ASSOCIATES, INC., LEN</u> Box 30943 Cahanna, OH 43230 614-861-6065	OH, KY	X		ABC/Sunray, Armstrong, Beacon-Morris, Burnham, Drayton, Flair, Oneida Heater, Power Flame, Sterling Radiator/Reed National, Sterico, Standard Fin Pipe, Woods Industrial Products.				X	4
<u>NIBCO PVF MARKETING, INC.</u> 1999 Dividend Drive Columbus, OH 43228 614-876-1800	MI, OH, W. PA, IN, W. NY, KY W. WV.	X		Allied Piping Products, C-P Industries, Croker Standard, Globe Hanger, Guinard Pumps, Incoa Pipe Insulation, NIBCO, Polycel, Sweetapple, Viking Fire Protection, Yardley Pipe.				X	10
<u>OBERNDORF CO., W.J.</u> 3737 Chester Avenue Cleveland, OH 44114 216-361-5500	OH, IN, KY		X	Capitol, Colonial Plastics, Kinlead Indus., Milwaukee Valve, Phoenix Forging, Sterling Faucet, Wilkins Regulator.				X	4
<u>OHIO HYDRONICS CO.</u> 1501 Euclid Avenue Cleveland, OH 44115 216-861-6357	N.E. OH	X		Anderson LBEC, Boylston Valves, Chicago Pumps, Coll, Peerless Pumps.					3
<u>PIEP CO., J.M.</u> 2317 Manchester Road Akron, OH 44314 1-800-722-PIER	N.E. OH	X		Air Enterprises, Airtex, Barty, Berner, Calmac, Clow, Connor, Dri-Steam, Dunham-Bush, Erincraft, Flexonics, Gerand, Griswold, Progressive Air Products, Ricwil, Robicon, Runtal, Systemcon, Temprite, Trerice, Worcester, Yarway.				X	6
<u>PLUMBING & HEATING SALES</u> Box 22212 Cleveland, OH 44122 216-752-4433	OH, IN, MI		X	Ayling & Reichert, Bufftech Industries, CRP, I.W. Industries, Stratallo, Waterway, Wax Products.	X				3
<u>PRACKER & ASSOCIATE, ART</u> 11204 Parkhurst Drive Cleveland, OH 44111 216-251-2829	OH, WV, KY		X	El Patio Products Co.				X	3
<u>PREFERRED SALES, INC.</u> 1642 Broadway Road Wheatland, PA. 16161 614-261-8358	OH, W. PA, WV, N. KY.	X						X	3
<u>PROGRESSIVE SALES ASSOCIATES</u> 410 Glen Ln. Middletown, OH 45042 513-423-3402	OH, KY		X	Argo Industries, Danfoos, F.W. Products, Westwood Products.				X	1
<u>RDH-AIR, INC.</u> Box 16391 19035 Detroit, Cleveland, OH 44116 216-331-2999	OH	X		A-Ware Air Systems, Dry-Air Dehumidifiers.				X	3
<u>ROESSLER & ASSOCIATES, J.M.</u> 1305 Som Center Road Cleveland, OH 44124 216-449-2477	OH	X		Bradley, Brunner, Continental Metal Products, Kinstock Southwest, Santana Products.				X	4
<u>ROSEL SALES, INC.</u> 9185 Solon Drive Cincinnati, OH 45242 513-984-8828	OH, KY, S. IN.		X	Aquarius Industries, Bremen Glass, Bristol Pipe, Mansfield Plumbing Products, Quest, Wayne Home Equipment.	X				6

APPENDIX E-2

MANUFACTURERS REPRESENTATIVES

Company Name, Address & Phone	Territory Covered	Warehousing		Lines	Industry Orientation Handles lines associated primarily with:				No. of Salesmen
		Yes	No		Plumbing	Hydronic Heating	Warm Air Heating, Ducted Air Conditioning, Refrigeration & Sheet Metal	One or More of the Other Groups	
Ohio									
<u>RUEVE & ASSOCIATES, INC., TOM</u> 3233 Westbourne Drive Cincinnati, OH 45211 513-451-7473	S. OH, KY	X		C.S.&B. Tubular Goods, Delany, Fee & Mason, Just, Metcraft, Mur- dock, Olsonite, Stern- Williams, Symmons Ind., T&S Brass & Bronze, Tyler Pipe Industries.	X				2
<u>E.V.F. SALES CO.</u> Box 33226 Cleveland, OH 44133 216-237-5478	OH	X		Actronics Relief Valves, B/W Valves, General Sealents, Mr. Steam, Palmetto Valves, Riken Groove Fittings, Sierra Fire Equipment, Waterbury.				X	3
<u>SCHEER & ASSOCIATES, MARVIN</u> 28437 Fairmont Blvd. P.O. Box 22717 Cleveland, OH 44124 216-292-3600	OH, MI, W. PA.	X		Auburn Brass, Canfield Soldier, Crane, DuPage, Hi Lift Plumbing Special- ties, Jado Faucets, Matco Products.	X				2
<u>SEENO & ASSOCIATES</u> 671 Parker Road Aurora, OH 44202 216-562-3433	OH, W. PA. WV.		X	Continental Cabinet, Lippert, Omega Vanity, Wellborn Cabinet, Wood Kitchens.	X				1
<u>SHUPE, INC., ROBERT</u> 124 Keswick Drive Hudson, OH 44236 216-650-0125/656-3848	OH, W. PA, W. NY.		X	Anvil Products, Bibby- Ste., Croix Foundries, Bridgeport Brass, Eastern Foundry, Modern Hanger, Neptune Backflow Preventers.				X	3
<u>STARN SALES CO.</u> 941 MacGregor Avenue Worthington, OH 43085 614-888-0701	OH, WV.		X	Actronics, Aqua Glass, CMC Metals, Oatey, Phyllich, Plastic Oddi- ties, Sheffield House, Thompson Plastics, Tin- cum Metals, Waste King.	X				1
<u>STEAM ECONOMIES CO.</u> 9464 Princeton-Glendale Rd. Hamilton, OH 45011 513-874-8444	OH, KY, WV.	X		Anderson Separator, Armstrong Machine Works, Armstrong/Hunt Industrial Heat Transfer Equipment, Check-All Valve, Hispan, Johnson, Marwin Valve, Nova, Perfection/Infra-Red, Rovanco, Spence Valves, U.E. Ultrasonic Test Equipment.				X	12
<u>STILES SALES, INC.</u> 293 Apache Cr. Westerville, OH 43081 614-891-6245	OH, KY, MI		X	Arco Rubber Products, Bard, Beaco Supply, Columbus Electric, Crown Industries, General Filters, Lambro Industries, Shock, Steinen.			X		2
<u>TRI-SALES, INC.</u> P.O. Box 486 3939 Bach-Burton Road Amelia, OH 45102 513-753-5400	OH, KY, IN S. MI.	X		Anderson Metals, M&K Industries, Continental Pipe Products, Duraline, Elkhart Products, IFS Weld-On, Lasco Industries, Mokorode, Thompson Plastics.				X	4
<u>U.S. CONSOLIDATED</u> 3774 West 33rd St. Cleveland, OH 44109 216-749-3888	OH, W. PA, part of IN.	X		Fluidmaster, Gerber, Jaseco, Lee Brass, State.	X				4

MANUFACTURERS REPRESENTATIVES

Company Name, Address & Phone	Territory Covered	Warehousing		Lines	Industry Orientation Handles lines associated primarily with:				No. of Salesmen
		Yes	No		Plumbing	Hydronic Heating	Warm Air Heating, Ducted Air Conditioning, Refrigeration & Sheet Metal	One or More of the Other Groups	
Ohio									
WEBER-HUFF, INC. 5033 Winton Road Cincinnati, OH 45232 513-681-5883	S.W. OH, N.W. KY		X	Airtherm, Alfa-Laval, Ammark, Armstrong Pumps, Arrow United Industries, Carlin, Econovent, Facet, Federal Pump, Kewanee Boiler, Krueger, Lichinvar Water Heater, Loren Cook, Midco International, Panel- bloc, Parker Boiler, Pennco, Safe-Air, M.B. Smith, Thunderline "Link Seal," Watson McDaniel.				X	4
WHITE BROS., INC. 9391 Hobart Road Willoughby, OH 44094 216-942-0685	OH, IN, KY WV, W. PA		X	ABS Pumps, Phillip Metal Cabinet, Jade Controls, Mor-Flo Industries, Permafit/Colonial, Perma-Pipe, Price Pfister, Reading, Ward Foundry, Woodford.				X	11
WHITNEY CO., FLOYD T. Box 521b Toledo, OH 43611 419-726-3735	MI, OH		X	Anchor Brass, Arundale, Beaton & Corbin, DM Die Cutting, Flexible Fab- ricators, IDE, Lodon, Jumbo, Prier Brass, Thrift Products, Web- stone, Westomatic.				X	3
WILKINS CO., WM. C. Box #415b Cincinnati, OH 45245 513-752-1225	S.W. OH, Central KY, E. IN.		X	Hydrotherm, Lattner, March, Young Radiator.		X			3
WILKINS SUPPLY CO., M.P. 302 S. Byrne Road P.O. Box 7419 Toledo, OH 43615 419-531-5574	N.W. OH		X	Alco, Andrews, Apollo, Cashco, CalVal, Crane, Danfoss, Dixon, Dresser, Epco, Essec, Flexonics, Griswold, Gustin Bacon, Henry, Hollanender, ITT Grinnel, J&L Steel, Ladish, Lonergan, Marsh, Master, Mercer, Moeller, Mono Groups, Mueller Steam, Naylor, Morriseal, RP&C, Republic, Ridge, Rockwell, Roth, Sarco, Spence, Sterling, Ric-Clover, U.S. Steel, Uniroyal, Velan, Welworth, Ward, Watts, Weatherhead, Whitlam, Young Radiator, Zurn.				X	5
WILSON SALES ASSOCIATES, INC. 6510 Lorain Avenue Cleveland, OH 44102 216-621-4660	N. OH		X	All-Lite Louvers, Amer- man Fans & Blowers, Bristol Skylights, Burt Ventilators, Dur-Kad Matches, Fisher Skylights, Hume Snow Melting Systems, Kelly Singleply Roofs, Make-Up Aire & Hoods, Paw Skylights, Solartron Skylights, Super "K" Tapered Roofs & Cants.				X	6
MOLENS SALES 21025 Seabury Avenue Fairview Park, OH 44126 216-333-6303	OH, W. PA, WV.		X	A.W. Cash, Genova, Jaclo, Jumbo, Raychem/ Frostex II, Royal Seats, Sanitary-Dash, Trin oak Products.				X	4

Appendix F

HVAC AND PLUMBING
DISTRIBUTORS

F-1 Summary of HVAC and Plumbing
Distributor Interviews

F-2 List of Selected HVAC and
Plumbing Distributors

Appendix F-1

SUMMARY OF HVAC AND PLUMBING DISTRIBUTOR INTERVIEWS

Company	Geographic Territory	No. of Sales Reps	No. of Locations/ Branches	Basic Product Lines	Receptivity to Canadian Products		General Comments
					Current Carry	Don't Carry	
ABR Wholesalers Inc.	Upstate NY	4	1	Heating, a/c ventilating		X	Would like to make quality/price comparison
Air Flo Distributors	Eastern Mass.	12	3	Heating, air conditioning	X		Equal to US products, good quality
Blue Cold Distrib'rs	South part of Maine	2	1	Heating, a/c		X	Receptive toward Canadian products; feels parts may be hard to get, metric system a problem
Burner & Heating Supply	All of Mass.	4	1	Heating, a/c		X	Receptive toward Canadians; will use as long as good quality and no warranty problems
Burner Supply Co.	Northeast	30	16	Plumbing equipment heating, a/c, solid fuel appliances		X	Receptive to quality products
Butler Plumbing & Heating Supply	Northern NJ	3	1	Plumbing equip., heating		X	Receptive to Canadian products if accepted by the trade and quality and price are marketable
Central Heating & A/C Supply	RI	2	1	Plumbing equip., a/c, solid fuel appliances		X	Willing to sell if equipment is of good quality
Climate Equipment & Supply	Western NY	3	2	Heating, a/c, solid fuel appliances		X	Tried and discontinued, but willing to try again
Continental Distributors	5 boroughs of NY	2	1	Heating, a/c		X	Leery of shipping costs
Distributor Corp. of NE	Eastern Mass, RI, NH, ME	11	1	Heating, a/c		X	Interested in Canadian products if it won't conflict with current commitment to American manufacturers
EA Company	Virginia frontier	not given	1	Plumbing equip., heating, a/c		X	Interested
Eckstein Co.	50 mile radius of Pittsburgh	5	1	Plumbing equip., heating, a/c, kitchen equip.		X	Would carry if product was superior, feels that loyalty is to US products, parts and availability would be a problem
Energy Supply Inc.	Most of Vermont	1	1	Heating		X	Would consider if had good warranty and better access to representatives

SUMMARY OF HVAC AND PLUMBING DISTRIBUTOR INTERVIEWS

Company	Geographic Territory	No. of Sales Reps	No. of Locations/ Branches	Basic Product Lines	Receptivity to Canadian Products		General Comments
					Current Carry	Don't Carry	
Furnace & Duct Energy	RI, Southwest ME & Western Conn.	3	1	Heating, a/c	X		Feels quality is best, are treated well and their customers are happy
Giruben Supply	5 counties in upstate NY incl. Buffalo	3	1	Plumbing equip., heating a/c, solid fuel appliances		X	Would only consider if equipment is of superior quality than what is now carried
Kreu Distributing	50 mile radius of Syracuse	3	1	Heating, a/c, solid fuel appliances		X	Tried and discontinued, freight made product so expensive it couldn't be competitively priced; good quality; energy efficient; would try again with US delivery
L&M Distributors	Tri-state area	7	4	Heating, a/c		X	Interested but never been approached
Mutual Mfg & Supply	Kentucky, Ohio, Indiana, pt of W. Virginia	over 30	4	Plumbing equip., heating, a/c		X	Would be interested if the price was right; perceives US and Canadian products as equal quality
New England Heating Parts	Conn., Western Mass., Westchester County, NY	8	5	Plumbing equip., heating, a/c	X		Good quality competitor, products no different than US.
Noland	Southeast, 11 states	3,000	80	Plumbing equip., heating, a/c, solid fuel appliances, refrigeration	X		Good quality products; delivery may take a long time
Pittsburgh Plumbing & Heating	Western PA, Eastern Ohio, NW Virginia	12	6	Plumbing equip., heating, a/c, solid fuel appliances, valve fitting pipes		X	Never approached, feels loyalty to buy US products, possibly if quality item
Sonesons Distributors	West Bronx, lower Conn., Rockland Cty, NY	2	1	Plumbing equip, heating, a/c		X	Never approached; would consider if good price and quality
Supply Distributors Company	NE	14	9	Heating, a/c		X	Never approached; would be interested if marketable product
Tesco	All of NJ, parts of NY, PA, Conn.	6	4	Heating, a/c		X	Interested if high quality and priced well
United Refrigeration	PA west of Harrisburg, MD, Del.	-	-	Heating, a/c		X	Never approached, would consider if quality and price were right
M Volk Supply	East side of Cleveland.	5	1	Plumbing equip., heating, a/c		X	Interested if quality and price were right

Appendix F-1

SUMMARY OF HVAC AND PLUMBING DISTRIBUTOR INTERVIEWS

<u>Company</u>	<u>Geographic Territory</u>	<u>No. of Sales Reps</u>	<u>No. of Locations/ Branches</u>	<u>Basic Product Lines</u>	<u>Receptivity to Canadian Products</u>		<u>General Comments</u>
					<u>Current Carry</u>	<u>Don't Carry</u>	
Ward Heating Supply Co.	Monroe & surrounding counties, Rochester	9	1	Heating, a/c, solid fuel appliances		X	Never approached; would consider if competitive
Warm Glow Distributing	All of CT	2	1	Solid fuel appliances		X	Interested if price were right
Walker McKee	Northern Ohio	15	1	Plumbing equip., heating, solid fuel appliances		X	Never approached; would consider if have proper pricing structure and servicing is easy
Yale Electrical Supply Co.	All over USA	20-25	2	Heating, a/c		X	Doesn't carry because can't find as good of a product, would consider if prices went down, guarantee was good, quality superior, feels Canadian products are too expensive

Appendix F-2

SELECTED HVAC AND PLUMBING DISTRIBUTORS
IN DESIGNATED STATES

Mr. M. Koutrakos
Albert Refrig. & A/C
665 Townsend St.
Fitchburg, MA 01420

Mr. William Klebart
Klebart Plumbing Supply
Frederick St.
Webster, MA 01570

Mr. George Dekeon
Burner Supply Co., Inc.
364 Rantoul St.
Beverly, MA 01915
(617) 922-1920

Mr. Ernest Toli
Yale Electrical Supply Co.
98 Canal
Boston, MA

Mr. Robert Fitzgerald
Distributors Corp. of NE
767 Eastern Avenue
Malden, MA 02148
(617) 322-8800

Mr. C. G. Koopman
Supply Distributors Corp.
50 Revere Beach Parkway
Medford, MA 02155
(617) 395-8100

Mr. F. B. Walker
Northeastern Equipment Co.
P. O. Box 271
Newton, MA 02160

Mr. James Durkey (industrial only)
Specialized Air Systems, Inc.
363 Massachusetts Ave.
Lexington, MA 02173

Mr. J. F. Cunningham
Air Flo Distributors, Inc.
94 Sparks St.
Brockton, MA 02402
(617) 586-6614

Mr. Dane White
Burner & Heating Supply
200 Tanner
Lowell, MA
(617) 729-7237

Mr. F. L. Peletier
Central Htg. & A/C Supply Co.
982 Tiogue Ave.
Coventry, RI 02816
(401) 828-4752

Mr. Richard Nassaney
Fasco Distributing Co.
181 Centerville Rd.
Warwick, RI 02816

Mr. John McEnery
Furnace & Duct Supply Co., Inc.
635 Elmwood Ave.
Providence, RI 02907
(401) 941-3800

Mr. Joseph Savegeau
Supply Distributors Corp.
148 Merrimack St.
Manchester, NH 03103

Mr. H. Pelletier
Blue Cold Distributors
460 Alfred Rd.
Biddeford, ME 04005
(207) 283-0086

Mr. Charles Hapoly
Energy Supply, Inc.
241 N. Wiwooski Ave.
Burlington, VT 05401
(802) 864-4600

Mr. H. Marchesi
Warm Glow Distributors
33 West Main St.
Plainville, CT 06062
(203) 747-3467

Mr. Joseph Leggo
Leggo Refrigeration Distrs.
20 Thomas St.
East Hartford, CT 06108

SELECTED HVAC AND PLUMBING DISTRIBUTORS
IN DESIGNATED STATES
(continued)

Mr. Raymond Grise
Grise's Refrig. Sls. & Serv.
Gibson Hill Road
Sterling, CT 06377

Mr. M. Eldrich
Scranton Sales of N.E.
P. O. Box 1728
New Haven, CT 06511

Mr. Samuel Newman
New England Htg. Parts Co.
1830-32 State St. Ext.
Bridgeport, CT 06605
(203) 335-5569

Mr. R. Nissman
Standard Supply of Conn.
P. O. Box 454
Norwalk, CT 06854

Mr. Herbert Tucker
Goldberg Plbg. Supply Co.
P. O. Box 29
Bayonne, NJ 07002

Mr. Irving Winkler
Aid Equip. & Supply Co.
356 Glenwood Ave.
East Orange, NJ 07017

Mr. Robert Dunn, Jr.
C. F. Connolly Dist. Co.
P. O. Box 718
41 River Road
North Arlington, NJ 07032

Mr. Norman Kantor
United Supply Co.
P. O. Box 1269
No. Plainfield, NJ 07061

Mr. Robert Thomas
Cooling Equip. & Supply
P. O. Box 7147
Newark, NJ 07103

Mr. Arnold Blum
Tesco Distributors, Inc.
300 Nye Ave.
Irvington, NJ 07111

Mr. Lino Stanchich
Summit Wholesale Corp.
334 Palisade Ave.
Jersey City, NJ 07306

Mr. Lewis Dorian
Butler Plbg. & Htg. Supl.
90 Route #23
Riverdale, NJ 07457
(201) 838-5220

Mr. William Shapiro
Larchmont Supply Co., Inc.
14 Jay Street
Englewood, NJ 07631

Mr. James Smith
HVAC Distributors, Inc.
406 Paulding Ave.
Northvale, NJ 07647

Mr. Alan Hurwitz
Rochelle Pk. Htg. Clg. Supl.
26 West Passaic St.
Rochelle Park, NJ 07662

Mr. Gifford Kelman
HVAC Equipment Sales Corp.
36 & Middle Road
Hazlet, NJ 07730

Mr. Bill Smith
Tesco Distributors, Inc.
108 So. Main St.
Ocean Grove, NJ 07756
(201) 774-1188

Mr. James Barberi
Amber Supply Co., Inc.
P. O. Box C
Cedar Knolls, NJ 07927

Mr. Howard Smith, Sr.
Smith Equipment Sales
31 Aristone Drive
Berlin, NJ 08009

Mr. T. P. Connors
T & T Supply Co.
26 Capital Ave.
Oaklyn, NJ 08107

SELECTED HVAC AND PLUMBING DISTRIBUTORS
IN DESIGNATED STATES
(continued)

Mr. Melvyn Gellman
Independence Distributors, Inc.
9246 Commerce Hwy.
Pennsauken, NJ 08110

Mr. Arthur Lyle
Taylor Freezer & Equip. Co.
3908 Westfield Ave.
Camden, NJ 08110

Mr. Harry Jaeger
Jaeger's Sales & Supplies
Cor Dover & Robbins Ave.
Trenton, NJ 08638

Mr. J. F. Bellezza
Hunterdon Plbg. & Htg. Supl.
West St.
Annandale, NJ 08801

Mr. Dominick Faraci
Tri County Supply Co., Inc.
850 Ridgewood Ave.
N. Brunswick, NJ 08902

Mr. Paul Hochhauser
J & P Supply
2 Bay Blvd.
Lawrence, NY 11559

Mr. Jeffrey Rose
All Industry Distributors Sup.
641 Broadway
Amityville, NY 11701

Mr. B. Cappiello
Self Serv. Refrig. Co.
864 Hampshire Rd.
Bay Shore, NY 11706

Mr. James McAvey
Air Control Supply, Inc.
45 Remington Blvd.
Ponkonkoma, NY 11779

Mr. Thomas Exposito
Brothers Supply Corp.
40 Commerce Rd.
Hauppauge, NY 11788

Mr. Bernard Rosen
Electro Freeze Distrs. NY
58 Mulberry St.
Hicksville, NY 11801

Mr. Gerlad Janicelli
Uni-Resources Supply, Inc.
Northway 10 PF Bldg.
Ballston Lake, NY 12019

Mr. E. D. Masterson
Masterson Supply Co.
P. O. Box 309
Mechanicville, NY 12118

Mr. Everett J. Marks
A-1 Ice Equip. Distr.
1143 Central Ave.
Albany, NY 12205

Mr. W. E. Legge
L & F Wholesalers, Inc.
91 Lexington Ave.
Albany, NY 12206

Mr. B. Reifler
Dutchess Wholesalers, Inc.
343 Mill St.
Poughkeepsie, NY 12601

Mr. A. Juan, Jr.
Juan Refrig. Supply, Inc.
224 Van Wagner St.
Poughkeepsie, NY 12603

Mr. R. Ray
Ray Industrial Products
3926 Highland Rd.
Cortland, NY 13045

Mr. Bob Kelly
Carnes Parts Center
4577 Buckley Rd.
Liverpool, NY 13088

Mr. K. Evertz
C & C Distributors, Inc.
116 Hawley Ave.
Syracuse, NY 13203

SELECTED HVAC AND PLUMBING DISTRIBUTORS
IN DESIGNATED STATES
(continued)

Mr. John Krell
Krell Distributing Co., Inc.
707 North State St.
Syracuse, NY 13203
(315) 471-7553

Mr. Robert Schruse
HVAC Distributing, Inc.
6493 Ridings Road
Syracuse, NY 13206

Mr. Theodore Raus
Jordan Supply Co.
1200 E. Water St.
Syracuse, NY 13210

Mr. J. Hameline
Central NY Supply Co., Inc.
418 Lafayette St.
Utica, NY 13502

Mr. Leon Lust
West Side Refrig. Supply
1409 Oriskany St. W.
Utica, NY 13502

Mr. W. M. Hannon, Jr.
Electric Svs. Sply & Ice Co.
49 Lester Ave.
Johnson City, NY 13790

Mr. George Baysidis
Clasic Air Cond. Refr.
242 W. 30th St.
New York, NY 10001

Mr. Leo Brown
Component Products, Corp.
500 W. 16th St.
New York, NY 10011

Mr. M. I. Millander
Millander-Wilke Mnfrs.
12 East 41st St.
New York, NY 10017

Mr. Albert Weiss
Weiss A/C Equip.
270 Madison Ave.
New York, NY 10016

Mr. John R. Powelson
Central Refrig. Sup. Co.
663 5th Ave.
New York, NY 10022

Mr. C. Reese
Reese & Long Rfrgtn. Pdts.
1891 Park Ave.
New York, NY 10035

Mr. L. Berkovits
Crest Rfgrn.
4750 Bronx Blvd.
Bronx, NY 10470

Mr. Thomas Monahan
Sonesons Distributors, Inc.
17 Nepperhan Ave.
Elmsford, NY 10523
(914) 592-4512

Mr. Robert Nissman
Eastern Mech. Supply
521 E. Third St.
Mt. Vernon, NY 10553

Mr. Martin Hopwood
L & M Distributors, Inc.
80 Marbledale Road
Tuckahoe, NY 10707
(914) 779-3192

Mr. George Hutter
Equip. Distributors Corp.
14 Tulip Ave.
Floral Park, NY 11001

Mr. Joseph Chalpin
Con-Dea Supply Corp.
21-21 44th Road
Long Island City, NY 11101

Mr. Anthony Rose
A/C Supply Co., Inc.
9-07 34th Ave.
Long Island City, NY 11106

Mr. Theodore Hamber
Continental Distributors, Inc.
50 Van Dam Street
Brooklyn, New York 11222
(212) 384-8456

SELECTED HVAC AND PLUMBING DISTRIBUTORS
IN DESIGNATED STATES
(continued)

Mr. Ralph Bailey
Bailey Distributors, Inc.
74 Sullivan Street
Brooklyn, New York 11231

Mr. Irving Haase
Atlantic Rfrgn. & A/C Co.
108-13 53rd Avenue
Corona, New York 11368

Mr. Ramiez
Blasco Supply, Inc.
60-21 Flushing Avenue
Maspeth, New York 11378

Mr. Melvin Freund
MHW Distributing Corp.
140-40 Queens Blvd.
Jamaica, New York 11435

Mr. Joseph Bosley
Erb Co.
1400 Seneca Street
Buffalo, New York
(716) 825-1400

Mr. Carl Gruber
Gruber Supply Corp.
1880 Elmwood Avenue
Buffalo, New York 14207
(716) 893-8834

Mr. Robert Altman
Comfort Distributors, Inc.
147 Leslie Street
Buffalo, New York 14211

Mr. Henry Neal
Climate Equip. & Suply.
45 Benbro Drive
Buffalo, New York 14225
(716) 683-0311

Mr. Neal Fischer
Standard Replacement Pts.
Box 494
106 E. Lake Road
Canandaigua, New York 14424

Mr. V.J. Monaco
ABR Wholesalers, Inc.
510 N. Goodman Street
Rochester, New York 14609
(716) 482-3601

Mr. Angelo Campise
Ward Heating Supply Co., Inc.
700 Clinton Avenue S.
Rochester, New York 14620
(716) 244-8840

Mr. Charles Scheuble
Dawn Supply Co., Inc.
P.O. Box 511
Donora, PA. 15033

Mr. Richard Feher
Air Distribution Pdts. Co.
139 Sandy Creek Road
Verona, PA. 15147

Mr. John Brussleman
Eckstein Company
1525 Beaver Avenue
Pittsburgh, PA. 15233
(412) 321-8300

Mr. Jay Joseph
Pitts. Plbg/Htg. Supply
416 Melwood Avenue
Pittsburgh, Pa. 15213
(412) 486-2700

Mr. Arthur Till
Rodger & Geiger Supply Co.
2601 Penn Avenue
Pittsburgh, PA. 15222

Mr. R.G. Fehriens
3 Bros. Plbg. Supplies, Inc.
2700 Saw Mill Run Blvd.
Pittsburgh, PA. 15227

Mr. Jay Blaushild
Famous Supply Co. of Uniontown
P.O. Box 1082
Uniontown, PA. 15401

SELECTED HVAC AND PLUMBING DISTRIBUTORS
IN DESIGNATED STATES
(continued)

Mr. Ray Johnson
Johnson Htg. & Supplies, Inc.
P.O. Box 175
Norvelt, PA. 15674

Mr. Duane Weibel
Trumbull Supply Co., Inc.
P.O. Box 536
Meadville, PA. 16335

Mr. Donald Newell
Jordan Supply Co., Inc.
1645 W. 26th Street
Erie, PA. 16505

Mr. D.F. McCready
Central Serv. & Distribution
P.O. Box 651
Altoona, Pa. 16602

Mr. Stephen Krentzman
Krentzman Supply Co.
P.O. Box 508
Lewistown, PA. 17044

Mr. J. Dreisbach
Equipment Brokers Co.
5995 Lemon Street
E. Petersburg, PA. 17520

Mr. Jim Miller
Distributor Associates, Inc.
2828 Fiddlers Green Road
Lancaster, PA. 17601

Mr. J.J. Anczarski
Brian Distributing Co., Inc.
230 S. Main Street
Shenandoah, PA. 17976

Mr. Frank Mikowychok
F&M Distributors, Inc.
P.O. Box 106
Sumneytown, PA. 18084

Mr. Thad Durbuck
Tyrol Distributors, Inc. of NY
600 Union Road
Allentown, PA. 18103

Mr. Edward Kossoff
Ohio Sanitary Supply Company
6010 Euclid Avenue
Cleveland, Ohio 44103
(216) 391-0500

Mr. Robert Keller
United Automatic Heating Supply Inc.
2125 Superior Avenue
Cleveland, Ohio
(216) 621-5571

Mr. Joseph O'Brien
Energy Equipment Supply Co.
57 Friend Street
Pittston, PA. 18640

Mr. Edward Abraham
Bush Distributors, Inc.
504 E. Wingohocking Street
Philadelphia, Pa. 19120

Ms. Mary Reilly
United Refrigeration, Inc.
4111 Whitaker Avenue
Philadelphia, PA. 19124
(205) 698-9100

Mr. Philip Voltz
MDS Supply Co.
P.O. Box 438
Eaton, PA. 19341

Mr. Brian Crick
Welker McKee
6606 Granger road
Cleveland, Ohio 44131
(216) 447-0050

Mr. Robert Wilhite
M. Volk Supply
12904 Kinsman Road
Cleveland, Ohio
(216) 561-2066

Ms. Phyllis Simon
Mutual Mfg. & Supply
3300 Spring Grove
Cincinnati, Ohio 45225
(513) 541-2330

Mr. Tucker
Noland
2700 Warwick Blvd.
Newport News, Virginia
(804) 244-8441

The Harry Alter Co.
1200 W. 35th Street
Chicago, Illinois

Mrs. Sally Mann
Eastern Ohio Sales
18 E. Wood
Lowellville, Ohio 49436
(216) 536-6809

Mr. Victor Torok
Torok Supply
52 S. Meridian
Youngstown, OHIO
(216) 799-6677

Appendix G

SOLID FUEL APPLIANCE
DISTRIBUTORS

- G-1 Summary of Solid Fuel Appliance
Distributor Interviews

- G-2 Listing of Selected Solid Fuel
Appliance Distributors in
Designated States

Appendix G-1

SUMMARY OF SOLID FUEL APPLIANCE DISTRIBUTOR INTERVIEWS

Company	Geographic Territory	No. of Sales Reps	Percent of Business		Percent of Business		Receptivity to Canadian Products		
			Residential	Commercial	New Construction	Replacement	Current Carry	Don't Carry	General Comments
B&K Associates	Mich., Ohio, Indiana	5	80	20	10	90		X	Tried and discontinued, freight charges too expensive like dealing with the people; dislike time and expense involved, would not consider again
Bauer Stoves & Heating	50 mile radius (Urbane, Ohio)	2	98	2	80	20	Not available	-	
Comfort Mart	50 mile radius Troy, N.Y.	1	50	50	10	90		X	Difficulty in getting replacement parts; would consider Canadian if easier to get parts
Energy Options	Ohio	2	99.9	.1	20	80	X		Good products, good value, good people, expensive freight charges
FyreSide Shoppe	NJ, Eastern PA, Western NY	1	95	5	-	-	X		Better made product, good pricing
Gatesman Distributors	Ohio	1	50	50	20	80	X		Superior quality, cooperative, free freight with full truckload
Gendel Enterprises	All of Northeast	3	60	40	30	70	X		Products equal in quality to US, good service, excellent appearance, friendly; delivery problems, freight too high
Masda	all NY, East PA, NJ, Del, Conn, NE, W. Mass.	11	100	0	10	90	X		Products similar to US, most solid fuel chimneys are made in Canada; language barrier
RDCO	NY and 6 N.E. states	4	98	2	5	95	X		Products similar to US; do better on price variance; occasionally there is a customs problem; good freight program less expensive per truckload

Appendix G-1

SUMMARY OF SOLID FUEL APPLIANCE DISTRIBUTOR INTERVIEWS

<u>Company</u>	<u>Geographic Territory</u>	<u>No. of Sales Reps</u>	<u>Percent of Business</u>		<u>Percent of Business</u>		<u>Receptivity to Canadian Products</u>		
			<u>Residential</u>	<u>Commercial</u>	<u>New Construction</u>	<u>Replacement</u>	<u>Current Carry</u>	<u>Don't Carry</u>	<u>General Comments</u>
Sterling Distributors	Northeast, in mostly all of USA	1.5 (part time)	90	10	10	90		X	Tried and discontinued; problems with poor delivery and communication; would re-try if delivery guaranteed and product quality high
Village Products	Northeast	3	95	5	25	75	X		Feels there is no difference between Canadian and American products
Warm Glow Distributors	Connecticut	2	100	-	40	60	X		If price is good, will do business.
Wood Heat	North Jersey, PA, Del, Md, W.Va.	6	60	40	10	90	X		Canadian products have excellent quality, superior to American. Dislike extra expenses linked to the geographic distance

Appendix G-2

SOLID FUEL EQUIPMENT DISTRIBUTORS

<u>Distributor Name and Address</u>	<u>States Covered</u>	<u>Comments</u>
<u>Almar Industries</u> 7 Harrison Avenue Morris Plains, NJ 07950 (201) 267-7192	CT, ME, MA, NH, NJ, NY, OH, PA, RI, VT	Wholesale distributors of stove and fireplace accessories, chimney cleaning equipment, fans, heaters, stove pipes
<u>B & K Distributors</u> 8996 U.S. 223 Elissfield, MI 49228 (517) 486-4205	OH, PA	BK add-on furnaces and boilers, Grizzly stoves and fireplace inserts, Hunter, Escatera wood stove lifts
<u>Bauer Stoves & Heating</u> 3548 SR 54 Urbana, OH 43078 (513) 484-3456 1-800-762-9802	OH, PA	Efel, Nashua, Yukon, Rutland, Worchester, VacuStack, Top Hat, Kool Krete, Hearthshield, Safe-T- Flue, Chimfex
<u>Comfort Mart</u> 8 Winter Street Troy, NY 12180 (518) 282-4543	NY	Wood/coal stoves, fireplace inserts, zero clearance fire- places, central heating/add-ons, chimney cleaning equipment, off season products
<u>Energy Options, Inc.</u> 7408 Vine Street Cincinnati, OH (513) 761-8873	OH, KY, IN	Distributes for: Carolina, Garrison, Energy, King, Ironsmith, Godin, accessories
<u>Family Fireplaces, Inc.</u> 3994 Groves Road Columbus, OH 43237 (614) 864-8888	OH	Distributes for: wood and coal stoves, fireplace inserts, furnaces, coal and wood, furnace add-ons, catalytic furnace, mobile home units
<u>Fyreside Shoppe, Inc.</u> 501 Stelton Road Piscataway, NJ 08854 (201) 752-4260	NJ, East PA, Metro NY	Distributes Black Lok Pipe, El Fuego Fireplaces, Metalbestos Pipe, Modifyre, Peterson gas logs, Portland Williamette, Saf-T- Grates, Worcester Brush, recessed screens and tool sets
<u>Gatesman Distributing, Inc.</u> 4011 Avon Lake Road Litchfield, OH 44253 (216) 725-7896	OH	Distributes "alternate energy products": Lopi energy systems, Jensen, Pro-jet, Chimfex, Thurma- lox, Hearthmate, Kresno, Crown Hill stove, Schaefer brush
<u>Gendel Enterprises, Inc.</u> 41 Canal Street Lee, MA 01238 1-800-628-5040	MA	Serves energy stoves, chimney sweeps, builders and installers

SOLID FUEL EQUIPMENT DISTRIBUTORS (continued)

<u>Distributor Name and Address</u>	<u>States Covered</u>	<u>Comments</u>
<u>Masda Corporation</u> 22 Troy Road Whippany, NJ 07981 (201) 386-1100	DE, MD, East PA, RI, CT, MA, NY, NJ	Distributors of Harpco Universal gas grill replacement parts, Ducane gas barbecues, Martin 'O' clearance fireplaces, Charmglow gas barbecues, Nashua wood and coal stoves, King wood and coal stoves, DuraVent chimneys, Black stove pipe, SuperHeat fireplace inserts, Empire gas space heaters, Security chimneys, Meredith fireplace inserts
<u>RDCO Energy Equipment Distributors</u> (A Division of Ryan- DeWitt Corp.) 563 East Main Street Batavia, NY 14020 (716) 343-5831	NY	Distributes Squire Stoves, Russo, LOPI Energy Systems, Russell Stoves, Fox Fire, DuraVent, Kem Stoves, Worcester
<u>Sterling Distributors</u> 60 Break Neck Hill Road Southboro, MA 01745 (617) 485-5875	MA	Wood stoves, coal stoves, wood/ coal stoves, fireplace inserts, accessories, central heating/ add-ons, solar products, chim- neys, chimney cleaning equipment, off-season products
<u>Village Products</u> Route 101 Bedford, NH 03102 (800) 843-9202 (603) 472-5007	NH	Wood stoves, coal stoves, accessories, central heating/ add-ons, chimneys, chimney cleaning equipment
<u>Warm Glow Distributors</u> 33 West Main Street Plainville, Ct. 06462 (203) 747-3467	-	Fuego prefabricated chimneys, and fireplaces
<u>Wood Heat</u> Route 212 Pleasant Valley Quakertown, PA 18951 (215) 346-7894	PA	Wood/coal stoves, fireplace inserts, accessories, zero clearance fireplaces, central heating/add-ons, solar pro- ducts, chimneys, lifting equipment, fans

Appendix H

SUPPORTING DATA FOR PRODUCT REVIEWS

- H-1 Residential Water Heaters
- H-2 Residential Furnaces
- H-3 Residential Boilers
- H-4 Solid Fuel Appliances

Appendix H-1

RESIDENTIAL WATER HEATERS

<u>HEATER TYPE</u>	<u>1983</u>	<u>1982</u>	<u>1981</u>	<u>1980</u>	<u>1979</u>	<u>1978</u>	<u>1977</u>	<u>1976</u>	<u>1975</u>	<u>1974</u>	<u>1973</u>
<u>Gas-Fired Automatic Storage⁽¹⁾</u>											
Natural Gas	2,953,375	2,771,349	2,461,544	2,498,475	2,548,175	2,577,573	N/A	2,695,470	2,388,120	2,209,390	2,568,030
LP-Gas	218,692	269,598	323,663	319,788	339,100	343,479	N/A	416,660	256,990	359,260	512,410
Total Gas	3,172,067	3,040,947	2,785,207	2,818,263	2,887,275	2,921,052	3,070,221	3,112,130	2,645,110	2,568,650	3,080,440
<u>Electric Storage⁽¹⁾</u>	3,131,017	2,716,219	2,463,270	2,451,021	2,661,809	2,684,104	2,703,810	2,618,200	2,183,400	2,486,600	2,591,100
<u>Oil-Fired⁽²⁾</u>	N/A	30,700	26,200	29,200	44,100	47,100	49,300	38,000	32,000	26,700	30,400
TOTAL WATER HEATERS	6,303,084 ⁽³⁾	5,787,866	5,274,677	5,298,484	5,593,184	5,652,256	5,823,331	5,768,330	4,860,510	5,081,950	5,701,940

(1) Not expanded to represent total industry.

(2) Bureau of the Census.

(3) Excludes oil-fired.

Source: GAMA and related associations

Appendix H-2

RESIDENTIAL FURNACES
Unit Shipments (000)

	<u>1983</u>	<u>1982</u>	<u>1981</u>	<u>1980</u>	<u>1979</u>	<u>1978</u>	<u>1977</u>	<u>1976</u>	<u>1975</u>	<u>1974</u>	<u>1973</u>
<u>WARM AIR FURNACES</u>											
Gas (forced and gravity)	1,661.8	1,155.6	1,417.7	1,445.7	1,862.6	1,636.1	1,508.1	1,554.4	1,185.8	1,476.3	1,719.5
Electric (resistance)	340.0	177.1	234.5	227.4	283.2	349.3	311.1	246.9	194.1	410.8	391.8
Oil	127.3	103.5	81.2	63.7	157.8	268.0	228.3	235.7	212.6	209.0	328.1
TOTAL FURNACES	2,129.1	1,436.2	1,733.4	1,736.8	2,303.6	2,253.4	2,047.5	2,037.0	1,592.5	2,096.1	2,439.4

Source: GAMA and related associations

Appendix H-3

RESIDENTIAL BOILERS
Unit Shipments (000)

	<u>1983</u>	<u>1982</u>	<u>1981</u>	<u>1980</u>	<u>1979</u>	<u>1978</u>	<u>1977</u>	<u>1976</u>	<u>1975</u>	<u>1974</u>	<u>1973</u>
<u>BOILER TYPE</u>											
Gas-Fired (steam and hot water)	147.7	147.6	161.6	293.3	221.3	125.9	113.1	112.6	88.1	122.6	146.7
Electric ⁽¹⁾	0.7	0.8	1.7	2.7	2.7	2.0	2.2	1.6	1.7	3.7	N/A
Oil-Fired ⁽¹⁾	82.6	72.8	67.5	51.7	85.1	108.0	134.2	132.3	98.9	91.0	130.3
TOTAL BOILERS	231.0	221.2	230.8	347.7	309.1	235.9	249.5	246.5	188.7	217.3	277.0 ⁽²⁾

(1) Not expanded to total industry.

(2) Excludes electric.

Source: CAMA and related associations

Appendix H-4

ESTIMATED SOLID FUEL APPLIANCE EQUIPMENT MARKET

(Thousands of Units)

	<u>1975*</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>
Fireplaces:								
Self-contained, zero clearance	450	470	650	700	740	680	570	490
Freestanding, prefabricated	30	30	45	50	40	40	35	30
Insert							800	831
Subtotal	480	500	695	750	780	720	1405	1351
Stoves:								
Wood only	577	444	1000	1055	1308	1000	900	1277
Coal/Wood, Coal only	N/A	N/A	51	117	192	380	340	481
Subtotal	577	444	1051	1172	1500	1380	1240	1758
Chimney:								
Masonry								1037
Pre-fab metal, air insulated								251
Pre-fab metal, solid pack								88
Unspecified								415
Subtotal								1719
Accessories:								
Tool sets								572
Log racks or holders								288
Grate								144
Glass Door								110
Metal Screen								89
Lock sets								11
Subtotal								1214
Other:								
Boiler, Furnace	40	40	40	50	70	140	125	210

Source: U.S. Department of Commerce, Wood 'n Energy Magazine, Housing Industry Dynamics, Hayes/Hill Estimates.

* All years are for the heating season that starts in that year and extends through the following Spring.

Appendix I

STATE CONSUMER
PROTECTION OFFICES

Appendix I

STATE CONSUMER PROTECTION OFFICES

CONNECTICUT

Department of Consumer Protection
State Office Building
165 Capitol Avenue
Hartford, CT 06106
(203) 566-4999
1-800-842-2649 (Connecticut only)

MAINE

Consumer Fraud Division
Office of Attorney General
State House Station No. 6
Augusta, ME 04333
(207) 289-3716

MASSACHUSETTS

Executive Office of Consumer Affairs
John W. McCormack Building
One Ashburton Place, Room 1411
Boston, MA 02108
(617) 727-7780

NEW HAMPSHIRE

Consumer Protection and Antitrust Division
Office of Attorney General
State House Annex
Concord, NH 03301
(603) 271-3641

NEW JERSEY

Division of Consumer Affairs
Department of Law and Public Safety
1100 Raymond Boulevard, Room 504
Newark, NJ 07102
(201) 648-4010

STATE CONSUMER PROTECTION OFFICES (continued)

NEW YORK

New York State Consumer Protection Board
99 Washington Avenue
Albany, NY 12210
(518) 474-8583

OHIO

Consumer Frauds and Crimes Section
Office of Attorney General
30 East Broad Street, 15th Floor
Columbus, OH 43215
(614) 466-8831 or 4986
1-800-282-0515 (Ohio only)

PENNSYLVANIA

Bureau of Consumer Protection
Office of Attorney General
Strawberry Square, 14th Floor
Harrisburg, PA 17120
(717) 787-9707

RHODE ISLAND

Consumer Protection Unit
Department of Attorney General
72 Pine Street
Providence, RI 02903
(401) 277-3163

VERMONT

Consumer Protection Division
Office of Attorney General
109 State Street
Montpelier, VT 05602
(802) 828-3171
1-800-642-5149 (Vermont only)

Appendix J

STATE INSURANCE REGULATORS

Appendix J

STATE INSURANCE REGULATORS

MAINE

Theodore T. Briggs
Superintendent of Insurance
State Office Building
State House, Station #34
Augusta, ME 04333
(207) 289-3101

NEW HAMPSHIRE

Frank E. Whaland
Insurance Commissioner
169 Manchester Street
Concord, NH 03301
(603) 271-2261

VERMONT

George A. Chaffee
Commissioner of Banking and Insurance
State Office Building
Montpelier, VT 05602
(802) 828-3301

MASSACHUSETTS

Peter Hiam
Commissioner of Insurance
100 Cambridge Street
Boston, MA 02202
(617) 727-3333

RHODE ISLAND

Thomas J. Caldarone, Jr.
Insurance Commissioner
100 North Main Street
Providence, RI 02903
(401) 277-2223

STATE INSURANCE REGULATORS
(continued)

CONNECTICUT

Peter W. Gillies
Insurance Commissioner
165 Capitol Avenue
Room 425
State Office Building
Hartford, CT 06106
(203) 566-2810

NEW YORK

James P. Corcoran
Superintendent of Insurance
Two World Trade Center
New York, NY 10047
(212) 488-4124
800-342-3736 (toll free)

NEW JERSEY

Joseph F. Murphy
Commissioner of Insurance
201 East State Street
Box CN 325
Trenton, NJ 08625
(609) 292-5363

PENNSYLVANIA

Michael L. Browne
Commissioner of Insurance
Strawberry Square
13th Floor
Harrisburg, PA 17120
(717) 787-5173

OHIO

George Fabe
Director of Insurance
2100 Stella Court
Columbus, OH 43215
(614) 466-3584

Appendix K

CHAMBERS OF COMMERCE
IN DESIGNATED STATES

Appendix K

CHAMBERS OF COMMERCE IN DESIGNATED STATES

The Conn. Business & Industry Assoc., Inc.
70 Asylum Street
Hartford, Connecticut 06103
(203) 547-1661

Council of State Chambers of Commerce (CSCC)
499 S. Capitol Street, S.W.
Washington, D.C. 20003
(202) 484-8104

Maine Chamber of Commerce & Industry
126 Sewall Street
Augusta, Maine 04330
(207) 623-4568

Massachusetts Chamber of Commerce
125 High Street
Boston, Massachusetts 02110
(617) 426-1250

New Hampshire Chamber of Commerce
244 N. Main Street
Concord, New Hampshire 03301
(603) 224-5388

New Jersey State Chamber of Commerce
5 Commerce Street
Newark, New Jersey 07102

New York State Dept. of Commerce
99 Washington Avenue
Albany, New York 12245
(518) 474-1431

Ohio Chamber of Commerce
17 South High Street, 8th Floor
Columbus, Ohio 43215
(614) 228-4201

Pennsylvania Chamber of Commerce
222 North Third Street
Harrisburg, Pennsylvania 17101
(717) 255-3252

Rhode Island Chamber of Commerce
206 Smith Street
Providence, R.I. 02908
(401) 272-1400

Vermont State Chamber of Commerce
Box 37
Montpelier, Vermont
(802) 223-3443/229-0154

Appendix L

STATE ENERGY OFFICES

Appendix L

STATE ENERGY OFFICES

CONNECTICUT

Office of Policy and Management Energy Division
80 Washington Street
Hartford, CT 06106
(203) 566-2800

MAINE

Maine Office of Energy Resources
State House, Station No. 53
Augusta, ME 04333
(207) 289-3811

MASSACHUSETTS

Executive Office of Energy Resources
100 Cambridge Street, Room 1500
Boston, MA 02202
(617) 727-4732

NEW HAMPSHIRE

Governor's Energy Office
State House Annex, Room 22
Concord, NH 03301
FTS 842-2711

NEW JERSEY

New Jersey Department of Energy
101 Commerce Street
Newark, NJ 07102
(201) 648-2744

NEW YORK

New York State Energy Office
2 Rockefeller Plaza, 10th Floor
Albany, NY 12223
(518) 473-4376

STATE ENERGY OFFICES (continued)

OHIO

Director, Ohio Department of Development
Division of Energy
30 East Broad Street, 34th Floor
Columbus, OH 43215
(614) 466-3465

PENNSYLVANIA

Governor's Energy Council
P. O. Box 8010
Harrisburg, PA 17105
(717) 783-9982

RHODE ISLAND

Governor's Energy Office
80 Dean Street
Providence, RI 02903
(401) 277-3370

VERMONT

Vermont Energy Office
State Office Building
Montpelier, VT 05602
(802) 828-2393
FTS 832-2393

Appendix M

STATE UTILITY COMMISSIONS

Appendix M

STATE UTILITY COMMISSIONS

CONNECTICUT

Thomas H. Fitzpatrick, Chairman
Connecticut Public Utilities Control Authority
1 Central Park Plaza
New Britain, CT 06051
(203) 827-1553

MAINE

Peter Bradford, Chairman
Maine Public Utilities Commission
State House, Station #18
Augusta, ME 04333
(207) 289-3831

MASSACHUSETTS

Paul F. Levy, Chairman
Massachusetts Department of Public Utilities
100 Cambridge Street
Boston, MA 02202
(617) 727-3500
800-392-6066 (toll free)

NEW HAMPSHIRE

Paul McQuade, Chairman
New Hampshire Public Utilities Commission
8 Old Suncook Road
Concord, NH 03301
(603) 271-2431

NEW JERSEY

Barbara Curran, President
New Jersey Board of Public Utilities
1100 Raymond Boulevard
Newark, NJ 07102
(201) 648-2026

STATE UTILITY COMMISSIONS (continued)

NEW YORK

Paul L. Gioia, Chairman
New York Public Service Commission
Empire State Plaza
Albany, NY 12223
(518) 474-7080
800-342-3377 (toll free)
800-342-3355 (toll free for emergencies)

OHIO

Michael Del Bane, Chairman
Ohio Public Utilities Commission
375 South High Street
Columbus, OH 43215
(614) 466-3016

PENNSYLVANIA

Linda C. Paliaferro, Chairman
Pennsylvania Public Utility Commission
P. O. Box 3265
Harrisburg, PA 17120
(717) 783-1740

RHODE ISLAND

Edward F. Burke, Chairman
Rhode Island Public Utilities Commission
100 Orange Street
Providence, RI 02903
(401) 277-3500

VERMONT

V. Louise McCarren, Chairman
Vermont Public Service Board
120 State Street
State Office Building
Montpelier, VT 05602
(802) 828-2319

Appendix N

TRADE ASSOCIATIONS

Appendix N

U. S. ASSOCIATIONS SERVING THE RESIDENTIAL HEATING INDUSTRY

Name, Address and Telephone No.	Description
<p>AIR CONDITIONING & REFRIGERATION INSTITUTE (ARI) 1815 N. Ft. Myer Drive Arlington, VA 22209 (703) 524-8800 Mr. Richard C. Schulze, President</p>	<p>Manufacturers of a/c, warm air heating and commercial and industrial refrigeration equipment and allied parts. Develops equipment standards and certifies performance of certain industry products.</p>
<p>AIR CONDITIONING CONTRACTORS OF AMERICA (ACCA) 1228 17th Street, N.W. Washington, D.C. 20036 (202) 296-7610 Mr. James P. Norris, Executive Vice President</p>	<p>Contractors involved in installation and servicing of heating, air conditioning and refrigeration systems. Associate members are utilities, wholesalers, and other market oriented businesses.</p>
<p>AIR DIFFUSION COUNCIL (ADC) 230 N. Michigan Avenue Chicago, IL 60601 (312) 372-9800 George M. Otto, Executive Secretary</p>	<p>Manufacturers of grilles, registers, ceiling diffusers, terminal air control devices of flexible ducts. Basic research into behavior of air streams in enclosed areas and analysis of air distribution equipment.</p>
<p>AIR DISTRIBUTION INSTITUTE (ADI) 242 E. Ogden Avenue Hinsdale, IL. 60521 (312) 920-0744 Ms. Patricia M. Keating, Gen. Manager</p>	<p>Manufacturers of prefabricated pipes, ducts, and fittings for the residential industry. Promotes the air distribution industry.</p>
<p>AIR MOVEMENT AND CONTROL ASSOCIATION (AMCA) 30 W. University Drive. Arlington Heights, IL. 60004 Mr. Edward A. Cruse, Exec. Vice President</p>	<p>Manufacturers of air moving and control equipment used in systems for ventilating, heating and cooling.</p>
<p>AMERICAN GAS ASSOCIATION (AGA) 1515 Wilson Blvd. Arlington, VA 22209 (703) 841-8400 Mr. George H. Lawrence, President</p>	<p>U.S. and Canadian distributors of natural, manufactured and liquified gas. Compiles variety of national and regional statistical, economic, financial and marketing studies. Maintains committee which compiles standards on construction and performance of appliances and equipment.</p>
<p>AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI) 1430 Broadway New York, NY. 10018 (212) 354-3300 Mr. Donald L. Peyton, Exec. Vice President</p>	<p>Industrial firms, trade associations, technical societies of consumer organizations and gov't agencies. Gives status as American National Standards to standards developed by agreement of groups concerned, in areas such as performance characteristics.</p>
<p>AMERICAN SOCIETY OF GAS ENGINEERS (ASGE) P.O. Box 936 Tinley Park, Illinois 60477 (312) 532-5707</p>	<p>Professional society of engineers in the field of gas appliances and equipment.</p>
<p>AMERICAN SOCIETY OF HEATING REFRIGERATION AND AIR CONDITIONING ENGINEERS (ASHRAE) 1791 Tullie Circle, N.E. Atlanta, GA 30329 (404) 636-8400 Mr. A. T. Bogs, Executive Vice President</p>	<p>Professional society of heating, ventilating, refrigeration and air conditioning engineers. Sponsors research and general technical programs.</p>
<p>AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME) 345 East 47th Street New York, New York 10077 (212) 705-7722 Mr. Paul F. Allmendinger, Deputy</p>	<p>Technical society of mechanical engineers. Conducts research and develops boiler, pressure vessel and power test codes. Sponsors ANSI in developing safety codes and standards for equipment.</p>
<p>AMERICAN SUPPLY ASSOCIATION (ASA) 221 N. LaSalle Street Chicago, Illinois 60601 (312) 236-4082 Mr. Robert Bluth, Exec. Dir.</p>	<p>National association of wholesalers of plumbing and heating. Compiles statistics on operating costs, wages and salaries</p>
<p>ASSOCIATED AIR BALANCE COUNCIL (AABC) 1133 15th St. N.W. Washington, D.C. 20005 (202) 429-9440 Mr. Kenneth M. Sufka, Exec. Director</p>	<p>Certified test and balance engineers. Offers recommendations to manufacturing segment regarding air handling equipment.</p>

U.S. ASSOCIATIONS SERVING THE RESIDENTIAL HEATING INDUSTRY

Name, Address and Telephone No.	Description
<p>ASSOC. OF HOME APPLIANCE MANUFACTURERS (AHAM) 20 N. Wacker Drive Chicago, IL 60606 (312) 984-5800 Mr. Robert Holding, President</p>	<p>Comprised of companies manufacturing approximately 90% of major portable appliances in U.S. Conducts market research and reporting of industry statistics. Represents appliance industry before gov't through Washington office. Develops standards for measuring appliance performance.</p>
<p>ASSOC. OF INDUSTRIAL MANUFACTURERS' REPRESENTATIVES (AIMR) 370 Lexington Avenue New York, NY 10017 (212) 679-5550 Mr. William Tellefsen, Exec. Vice President</p>	<p>Manufacturer representative companies in the plumbing - heating - cooling industries.</p>
<p>GAS APPLIANCE MANUFACTURES ASSN. (GAMA) 1901 N. Ft. Myer Drive Arlington, VA. 22209 (703) 525-9565 Mr. Harry A. Paynter, President</p>	<p>Manufacturers of residential, commercial and industrial gas appliances and equipment. Represents members before legislative bodies, freight-rate making bodies and consumer groups. Source for market statistics, product promotion and industrial publicity.</p>
<p>GAS RESEARCH INSTITUTE (GRI) 8600 W. Bryn Mawr Avenue Chicago, IL. 60671 (312) 399-8100 Mr. Henry Linden, President</p>	<p>Interstate and intrastate gas pipelines, natural gas distribution companies, municipal gas distribution systems. Conducts research related to gas supply, efficient gas fueled appliances and equipment.</p>
<p>GAS VENT INSTITUTE c/o Herbert Witte 6531 Drake Lincolnwood, IL. 60645 (312) 673-6913 Mr. Herbert Witte, Secretary - Treasurer</p>	<p>Manufacturers of gas vents</p>
<p>HOME VENTILATING INSTITUTE 4300-L Lincoln Avenue Rolling Meadows, IL. 60008 (312) 359-8160 Mr. Les A. Barron, Exec. Director</p>	<p>Voluntary organization for manufacturers self regulation. Designates air delivery and standards ratings for ventilating products. Cooperates with code and standard bodies in development of proposed standards.</p>
<p>HYDRONICS INSTITUTE (HI) 35 Russo Place Berkeley Hts., NJ 07922 (201) 464-8200 Mr. Louis F. Kurtz, General Manager</p>	<p>Manufacturers of hydronic heating and cooling equipment. Compiles statistics.</p>
<p>INSTITUTE OF GAS TECHNOLOGY 3424 State Street Chicago, Illinois 60616 (312) 567-3650 Mr. Bernard S. Lee, President</p>	<p>Educational and research facility sponsored by companies engaged in the production and distribution of natural gas, oil and coal.</p>
<p>MECHANICAL CONTRACTORS ASSOCIATION OF AMERICA (MCAA) 5530 Wisconsin Avenue, N.W. Suite 750 Chevy Chase, Maryland 20815 (301) 654-7960 Mr. Walter M. Kandy, Exec. Vice President</p>	<p>Contractors who furnish install piping, piping systems and related equipment for heating, ventilating, a/c, cooling and refrigeration systems.</p>
<p>NAT'L ASSOC. OF ELECTRICAL DISTRIBUTORS (NAED) 600 Summer Street Stamford, Ct. 06901 (203) 327-1290 Mr. Arthur W. Hooper, Executive Director</p>	<p>Wholesale distributors of electrical supplies and apparatus.</p>

U.S. ASSOCIATIONS SERVING THE RESIDENTIAL HEATING INDUSTRY

<u>Name, Address and Telephone No.</u>	<u>Description</u>
NATIONAL ASSOCIATION OF PLUMBING - HEATING - COOLING CONTRACTORS (NAPHCC) 1016 20th Street, N.W. Washington, D.C. 20036 (202) 331-7675 Mr. Charles B. Lavin, Jr., Executive Director	Federation of 350 local associations of plumbing, heating and cooling contractors.
NATIONAL ASSOCIATION OF WHOLESALER DISTRIBUTORS (NAW) 1725 K Street, N.W. Washington, D.C. 20006 (202) 872-0885	Federation of national, state, and local associations and individual wholesalers-distributors. Represents industry's views to the federal government.
NATIONAL ELECTRIC MANUFACTURERS ASSOCIATION (NEMA) 2101 L Street, N.W. Washington, D.C. 20037 (202) 457-8400 Mr. Bernard H. Falk, President.	Companies which manufacture equipment used for generation, transmission, distribution and utilization of electric power. Develops product standards, participates in developing National Electrical Safety Codes. Compiles and issues statistical data on sales, production and inventories.
NATIONAL ELECTRICAL CONTRACTOR ASSOCIATION (NECA) 7315 Wisconsin Avenue Bethesda, MD. 20214 (301) 657-3110 Mr. Robert L. Higgins, Exec. Vice President	Electrical contractors installing, repairing, or servicing electric wiring, equipment and appliances.
NATIONAL OIL JOBBERS COUNCIL 1707 H. St. N.W. Washington, D.C. 20006 (203) 331-1198 Mr. Phillip R. Chisholm, Exec. Vice President	Federation of 43 state and regional petroleum marketing associations. 20,000 independent wholesale petroleum marketers and retail fuel oil dealers.
NORTH AMERICAN HEATING AND AIR CONDITIONING WHOLESALERS ASSOCIATION (NHAW) 1661 W. Henderson Road Columbus, Ohio 43220 (614) 459-2200 Mr. James P. Wilder, Exec. V.P.	Wholesalers of heating, a/c, sheet metal, duct work, refrigerants and their components.
WOOD HEATING ALLIANCE (WHA) 1101 Connecticut Avenue, N.W. Suite 700 Washington, D.C. 20036 (202) 857-1181 Mr. Carter Keithley, Executive Vice President	Manufacturers, dealers and suppliers. Fosters promotion and education in the use of wood, and in the highest level of design in appliances using wood.

Appendix O

MAJOR TRADE PUBLICATIONS

Appendix O

MAJOR TRADE PUBLICATIONS

Directories

<u>Title</u>	<u>Periodicity</u>	<u>Publisher</u>	<u>Address</u>
ASHRAE Handbook & Product Directory	Approx. every 4 years	ASHRAE	345 E. 47th Street New York, NY 10017
The Air Conditioning, Heating & Refrigeration News	A	Business News Publishing Co.	P. O. Box 2600 755 W. Big Beaver Road Troy, MI 48099 (313) 362-3700
LP-Gas Engine Fuel Resource Directory	A	National LP-Gas Association	1301 W. 22nd Street Oak Brook, IL 60521 (312) 986-4800

Solid Fuel

<u>Title</u>	<u>Periodicity</u>	<u>Publisher</u>	<u>Address</u>
Alternative Energy Retailer	M	Zackin Publications, Inc.	70 Edwin Avenue P. O. Box 2180 Waterbury, CT 06722 (203) 755-0158
Wood 'N Energy	M	Wood 'N Energy (Annual Buyer's Guide)	13 Depot Street P. O. Box 2008 Concord, NH 03301 (603)

MAJOR TRADE PUBLICATIONS (continued)

Heating Equipment

<u>Title</u>	<u>Periodicity</u>	<u>Publisher</u>	<u>Address</u>
Fuel Oil & Oil Heat and Solar Systems	M	Industry Publications, Inc.	200 Commerce Road Cedar Grove, NJ 07004 (201) 239-5800
The Air Conditioning, Heating and Refrigeration News	W	Business News Publishing Co.	P. O. Box 2600 755 W. Big Beaver Road Troy, MI 48007 (313) 362-3700
HVAC Product News	Q	Construction Industry Press, Inc.	135 N. Addison Street Elmhurst, IL 60126 (312) 530-6161
Fuel Oil News	M	Hunter Publishing	950 Lee Street Des Plaines, IL 60016 (312) 296-0770
Heating & Plumbing Product News	Bi-M	Gordon Publications	13 Emery Avenue Dover, NJ 07801 (201) 361-9060
Heating/Piping/Air Conditioning	M	Reinhold Publishing, Penton/IPC	1111 Chester Avenue Cleveland, OH 44114 (216) 696-7000
Mechanical Products Catalog	A	Hutton Publishing Co.	375 N. Broadway Jericho, NY 11753 (516) 935-2740
The National Energy Journal	M	The National Wood Stove & Fireplace Journal	4930 W. Glendale Avenue Glendale, AZ 85301 (602) 937-0373
Pennsylvania Contractor	7x	Pennsylvania Assn. of Plumbing-Heating-Cooling Contractors, Inc.	219 Pine Street Harrisburg, PA 17101 (717) 232-4247
Plumbing-Heating-Cooling Catalog	A	Hutton Publishing Co.	375 N. Broadway Jericho, NY 11753 (516) 935-2740

MAJOR TRADE PUBLICATIONS (continued)

Heating Distribution

<u>Title</u>	<u>Periodicity</u>	<u>Publisher</u>	<u>Address</u>
Distributor (HVAC/ R)	Q	Technical Reporting Corp.	1098 S. Milwaukee Avenue P. O. Box 745 Wheeling, IL 60090 (312) 537-6460
Service Reporter (AC, H, V, & R)	M	Technical Reporting Corp.	1098 S. Milwaukee Avenue P. O. Box 745 Wheeling, IL 60090 (312) 537-6460
The Wholesaler (P, H, C, P)	M	Scott Periodicals Corp.	135 Addison Elmhurst, IL 60126 (312) 530-6160
Contractor	Bi-W	Technical Publishing	1301 S. Grove Avenue P. O. Box 1030 Barrington, IL (312) 381-1840
Contracting Busi- ness	M	Penton/IPC	1111 Chester Avenue Cleveland, OH 44114 (216) 696-7000

Key:

A - Annually
Bi-M - Bi-Monthly
Bi-W - Bi-Weekly
M - Monthly
Q - Quarterly
W - Weekly
7x - Seven times
per year

Appendix P

MAJOR U.S. AND SELECTED
NORTHEAST REGIONAL TRADE
SHOWS & CONVENTIONS

Appendix P
MAJOR U.S. AND SELECTED NORTHEAST REGIONAL
TRADE SHOWS & CONVENTIONS

Name, Address and Telephone No.	Trade Show	Convention/ Meeting	Location	1984 Date
AIR CONDITIONING & REFRIGERATION INSTITUTE (ARI) 1815 North Ft. Myer Drive Arlington, VA 22209 (703) 524-8800		X	Phoenix, AZ	Nov. 12-16
AIR CONDITIONING CONTRACTORS OF AMERICA (ACCA) 1228 17th Street, N.W. Washington, DC 20036 (202) 296-7610		X	Washington, DC	March
AMERICAN GAS ASSOCIATION (AGA) 1515 Wilson Boulevard Arlington, VA 22209 (703) 841-8400		X	Washington, DC	Oct. 28-31
AMERICAN SOCIETY OF HEATING, REFRIGERATION AND AIR CONDITIONING ENGINEERS (ASHRAE) 1791 Tullie Circle, N.E. Atlanta, GA 30329 (404) 636-8400	X	X	Atlanta, GA Kansas City, MO	Jan. 29-Feb. 2 June 24-28
AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME) 345 E. 47th Street New York, New York 10077 (212) 705-7722		X	Seattle, Wa. New Orleans, La.	June 10-14 Dec. 9-14
AMERICAN SUPPLY ASSOCIATION (ASA) 221 N. LaSalle Street Chicago, IL 60601 (312) 236-4082	X	X	Atlanta, GA Atlanta, GA.	Oct. 28-Nov. 4 Oct. 29-Nov. 1
ASSOCIATION OF HOME APPLIANCE MANUFACTURERS (AHAM) 20 North Wacker Drive Chicago, IL 60606 (312) 984-5800		X	Amelia Island, FL	Apr. 25-29
GAS APPLIANCE MANUFACTURERS ASSOCIATION (GAMA) 1901 North Ft. Myer Drive Arlington, VA 22209 (703) 525-9565		X	Palm Beach, FL	Apr. 16-18
HYDRONICS INSTITUTE (HI) 35 Russo Place Berkeley Heights, NJ 07922 (201) 464-8200		X	Absecon, NJ	June 5-7 Oct. 23-25

MAJOR U.S. AND SELECTED NORTHEAST REGIONAL
TRADE SHOWS & CONVENTIONS
(continued)

<u>Name, Address and Telephone No.</u>	<u>Trade Show</u>	<u>Convention/ Meeting</u>	<u>Location</u>	<u>1984 Date</u>
MAINE PLUMBING-HEATING-COOLING CONTRACTORS c/o Clare J. Charles, Executive Director P. O. Box 800 Kennebunk, ME 04045 (203) 985-6673	X		Portland, ME	Apr. 6-7
MASSACHUSETTS PLUMBING-HEATING-COOLING CONTRACTORS 316 Washington Street Wellesley, MA 02181 (617) 237-4076	X		Sturbridge, MA	Apr. 14
MECHANICAL CONTRACTORS ASSOCIATION OF AMERICA (MCAA) 5530 Wisconsin Avenue, N.W. Suite 750 Chevy Chase, Maryland 20815 (301) 654-7960 Mr. Walter M. Kandy, Exec. Vice President		X	Los Angeles, Ca.	Feb. 5-9
NATIONAL ASSOCIATION OF HOME BUILDERS OF THE U.S. 15th and M Streets, N.W. Washington, DC 20005 (202) 822-0200	X		Houston, TX	Jan. 21-24
NATIONAL ASSOCIATION OF PLUMBING - HEATING - COOLING CONTRACTORS (NAPHCC) 1016 20th Street, N.W. Washington, DC 20036 (202) 331-7675	X		Atlanta, GA	Oct. 29-Nov. 1
NATIONAL ASSOCIATION OF THE REMODELING INDUSTRY 1901 N. Moore Street, Suite 808 Arlington, Virginia 22209 (703) 276-7600	X		Chicago, IL	Mar. 29-31
NATIONAL ASSOCIATION OF WHOLESALER DISTRIBUTORS (NAW) 1725 K Street, N.W. Washington, D.C. 20006 (202) 872-0885		X	San Juan, P.R.	Jan. 15-21
NATIONAL ELECTRICAL CONTRACTOR ASSOCIATION (NECA) 7315 Wisconsin Avenue Bethesda, MD 20214 (301) 657-3110		X	New Orleans, LA	Oct. 29-Nov. 2
NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA) 2101 L Street, N.W. Washington, D.C. 20037 (202) 457-8400 Mr. Bernard H. Falk, President.		X	Atlanta, Ga.	Nov. 11-14
NATIONAL OIL JOBBERS COUNCIL 1707 H Street, N.W. Washington, DC 20006 (203) 331-1198		X	New Orleans, LA	Sept. 24-26
NORTH AMERICAN HEATING AND AIR CONDITIONING WHOLESALERS ASSOCIATION (NHAW) 1661 W. Henderson Road Columbus, Ohio 43220 (614) 459-2100 Mr. James P. Wilder, Exec. Vice President		X	Quebec City, Que. San Diego, Ca.	June 10-12 Dec. 9-11

MAJOR U.S. AND SELECTED NORTHEAST REGIONAL
TRADE SHOWS & CONVENTIONS
 (continued)

<u>Name, Address and Telephone No.</u>	<u>Trade Show</u>	<u>Convention/ Meeting</u>	<u>Location</u>	<u>1984 Date</u>
PHILADELPHIA MANUFACTURER REPRESENTATIVE ASSOCIATION c/o Haymon & Carpenter 1864 East Marlton Pike Cherry Hill, NJ 08003 (215) 331-5800	X		Philadelphia, PA	Nov. 7-8
PLUMBING & HEATING REPRESENTATIVES OF NEW ENGLAND c/o Brad Sell Burt Sell & Sons Inc. 816 Crooks Way Mattapoisett, MA 02739 (617) 758-2960	X		Lebanon, NH	May 2
PLUMBING & HEATING WHOLESALERS OF N.E. 192 Worcester Street Willerley, MA (617) 235-7225	X		Boston, MA	Feb. 5-6
WOOD HEATING ALLIANCE (WHA) 1101 Connecticut Avenue, N.W., Suite 700 Washington, DC 20036 (202) 857-1181	X		Louisville, KY	Mar. 4-11

Appendix Q

INDEPENDENT TESTING LABORATORIES

Appendix Q

INDEPENDENT TESTING LABORATORIES

APEX Testing and Engineering Inc.
P. O. Box 1324
York, PA 17405
(717) 854-2182

American Gas Association Laboratories
8501 East Pleasant Valley Road
Cleveland, Ohio 44131

1425 Grande Vista Avenue
Los Angeles, California 90023

Arnold Greene Testing Laboratories Inc.
East Natick Industrial Park
6 Huron Avenue
Natick, MA 01760
(617) 653-5950

Auburn University
Mechanical Engineering Department
Auburn, AL 36830
(205) 826-4574

Canadian Standards Association
178 Rexdale Boulevard
Rexdale, Ontario M9W 1R3
(416) 744-4240

Certicon of America Inc.
8612 Fairway Place
Middleton, WI 53562
(608) 836-4400

ETL Testing Laboratories Inc.
Industrial Park
Cortland, NY 13045
(607) 753-6711

Energy Testing Laboratory of Maine (ETLM)
Southern Maine Vocational Technical Institute
Fort Road
South Portland, ME 04106
(207) 799-7303, Ext. 392

Gas and Mechanical Laboratories Inc.
3230 Mines Avenue
Los Angeles, CA 90023
(213) 262-1185

Northwest Laboratories of Seattle Inc.
1530 First Avenue South
Seattle, WA 98134
(206) 622-0680

Omni Environmental Services Inc.
10950 S.W. 5th Street, Suite 245
Greentree West Business Park
Beaverton, OR 97005
(503) 643-3755

PFS Corporation
2404 Daniels Street
Madison, WI 53704
(608) 221-3361

Appendix Q

INDEPENDENT TESTING LABORATORIES (Continued)

Pacific Inspection and Research Lab Inc.
4076 148th Avenue, N.E.
Redmond, VA 98052
(206) 881-7668

R.F. Geisser and Associates, Inc.
P.O. Box 4145
East Providence, RI 02914
(401) 438-7320

Shelton Energy Research
P.O. Box 5235
Santa Fe, NM 87502
(505) 983-9457

Stove Testing Lab
2721 North Hayden Island Drive
Portland, OR 97217
(503) 283-9711

5355 West Minnesota Avenue
Indianapolis, IN 46241
(317) 243-7422

Terralab Engineers
3585 Via Terra
Salt Lake City, UT 84115
(801) 262-0094

Underwriters Laboratories, Inc. (UL)
333 Pfingsten Road
Northbrook, IL. 60062
(312) 272-8800

Underwriters Laboratories of Canada (ULC)
7 Crouse Road
Scarborough, Ontario M1R 3A9
(416) 757-3611

Warnock Hersey International Inc.
Fire Laboratories Division
3210 American Drive
Mississauga, Ontario L4V 1B3
(416) 678-7820

125 East 4th Avenue
Vancouver, BC V5T 1G4
(604) 876-4111

**TESTING LABORATORIES - PRODUCTS TYPICALLY TESTED,
APPROXIMATE COST AND TIME REQUIREMENTS**

Testing Laboratory	Covered Products Typically Tested	Approximate Cost⁽¹⁾ for Single Appliance	Approximate Time Required⁽²⁾ for Single Appliance
American Gas Association Laboratories	Gas fired products, some others.	\$2,000 - \$4,000	2 - 3 weeks
Arnold Greene Testing Laboratories Inc.	All products covered	\$2,000 - \$4,000	2 - 6 weeks
ETL Testing Laboratories Inc.	All products covered except pre fab chimneys, chimney liners and zero clearance fireplaces	\$550 and up	Varies
Energy Testing Laboratories of Maine	All products covered except air to air heat exchangers	\$4,000 - \$6,000	6 - 8 weeks
PFS Corporation	All products except water heaters (gas and electric)	\$1,500 and up	1 week and up
R.F. Geisser & Associates Inc.	Furnaces (wood, coal) Boilers (wood, coal) Chimney and chimney liners, zero-clearance fireplaces	\$3,500 - \$4,500	3 weeks and up
Underwriters Laboratories Inc.	All products covered.	\$2,000 and up	8 - 12 weeks

1. These figures are only rough estimates. Laboratories indicated that cost varies considerably with type of product, tests required, product conformance to standards and the number of products submitted by a manufacturer.
2. These figures are only rough estimates. Laboratories indicated that time requirements vary considerably with type of product, test required and product conformance to standards.

Source: Based on Hayes/Hill interviews

Appendix R

STATE FIRE MARSHALS

Appendix R

STATE FIRE MARSHALS

CONNECTICUT

Captain Leslie W. Williams, Jr.
Deputy State Fire Marshal
Bureau of State Fire Marshal
Division of State Police
Connecticut Department of Public Safety
294 Colony Street
Meriden, CT 06450

MAINE

Donald M. Bisset
State Fire Marshal
Maine Department of Public Safety
99 Western Avenue
Augusta, ME 04333

MASSACHUSETTS

Joseph A. O'Keefe
State Fire Marshal
Division of Fire Prevention
Massachusetts Department of Public Safety
1010 Commonwealth Avenue
Boston, MA 02215

NEW HAMPSHIRE

Dr. Thomas W. Dawson
State Fire Marshal
Division of Safety Services
New Hampshire Department of Safety
James H. Hayes Building
Hazen Drive
Concord, NH 03305

NEW JERSEY

John McQuade
State Fire Marshal
Bureau of Fire Safety
New Jersey Department of Community Affairs
3131 Princeton Pike
Building #3 (2nd Floor)
CN 809
Lawrenceville, NJ 08648

NEW YORK

Francis A. McGarry
State Fire Administrator
Office of Fire Prevention and Control
New York Department of State
162 Washington Avenue
Albany, NY 12231

OHIO

William Hennosy
Acting State Fire Marshal
Division of State Fire Marshal
Ohio Department of Commerce
8895 East Main Street
Reynoldsburg, OH 43068

PENNSYLVANIA

Captain Joseph A. Robyak
State Police Fire Marshal
Fire Marshal Division
Pennsylvania Division of State Police
1800 Elmerton Avenue
Harrisburg, PA 17109

RHODE ISLAND

Earl F. Shannon
State Fire Marshal
Rhode Island Division of Fire Safety
1270 Mineral Spring Avenue
North Providence, RI 02904

VERMONT

Paul R. Philbrook
Commissioner of Public Safety and
State Fire Marshal
Vermont Department of Labor and Industry
120 State Street
Montpelier, VT 05602

Appendix S

SUPPORTING MATERIALS ON PRODUCT
TESTING AND APPROVALS

Appendix S

CODES AND STANDARDS SPONSORED BY
VARIOUS SOCIETIES AND ASSOCIATIONS

PRODUCT	TITLE	SPONSOR	REFERENCE	
Boilers	Packaged Fire Tube Boiler Ratings (1978)	ABMA	ABMA	
	Commercial Industrial Boiler Ratings (1980)	ABMA	ABMA	
	Performance Requirements for Automatic Pressure Atomizing Oil Burners of the Mechanical Draft Type		ANSI Z 91.2-1976	
	Recommended Design Guidelines for Stoker Firing of Bituminous Coals (1983)	ABMA	ABMA	
	Boiler Water Limits and Steam Purity Recommendations for Watertube Boilers (3rd Ed., 1982)	ABMA	ABMA	
	Boiler and Pressure Vessel Code (eleven sections) (1980)	ASME	ASME	
	Code for the Construction and Inspection of Boilers and Pressure Vessels	CSA	B51-M1981	
	Cast-Iron	Testing and Rating Heating Boilers (1982)	HYD I	IBR/SBI
		Ratings for Cast-Iron and Steel Boilers (1983)	HYD I	IBR/SBI
	Gas or Oil	Explosion Prevention of Fuel Oil and Natural Gas Fired Single Burner Boiler Furnaces (1982)	NFPA	NFPA 85A
Explosion Prevention of Natural Gas-Fired Multiple Burner Boiler-Furnaces (1978)		NFPA	NFPA 85B	
Gas-Fired Low-Pressure Steam and Hot Water Boilers (with 1983 addenda)		AGA	ANSI 221.13-1982	
Gas Utilization Equipment in Large Boilers (with 1972 and 1976 addenda; R-1983)		AGA	ANSI 283.3-1971	
Oil Fired Boiler Assemblies (1975)		UL	ANSI/UL 726	
Prevention of Explosions in Fuel Oil-Fired Multiple Burner Boiler-Furnaces (1978)		NFPA	NFPA 85D	
Control and Safety Devices for Automatically Fired Boilers		ASME	ANSI/ASME CSD.1-1982	
Oil-Fired Steam and Hot-Water Boilers for Residential Use (3a)		CSA	B140.7.1-1976	
Oil-Fired Steam and Hot Water Boilers for Commercial and Industrial Use (1a)		CSA	B140.7.2-1967	

Appendix S

CODES AND STANDARDS SPONSORED BY
VARIOUS SOCIETIES AND ASSOCIATIONS

PRODUCT	TITLE	SPONSOR	REFERENCE
Burners	Installation of Domestic Gas Conversion Burners (reaffirmed 1977 with 1979 addenda)	AGA	ANSI Z21.8-1971
	Domestic Gas Conversion Burners (with 1981 addenda)	AGA	ANSI Z21.17-1979
	Oil Burners (1980)	UL	ANSI/UL 296-1980
	Installation Code for Oil Burning Equipment	CSA	B139-1976
	General Requirements for Oil Burning Equipment	CSA	B140.0-1972
	Vaporizing Type Oil Burners	CSA	B140.1-1966 (R1980)
Chimneys	Chimneys, Fireplaces, and Vents (1977)	NFPA	ANSI/NFPA 211-1980
	Chimneys, Factory-Built, Residential Type and Building Heating Appliance (1978)	UL	ANSI A52.1-1973 ANSI/UL 103-1977
	Chimneys, Factory-Built, Medium Heat Appliance (1976)	UL	ANSI/UL 959-1976
	Glossary of Terms Relating to Chimneys, Vents, and Heat Producing Appliances (1984)	NFPA	NFPA 97M
Furnaces	Gas-Fired Gravity and Fan Type Direct Vent Wall Furnaces (with 1982 addenda)	AGA	ANSI Z21.44-1981
	Gas-Fired (except Direct Vent and Separated Combustion System Central Furnaces) Central Furnaces	AGA	ANSI Z21.47-1983
	Direct Vent Central Furnaces (with 1980 and 1982 addenda)	AGA	ANSI Z21.64-1978
	Gas-Fired Gravity and Fan Type Floor Furnaces (with 1982 addenda)	AGA	ANSI Z21.48-1982
	Gas-Fired Gravity and Fan Type Vented Wall Furnaces (with 1982 addenda)	AGA	ANSI Z21.49-1982
	Methods of Testing for Rating Non-Residential Warm Air Heaters	ASHRAE	ASHRAE 45-78
	Methods of Testing for Heating Seasonal Efficiency of Central Furnaces and Boilers	ASHRAE	ANSI/ASHRAE 103-1982

Appendix S

CODES AND STANDARDS SPONSORED BY
VARIOUS SOCIETIES AND ASSOCIATIONS

PRODUCT	TITLE	SPONSOR	REFERENCE
Furnaces (Con't)	Installation of Oil Burning Equipment	NFPA	NFPA 31-1983
	Oil-Fired Central Furnaces (1980)	UL	ANSI/UL 727-1980
	Gas-Fired Duct Furnaces (with 1983 addenda)	AGA	ANSI 283.9-1982
	Oil-Fired Floor Furnaces (1976)	UL	ANSI/UL 729-1975
	Oil-Fired Wall Furnaces (1974)	UL	ANSI/UL 730-1978
	Standard Gas Code (1982 with 1984 addenda)	SHCCI	SBCCI
	Oil Burning Stoves and Water Heaters (2a)	CSA	B140.3-1962 (R1980)
	Oil-Fired Warm Air Furnaces (8a)	CSA	B140.4-1974
	Oil-Fired Floor Furnaces (4a)	CSA	B140.5-1963 (R1981)
	Installation Code for Solid-Fuel Burning Appliances and Equipment	CSA	B365 M1982
	Solid Fuel-Fired Appliances for Residential Use	CSA	B366.1 M1981
	Electric Central Warm Air Furnaces	CSA	C22.2 No. 23-1980
Heat Exchangers	Standards of Tubular Exchanger Manufacturers Association, 6th, ed. (with 1982 addenda)	TEMA	TEMA
	Sample Problem Book Supplement (1980)	TEMA	TEMA
	Liquid Suction Heat Exchangers	ARI	ANSI/ARI 490-79
	Method of Testing Air-to-Air Heat Exchangers	ASHRAE	ASHRAE 84-78
	Air-to-Air Heat Recovery Equipment	ARI	ARI 1060-80
Water Heaters	Gas Water Heaters, Vol. 1, Automatic Storage Type Water Heaters with Inputs of 75,000 Btu per Hour or Less (with 1982 and 1983 addenda)	AGA	ANSI Z21.10.1-1981 ANSI Z21.10.1A-1982
	Gas Water Heaters, Vol.III, Circulating Tank, Instantaneous and Large Automatic Storage Type Water Heaters (with 1982 and 1983 addenda)	AGA	ANSI Z21.10.3-1981 ANSI Z21.10.3A-1982

Appendix S

CODES AND STANDARDS SPONSORED BY
VARIOUS SOCIETIES AND ASSOCIATIONS

PRODUCT	TITLE	SPONSOR	REFERENCE
Water Heaters (Cont')	Household Electric Storage Tank Water Heaters (1983) Oil-Fired Storage Tank Water Heaters (1974) Commercial Hot Water Generating and Heat Recovery Equip. Construction and Test of Electric Storage Tank Water Heaters Oil Burning Stoves and Water Heaters Oil-Fired Service Water Heaters & Swimming Pool Heaters Performance Requirements for Electric Storage Tank Water Heaters Methods of Testing to Determine the Thermal Performance of Domestic Water Heating Systems	UL UL NSF CSA CSA CSA CSA ASHRAE	UL 174 ANSI/UL 732-1975 NSF-5 C22.2 No. 110M-1981 B140.3-1962 (R1980) B140.12-1976 C191-1973 ANSI/ASHRAE 95-1981

Appendix S

CODES AND STANDARDS SPONSORED BY
VARIOUS SOCIETIES AND ASSOCIATIONS

PRODUCT	TITLE	COMMENTS
Solid Fuel	UL 103	Sixth edition of the standard for chimneys, factory-built, residential type and building heating appliance. February 1983. Chimneys tested to 2,100 degrees F. receive UL 103"HT".
	UL 127	Fifth edition of the standard for factory-built fireplaces. November 1981. Revisions made January 1983.
	UL 391	First edition of the standard for manually fired, solid-fuel central heaters. July 1981.
	UL 462	Standard for heat reclaimers in gas, oil or solid fuel-fired appliances. Proposed November 1978.
	UL 737	Fifth edition, fireplace stoves, March 1982. Covers free-standing solid fuel-burning units with chambers open to rooms, open and closed to the room, and others.
	UL 907	Proposed standard for fireplace accessories. Includes inserts, heat exchangers and glass doors.
	UL 1482	Standard for most stoves. Officially "room heaters, solid fuel type". Second edition, January, 1983.
	UL 1618	Upcoming standard for floor protection and wall shields.

Appendix S

CODES AND STANDARDS SPONSORED BY
VARIOUS SOCIETIES AND ASSOCIATIONS

PRODUCT	TITLE	COMMENTS
Solid Fuel	CSA B366-M1979	Solid fuel-fired appliances for residential use standard, including wood and coal, 1979.
	CSA C22.2, No. 3-1979	Standard for electrical features of solid fuel burning equipment. 1979.
	ULC S629M	Highest safety standard for prefabricated chimneys. Three half-hour test burns required at 2,100°F. June 1981.
	ULC S628	Canada's first safety standard for fireplace inserts. Requires a direct flue connection and easy removal of the appliance for chimney cleaning. June, 1981.
	ULC S627	For solid fuel-fired space heaters. Includes all wood and coal-fired stoves. Latest metric version, S627M, issued September, 1980.
	ULC C127S	Factory-built fireplaces. Canadian version of UL 127; now included in ULC S610.
	ULC S610	Standard for factory-built fireplaces, including zero clearances. December, 1979.
ETLM 78-1	Covers low heat producing, solid fuel-burning and combination appliances. The first standard in the U.S. to be applied to central heating equipment, it was originated by the Energy Testing Laboratory of Maine in 1978.	

ABBREVIATIONS AND ADDRESSES

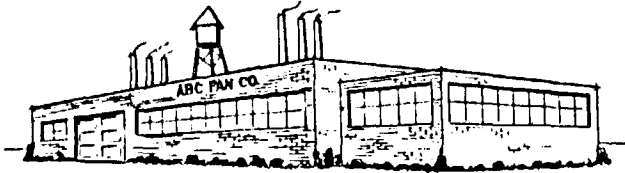
The Codes and Standards Listed in Table 1 Can be Obtained
from the Organizations Listed in the Reference Column.

ABMA	American Boiler Manufacturers Association, Ste. 160, 950 N. Glebe Rd., Arlington, Va 22203
ACCA	Air Conditioning Contractors of America, 1228 17th St., N.W., Washington, DC. 20036 (formerly the National Environmental Systems Contractors Association)
ACGIH	American Conference of Governmental Industrial Hygienists, 6500 Glenway Avenue, Bldg. D-5, Cincinnati, OH 45211
ADC	Air Diffusion Council, 230 N. Michigan Avenue, Suite 1200, Chicago, IL. 60601
AFS	American Foundrymen's Society, Golf and Wolf Roads, Des Plaines, IL. 60016
AGA	American Gas Association, 1515 Wilson Blvd. Arlington, VA 22209
AHAM	Association of Home Appliance Manufacturers, 20 N. Wacker Dr., Chicago, IL. 60606
AIA	American Insurance Association, 85 John St. New York, N.Y. 10038
AIHA	American Industrial Hygiene Association, 475 Wolf Ledges Pkwy., Akron, OH 44311
AMCA	Air Movement and Control Association, 30 W. University Dr., Arlington Heights, IL 60004
ANSI	American National Standards Institute, 1430 Broadway, New York, N.Y. 10018
ARI	Air-Conditioning and Refrigeration Institute, 1501 Wilson Blvd., 6th Fl., Arlington, VA 22209
ASA	Acoustical Society of America, 335 E. 45th Street, New York, N.Y. 10017
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. 1791 Tullie Circle, N.E. Atlanta, GA 30329
ASME	American Society of Mechanical Engineers, 345 E. 47th Street, New York, N.Y. 10017
ASTM	American Society for Testing and Materials, 1916 Race St., Philadelphia Pa. 19103
BOCA	Building Officials and Code Administrators International, Inc. 4501 W. Flossmoor Road, Country Club Hills, IL 60477
BSI	British Standards Institution, 2 Park St., London, W1A 2BS, England
CABO	Council of American Building Officials, 5205 Leesburg Pike, Suite 201 Falls Church, VA 22041
CAGI	Compressed Air and Gas Institute, Ste. 1230 Keith Bldg., 1621 Euclid Avenue, Cleveland OH 44115
CSA	Canadian Standards Association, 178 Rexdale Blvd., Rexdale, Ont. M9W 1R3, Canada
CTI	Cooling Tower Institute, P.O. Box 73383, Houston, Texas 77090
EJMA	Expansion Joint Manufacturers Association, Inc., 25 N. Broadway, Tarrytown, NY 10591
HEI	Heat Exchange Institute, Ste. 1230 Keith Bldg. 1621 Euclid Avenue, Cleveland, OH 44115
HI	Hydraulic Institute, 712 Lakewood Ctr., N., 14600 Detroit Avenue, Cleveland OH 44107
HYD I	Hydronics Institute, 35 Russo Place, Berkeley Heights, N.J. 07922
IAPMO	International Association of Plumbing and Mechanical Officials, 5032 Alhambra Ave. Los Angeles, California 90032
IBR	Institute of Boiler and Radiator Manufacturers, superseded by Hydronics Institute.

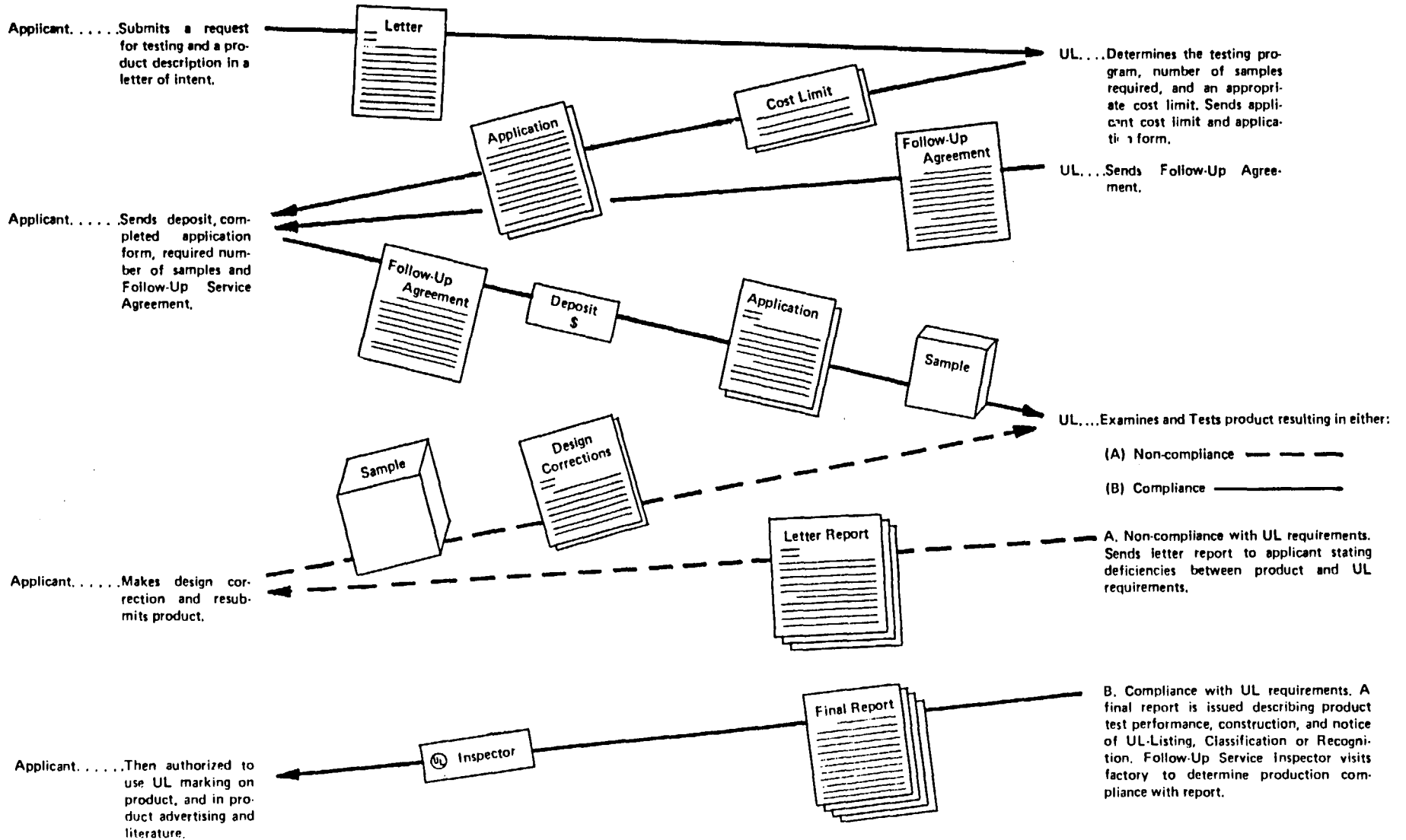
TYPICAL




SUBMITTAL



A-154



ENERGYGUIDE



You can save substantially on home heating and cooling energy costs by following the simple steps outlined below:

-
1. Weatherproof your house
 2. Assure energy efficient heating and cooling equipment selection and installation
 3. Operate and maintain your system to conserve energy.
-

Help conserve energy. Compare the energy efficiency rating and cost information for this model with others. Check the figures and spend less on energy.

Your contractor has the energy fact sheets. Ask for them.

Important Removal of this label before consumer purchase is a violation of federal law (42 U.S.C. 6302)

SAMPLE LABEL

[FR Doc. 79-33568 Filed 11-16-79; 8:48 am]
BILLING CODE 5730-01-C

APPENDIX S

Water Heater-Oil

(Name of Corporation)
Model(s) RP23, RP38

ENERGYGUIDE

Estimates on the scale are based on a national average oil rate of 62¢ per gallon.

Only models with first hour ratings of 75 to 85 gallons are used in the scale.



Model with lowest energy cost
\$127

\$134

Model with highest energy cost
\$159



THIS MODEL



Your cost will vary depending on your local energy rate and how you use the product. The energy cost is based on U.S. Government standard tests.

How much will this model cost you to run yearly?

		Yearly cost
Cost per gallon	52c	\$137
	56c	\$145
	60c	\$153
	64c	\$161
	68c	\$169
	72c	\$177

Ask your salesperson or local utility for the energy rate (cost per gallon) in your area.

Important Removal of the label before consumer purchase is a violation of federal law (42 U.S.C. 6302)

SAMPLE LABEL

Part No. 381279

APPENDIX S

BUILDING CODES IN SELECTED STATES(1)

Designated State	Statewide Building or Fire Code		Notes: (For states where a specific code is not required, references are to most widely accepted codes.)	Statewide Safety Testing	
	Required	Not Required		Required	Not Required
Maine	X		NFPA 211, except some towns have adopted their own, stricter ordinances.(2)	X (for central heaters only)	
Massachusetts	X		Massachusetts State Building Code. Inspections and permits required.	X	
New Hampshire		X	NFPA 211 or local code, whichever is more strict.		X
New Jersey	X		New Jersey Uniform Construction Code. Permits required.	X	
New York		X	New York State Building Code		X
Ohio		X	BOCA, One and Two Family Dwelling Code. Ohio Basic Building Code covers public buildings.	X (in public buildings)	
Pennsylvania		X	BOCA covers 33% of population. Fire and Panic Regulations for three or more family dwellings.		X
Rhode Island	X		Rhode Island State Building Code. Permits required.		X
Vermont		X	NFPA 211 covers leased or rented dwellings.		X

(1) Compiled are building codes, fire codes and safety standards that apply to solid fuel appliances and installations, as reported by state energy offices, fire marshals and building code officials. It should be noted that although individual states have adopted the codes listed, interpretation, enforcement and additional regulations may vary among building and enforcement officials at the local level.

(2) Maine: Fire marshal fines up to \$500 for an improper installation.

APPENDIX T

SUPPORTING MATERIALS ON
STATE BUILDING CODES AND REGULATIONS

- T-1 State Building, Codes and Regulations
- T-2 State Energy Efficiency Requirements for
Residential Heating Equipment in New
Residential Buildings

STATE BUILDING CODES AND REGULATIONS

This sheet describes the information presented in Appendix T-1 on how to read the tables. Each state has two sheets. Listed below are the titles and descriptions which refer to a corresponding column heading on the state charts which follow. The second sheet provides names and addresses corresponding to the numbers in Columns VI and VIII.

CODE OR REGULATION (Column I) 1977/1914

The first year noted above is the year the latest edition of the code or regulation was adopted. The second year is the year the code or regulation was originally adopted. The name of the Model Code is indicated when appropriate.

TECHNICAL BASIS FOR THE CODE OR REGULATION (Column II)

- A. Model code adopted without technical amendments made by the state.
- B. Model code adopted with technical amendments made by the state.
- C. Code is written by the state.

ADMINISTRATIVE RULES AND REGULATIONS (Column III) - 1977/1914

The first year is the year the latest revision of the administrative rules and regulations was adopted. The second year is the year the administrative rules and regulations were originally adopted.

PRE-EMPTIVE APPLICATION OF CODE OR REGULATION (Column IV)

- A. Code is mandatory (minimum) throughout state.
- B. Code is mandatory (maximum) throughout state.
- C. Code is mandatory throughout state except for specified areas, cities, or municipalities.
- D. Code is mandatory for state buildings only.
- E. Code is voluntary only.
- F. Code may be amended by local jurisdictions only with state approval.
- G. Code may be amended by local jurisdiction without state approval.

ADMINISTRATION (Column VI)

Number listed refers to agency (in charge of administration of the code or regulation) listed below.

LEVEL OF ENFORCEMENT (Column VII)

Level of government at which enforcement is conducted:

- A. State
- B. County
- C. Municipal

If A. see column for specific state agency in charge of enforcement.

ENFORCEMENT (Column VIII)

Number listed refers to agency (in charge of enforcement of the code or regulation) listed below.

Source: 1982 Directory of State Building Codes & Regulations, Robert C. McLaughlin - Wible, Ed. National Conference of States on Building Codes and Standards. 1982.

APPENDIX T-1

CONNECTICUT

	Code or Regulation	Technical Basis of Code	Administrative Rules and Regulations	Preemptive Application of Code	Administration	Level of Enforcement	Enforcement
BUILDING	State of CT Basic Building Code - 1981/1971/S1	B	CT General Statutes, Chapter 354-1981/1970	A	1	A	1
ELECTRICAL	NFPA National Electrical Code - 1978	A		A,B,F	1	A	1
FIRE SAFETY	CT Fire Safety Code	A		A	4	A	4
FIRE PREVENTION	NFPA 101						
MECHANICAL	State of CT Basic Building Code - 1978			A,B,F	1	A	1
PLUMBING	National Plumbing Code - 1978	B		A,B,F	1	A	1
ENERGY IN NEW BUILDINGS	ASHRAE 90-75 - 1975	A			5		
ENERGY IN EXISTING BUILDINGS							

A-160

CONNECTICUT BUILDING REGULATORY AGENCIES

1. Leo Belval
Acting State Building Inspector
Department of Public Safety
294 Colony Street
Meriden, Connecticut 06450
(203) 238-6011
2. P. Joseph Peraro
Commissioner
Labor Department
200 Folly Brook Boulevard
Wethersfield, Connecticut 06109
(293)566-4385
3. Leo F. Alix
Deputy Commissioner of
Factory Inspection Division
Director of Occupational Safety & Health
200 Folly Brook Boulevard
Wethersfield, Connecticut 06109
(203) 566-4550
4. Lt. William Kirkby
Deputy State Fire marshal
State Fire Marshal's Office
State Police Department
294 Colony Street
Meriden, Connecticut 06450
(203) 238-6620
5. Joseph De Simone
Assistant Program Manager
Connecticut Energy Office
80 Washington Street
Hartford, Connecticut 06
(203) 5666-5757

APPENDIX T-1

MAINE

	Code or Regulation	Technical Basis of Code	Administrative Rules and Regulations	Preemptive Application of Code	Administration	Level of Enforcement	Enforcement
BUILDING							
ELECTRICAL	NFPA National Electric Code - 1981/1955	A	State of Maine Electricians' Examining Board - 1981/1955	A	1	A	2
FIRE SAFETY	NFPA Codes - 1955 Numbers 10, 12, 13, 17, 33, 34 1976/1973	A	National Fire Protection Association Codes Adopted by Maine's Fire Marshal's Office - 1977	A	5	A	6
FIRE PREVENTION	NFPA Codes - 1955 Numbers 50, 51, 51A, 545, 56A, 56B, 56C, 56F, 56G, 58, 72A, 72E, 75, 76A, 96, 102, and 211	A	NFPA Codes Adopted by Maine's Fire Marshal's office - 1980	A	5	A	6
MECHANICAL	NFPA Code #31, Installation of Oil Burning Equipment - 1981/1955	B	Rule and Regulations and Standards in Addition to Those in Current Edition of NFPA #31 1981/1955	A	1	A	3
PLUMBING	IAPMO Uniform Plumbing Code - 1982/1970 (as written by the state)	B	State of Maine Plumbing Code - 1982/1970	A	7	A	8
ENERGY IN NEW BUILDINGS ¹	Maine Energy Efficiency Standards	A		E		C,D	
ENERGY IN EXISTING BUILDINGS ²							

A-162

¹ Legislation pending.

² Ibid.

MAINE BUILDING REGULATORY AGENCIES

1. Mr. Harvey E. DeVama, Commissioner
Department of Business Regulation
Station 35
State House
Augusta, Maine 04333
(207) 289-3916

2. Blake MacKay, Executive Secretary
Electricians' Examining Board
Department of Business Regulation
Station 35
State House,
Augusta, Maine 04333
(207) 289-2352

3. Donald M. Bissett, State Fire Marshal
Oil and Solid Fuel Board
Station 52
State House
Augusta, Maine 04333
(207) 289-2481

4. David F. Preble, Executive Director
Manufactured Housing Board
Station 35
State House
Augusta, Maine 04333
(207) 289-2955

5. Arthur K. Stilphen, Commissioner
Department of Public Safety
Station 42
State House
Augusta, Maine 04333
(207) 289-3801

6. Donald M. Bisset, State Fire Marshal
Station 52
State House
Augusta Maine 04333
(207) 289-2481

7. Michael R. Petit, Commissioner
Department of Human Services
Station 11
State House
Augusta, Maine 04333
(207) 289-2736

8. Donald Hoxie, Director
Division of Health Engineering
Station 11
State House
Augusta, Maine 04333

9. William R. Malloy, Commissioner
Department of Manpower Affairs
Station 54
State House
Augusta, Maine 04333
(207) 289-3788

10. Robert Sullivan, Director
Division of Boilers,
Elevators, and Tramways
Station 45
State House
Augusta, Maine 04333
(207) 289-3331

11. Henry E. Warren, Commissioner
Department of Environmental
Protection
Station 17
State House
Augusta, Maine 04333
(207) 289-2811

APPENDIX T-1

MASSACHUSETTS

	Code or Regulation	Technical Basis of Code	Administrative Rules and Regulations	Preemptive Application of Code	Administration	Level of Enforcement	Enforcement
BUILDING	Massachusetts State Building Code - 1979/1975 (BOCA Basic Building Code)	B	Article 1, Administration and Enforcement of the Massachusetts State Building Code - 1979/1975	B	1	C	
ELECTRICAL	Massachusetts Electrical Code - 1978/1950	B		B	1	C	
FIRE SAFETY	Massachusetts State Building Code - 1978/1950 (BOCA Basic Building Code)						
FIRE PREVENTION	Massachusetts Fire Prevention Regulations - 1979/1948	C		B	2	C	
MECHANICAL	BOCA Basic Mechanical Code - 1978/1979 (adopted by reference only)		Article 1. Adminis. and Enforce. of the MA State Bldg. Code - 1979/1975	B	1	C	
PLUMBING	Massachusetts State Plumbing and Gas Code			B	4	C	
ENERGY IN NEW BUILDINGS	Article 20, Energy Conservation of the Massachusetts State Building Code - 1979/1978		Article 1. Adminis. and Enforce. of the MA State Bldg. Code - 1979/1975	B	1	C	
ENERGY IN EXISTING BUILDINGS							

A-164

MASSACHUSETTS BUILDING REGULATORY AGENCIES

John K. Olsen
State Building Code Commission
McCormack State Office Building
1 Ashburton Place, Room 1301
Boston, Massachusetts 02108
(617) 727-7551

Samuel Gronich, Chairman
Board of Fire Prevention Regulations
Department of Public Safety
McCormack State Office Building
1 Ashburton Place
Boston, Massachusetts 02108
(617) 727-7551

John M. Otis, Chairman
Board of Elevator Regulations
Department of Public Safety
McCormack St., Room 1301
Boston, Massachusetts 02108
(617) 727-3046

Irving J. Risi, Executive Secretary
Board of State Examiners of
Plumbers and Gas Fitters
100 Cambridge Street
Room 1503
Boston, Massachusetts 02202
(617) 727-3046

5. Deborah A. Ryan
Administrative Assistant
Architectural Barriers Board
McCormack State Office Building
1 Ashburton Place
Room 1301
Boston, Massachusetts 02108
6. Frank Gotta, Chairman
Massachusetts Mobile Homes Comm.
100 Cambridge Street
Room 904
Boston, Massachusetts 02202
(617) 727-3253
7. Howard S. Wensley, Director
Division of Community Sanitation
Department of Public Health
600 Washington Street
Room 770
Boston, Massachusetts 02111
(617) 727-2660
8. Anthony D. Cortese, Commissioner
Department of Environmental
Quality Engineering
1 Winter Street, 9th Floor
Boston, Massachusetts 02108

APPENDIX T-1

NEW HAMPSHIRE

	Code or Regulation	Technical Basis of Code	Administrative Rules and Regulations	Preemptive Application of Code	Adminis- tration	Level of Enforce- ment	Enforce- ment
BUILDING	BOCA Building Code 1981/1981	A	State Law	D	1	A	1
ELECTRICAL	National Electrical Code - 1978/1973 ¹	A	National Electrical Code RSA 319C, Rules and Regulations Governing Electricians' Licenses - 1978/1977	A	1	A	1
FIRE SAFETY	NFPA Codes and Standards - Numbers 30-1977, 31-1974, 54,1974, 58-1976, 70-1978, 385-1974, 11-1977, 89M-1976 ²	B	Promulgated by Fire Marshal Per RSA 153; 14-1979	C	2	A,C	2
FIRE PREVENTION	BOCA Fire Prevention Code 1981/1981	A	Promulgated by Fire Marshal Per 1981	C	2	A,C	2
MECHANICAL							
PLUMBING	BOCA Basic Plumbing Code - 1980/1979 ⁵	B	RSA 329A, Rules and Regulations Governing Plumbers' Licenses - 1978/1978	A	3	A	3
ENERGY IN NEW BUILDINGS	New Hampshire Energy Code - 1980/1979 ⁶ (ASHRAE 90-75)	B	N.H. Energy Code - 1978/1978 RSA 155D	A	4		
ENERGY IN EXISTING BUILDINGS	New Hampshire Energy Code - 1980/1979 ⁷ (ASHRAE 90-75)	B	N.H. Energy Code - 1979/1979	A	4		

A-166

1 Enforcement by towns
2-7 Ibid.

NEW HAMPSHIRE BUILDING REGULATORY AGENCIES

1. Raymond T. Dewhurst
Executive Secretary
Electrician Board
P.O. Box 646
Concord, New Hampshire 03301
(603) 271-3748
2. Raymond T. Dewhurst
State Fire Marshal
Department of Public Safety
James Hayes Safety Building
Hazen Drive
Concord, New Hampshire 03301
(603) 271-3336
3. Joseph Swienzynski
Chairman
State Board for Licensing and
Regulation of Plumbers
105 Loudon Road
Concord, New Hampshire 03301
(603) 271-3267
4. Alice Chamberlin
Energy Advisor
State House
Concord, New Hampshire 03301
(603) 271-2416
5. Michael B. Ingram, AIA
Chairman, Permanent Subcommittee
on Architectural Barrier-Free
Design of the Governor's
Commission for the Handicapped
6 Loudon Road
Concord, New Hampshire 03301
(603) 271-2773
6. William A. Healy
Executive Director
Water Supply and Pollution Commission
P.O. Box 95
Hazen Drive
Concord, New Hampshire 03301
(603) 271-3503

APPENDIX T-1

NEW JERSEY

	Code or Regulation	Technical Basis of Code	Administrative Rules and Regulations	Preemptive Application of Code	Administration	Level of Enforcement	Enforcement
BUILDING	New Jersey Uniform Construction Code, Building Subcode - 1981/1977 (BOCA Basic Building Code)	A	Uniform Construction Code, Chapter 23, Title 5, New Jersey Administrative Code - 1982/1977	A,B	1	A,C	1
ELECTRICAL	New Jersey Uniform Construction Code, Building Subcode - 1981/1977 (NFPA National Electrical Code)	A	U.C.C., Ch.23, Title 5, NJ Admin. Code - 1982/1977	A,B	1	A,C	1
FIRE SAFETY	New Jersey Uniform Construction Code, Building Subcode - 1978/1977 (BOCA Basic Building Code)	A	U.C.C., Ch.23, Title 5, NJ Admin. Code - 1982/1977	A,B	1	A,C	
FIRE PREVENTION							
MECHANICAL							
PLUMBING	New Jersey Uniform Construction Code, Plumbing Subcode - 1982/1977 (National Standard Plumbing Code)	A	U.C.C., Ch.23, Title 5, NJ Admin. Code - 1982/1977	A,B	1	A,C	1
ENERGY IN NEW BUILDINGS	New Jersey Uniform Construction Code, Energy Subcode - 1981/1978 (BOCA Basic Energy Code)	A	U.C.C., Ch.23, Title 5, NJ Admin. Code - 1982/1978	A,B	1	A,C	1
ENERGY IN EXISTING BUILDINGS	State Energy Conservation Regulations - 1981/1978	A	Energy Conservation Regulations, Ch.3, Title 14, New Jersey Administrative Code - 1981/1978	A	5	A	1

A-168

NEW JERSEY BUILDING REGULATORY AGENCIES

1. William M. Connolly, Acting Director
Division of Housing
363 West State Street
Trenton, New Jersey 08625
(609) 292-7899
2. Paul Sachdeva, P.E. (Satya Pal Sachdeva)
Project Engineer, Manufactured Construction
Division of Housing
Bureau of Construction Code Enforcement
P.O. Box 2768
Trenton, New Jersey 08625
(609) 292-6254
(Mobile Homes)
3. Joanne E. Finley, M.D.
State Commissioner of Health
State Department of Health
P.O. Box 1540
Trenton, New Jersey 08625
(609) 292-7837
4. Dr. W. Rednor, Director
Division of Consumer Health Services
1911 Princeton Avenue
Trenton, New Jersey 08648
(609) 392-1180
5. Charles A. Richman
Assistant Commissioner
Department of Energy
101 Commerce Street
Newark, New Jersey 07102
(201) 648-3290
6. Jerry Fitzgerald English, Commissioner
Department of Environmental Protection
P.O. Box 1390
Trenton, New Jersey 08625

APPENDIX T-1

NEW YORK

	Code or Regulation	Technical Basis of Code	Administrative Rules and Regulations	Preemptive Application of Code	Administration	Level of Enforcement	Enforcement
BUILDING	New York State Building Construction Code - 1980/1951 ¹	C	Enforced locally in accordance with each municipal ordinance	E		D	
ELECTRICAL	New York State Building Construction Code with National Electrical Code as Referenced Standard - 1978	C	Enforced locally in accordance with each municipal ordinance	E			
FIRE SAFETY	New York State Building Construction Code - 1980/1951	C	Enforced locally in accordance with each municipal ordinance	E		D	
FIRE PREVENTION	New York State Fire Prevention Code - 1978/1976	C	Enforced locally in accordance with each municipal ordinance	E		D	
MECHANICAL	New York State Building Construction Code - 1980/1951	C	Enforced locally in accordance with each municipal ordinance	E		D	
PLUMBING	New York State Building Construction Code - 1978/1951	C	Enforced locally in accordance with each municipal ordinance	E		D	
ENERGY IN NEW BUILDINGS	New York State Building Construction Code - 1980/1979	C	Enforced locally in accordance with each municipal ordinance	A		D	
ENERGY IN EXISTING BUILDINGS							

¹ All codes are administered and enforced at the local level.

NEW YORK BUILDING REGULATORY AGENCIES

1. Bennett Selekof, Director
Housing and Building Codes Bureau
Division of Housing and Community Renewal
Two World Trade Center
New York, New York 10047
(212) 488-7080
(Mobile Homes)

APPENDIX T-1

OHIO

	Code or Regulation	Technical Basis of Code	Administrative Rules and Regulations	Preemptive Application of Code	Administration	Level of Enforcement	Enforcement
BUILDING	Ohio Basic Building Code - 1981/1978 ¹ (BOCA Basic Building Code)	B	Chapters 4101:2-1 to 4101:2-51 of the Ohio Administrative Code - 1982/1956	A,G	1	A,B,C,	2
ELECTRICAL	Ohio Basic Building Code - 1981/1978	B	Ch. 4101:2-1 to 4101:2-51, O.A.C. - 1980/1956	A,G	1	A,B,C,	2
FIRE SAFETY	Ohio Basic Building Code - 1982/1979	B	Ch. 1301:7-1 to -7, O.A.C.	A,G	5	A	5
FIRE PREVENTION	Ohio Fire Code - 1978/1979 (BOCA Basic Fire Prevention Code)	B	Ch. 1301:7-1 to -7, O.A.C.	A,G	5	A	5
MECHANICAL	Ohio Basic Building Code - 1982/1981	B	Ch. 4101:2-1 to 4101:2-51, O.A.C. - 1980/1956	A,G	1	A,B,C,	2
PLUMBING	Ohio Basic Building Code - 1982/1981	C	Ch. 4101:2-51, O.A.C. - 1980/1956	A,G	1	A,B,C,	3
ENERGY IN NEW BUILDINGS	Ohio Basic Building Code - 1977/1977 (NCSBCS/MCG Code for Energy Conservation in New Buildings)	A	Ch. 4101:2-20, O.A.C. - 1977/1977	A,G	1	A,B,C,	2
ENERGY IN EXISTING BUILDINGS	Lighting Efficiency Rules for Existing Buildings - 1980/1980 ²	C	Energy Conservation, Ch. 1551:4-1 O.A.C. - 1980/1980	D,E	6	A	6

A-172

¹ The Ohio Basic Building Code does not apply to any one, two or three family residential dwelling except for industrialized units, and except for energy conservation requirements for all. Municipalities may adopt further requirements not in conflict with the Ohio Basic Building Code. All jurisdictions may adopt any regulations they desire concerning one, two, and three family dwellings, conventionally built.

² Mandatory for all state-owned buildings except colleges and universities.

OHIO BUILDING REGULATORY AGENCIES

1. John W. Brant
Executive Secretary
Board of Building Standards
P.O. Box 825
2323 West 5th Avenue
Columbus, Ohio 43216
(614) 466-3316
2. J.E. Bruce, Chief
Division of Factory &
Building Inspection
P.O. Box 825
2323 West 5th Avenue
Columbus, Ohio 43216
(614) 466-6631
3. R.G. McCloskey
Chief Enforcement Official
Plumbing Unit
Division of General Environmental
Health Service
266 North 4th Street
Columbus, Ohio 43215
(614) 466-4746
4. Henry Arnold, Chief
Division of Elevator Inspection
Department of Industrial Relations
P.O. Box 825
2323 West 5th Avenue
Columbus, Ohio 43216
(614) 466-6127
5. William B. Sanders
State Fire Marshal
Division of Fire Marshal
8895 East Main Street
Reynoldsburg, Ohio 43068
(61) 864-5510
6. Robert C. Masoner
Department of Energy
30 East Broad Street
34th Floor
Columbus, Ohio 43215
(614) 466-3465
7. John H. Ackerman, M.D.
Director, Department of Health
246 North High Street
Columbus, Ohio 43215
(614) 466-2253
8. Wayne S. Nichols, Director
Ohio Environmental Protection
Agency
361 East Broad Street
P.O. Box 1049
Columbus, Ohio 432126
(614) 466-8318

APPENDIX T-1

PENNSYLVANIA

	Code or Regulation	Technical Basis of Code	Administrative Rules and Regulations	Preemptive Application of Code	Administration	Level of Enforcement	Enforcement
BUILDING							
ELECTRICAL							
FIRE SAFETY	Pennsylvania Code, Fire and Panic Regulations - 1981/1929	C	Pennsylvania Code, Fire and Panic Regulations - 1978/1927	C	1	A	1
FIRE PREVENTION	Pennsylvania Code, Fire and Panic Regulations - 1981/1929	C	PA Fire and Panic Regulations - 1978/1927	C	1	A	1
MECHANICAL¹							
PLUMBING							
ENERGY IN NEW BUILDINGS	Pennsylvania Building Energy Act 1980	C	Act 222 Rules & Regs. 1982/1982	B	1,2	A	1,2
ENERGY IN EXISTING BUILDINGS							

¹ Regulations for boilers only.

PENNSYLVANIA BUILDING REGULATORY AGENCIES

1. Barry H. Stern, Secretary
Department of Labor and Industry
1700 Labor and Industry Building
Harrisburg, Pennsylvania 17120
(717) 787-3157

2. Shirley M. Dennis
Secretary
Department of Community Affairs
Forum Building, Room 317
Harrisburg, Pennsylvania 17120
(717) 787-7160

3. William A. Hawkins
Executive Deputy Secretary
Department of Community Affairs
Forum Building, Room 313
Harrisburg, Pennsylvania 17120
(717) 787-2331

APPENDIX T-1

RHODE ISLAND

	Code or Regulation	Technical Basis of Code	Administrative Rules and Regulations	Preemptive Application of Code	Adminis- tration	Level of Enforce- ment	Enforce- ment
BUILDING	Rhode Island State Building Code - 1978/1977 (BOCA Basic Building Code)	B	Rhode Island State Building Code, Rules and Regulations - 1981/1981	B,F	1	A	1
ELECTRICAL	Rhode Island State Electrical Code - 1981/1977 (NFPA National Electrical Code)	B	R.I. State Bldg. Code, Rules and Regs. - 1981/1977	B,F	1	A	1
FIRE SAFETY	Rhode Island Fire Safety Code 1981/1968 ¹	C	R.I. State Bldg. Code, Rules and Regs. - 1979/1977	A,G	2	A	2
FIRE PREVENTION	Rhode Island Fire Safety Code 1981/1968 ¹		R.I. State Bldg. Code, Rules and Regs. - 1979/1977				
MECHANICAL	Rhode Island State Mechanical Code - 1978/1977 (BOCA Basic Mechanical Code)	B	R.I. State Bldg. Code, Rules and Regs. - 1979/1977	B,F	1	A	1
PLUMBING	Rhode Island State Plumbing Code - 1978/1977 (BOCA Basic Plumbing Code)	B	R.I. State Bldg. Code, Rules and Regs. - 1981/1977	B,F	1	A	1
ENERGY IN NEW BUILDINGS	Rhode Island State Energy Code - 1979/1977 (NCSHCS/MCG)	B	R.I. State Bldg. Code, Rules and Regs. - 1981/1977	B,P	1	A	1
ENERGY IN EXISTING BUILDINGS ²							

¹ Omits one, two and three family dwellings.

² Applies when fifty percent or more of the value of a building is being remodeled.

A-176

RHODE ISLAND BUILDING REGULATORY AGENCIES

1. Joseph A. Cirillo
State Building Commissioner
State Building Commission
1270 Mineral Spring Avenue
North Providence, Rhode Island 02904
(Manufactured Homes)
2. Earl S. Shannon
State Fire Marshal
Division of Fire Safety
1270 Mineral Spring Avenue
North Providence, Rhode Island 02904
(401) 277-2335
3. Raymond H. DeStefanis, Administrator
Division of Occupational Safety
Department of Labor
200 Elmwood Avenue
Providence, Rhode Island 02907
(401) 277-2500
4. Richard F. Sylvestre, Chief
Housing and Government Services
Department of Community Affairs
150 Washington Street
Providence, Rhode Island 02903
(401) 277-2867
5. Thomas Wright, Chief
Division of Air Resources
75 David Street
Providence, Rhode Island 02903
(401) 277-2808
6. Robert Bendick, Director
Department of Environmental Management
83 Park Street
Providence, Rhode Island 02903
(401) 277-2776

APPENDIX T-1

VERMONT

	Code or Regulation	Technical Basis of Code	Administrative Rules and Regulations	Preemptive Application of Code	Administration	Level of Enforcement	Enforcement
BUILDING	AIA National Building Code, Articles II, V, VII, IX and XVIII and appendices A, C, D, and G - 1976 ¹ (Public Buildings)	B	Vermont Fire Prevention Code - 1979	A, G	1	A	1
ELECTRICAL	NFPA #70 National Electrical Code - 1978 ²	A	Vermont Fire Prevention Code - 1979	A, G	1	A	1
FIRE SAFETY	NFPA Various regulations from codes of 1970 through 1979 ³	A	Vermont Fire Prevention Code - 1979	A, G	1	A	1
FIRE PREVENTION	NFPA Various regulations of codes from 1970 through 1979 ⁴	A	Vermont Fire Prevention Code - 1979	A, G	1	A	1
MECHANICAL	NFPA various regulation from codes of 1970 through 1979 ⁶	B	Vermont Fire Prevention Code - 1979	A, G	1	A	1
PLUMBING	National Plumbing Code ⁷	B	Vermont Health Regulations - 1979	A, G	2	A	2
ENERGY IN NEW BUILDINGS	ASHRAE 90-75 (Public Bldgs only)	A		D		A	
ENERGY IN EXISTING BUILDINGS							

A-178

¹ A public building is any building except a single owner occupied dwelling. Residential occupancy is considered a public building if two family houses share a common wall.

2-7 Ibid.

VERMONT BUILDING REGULATORY AGENCIES

1. Jeffrey L. Amestoy, Commissioner
Department of Labor and Industry
120 State Street
Montpelier, Vermont 05602
(802) 828-2286
2. Brendan J. Whittaker, Secretary
Agency of Environmental Conservation
Montpelier, Vermont 05602
(802) 828-3130

APPENDIX T-2

STATE ENERGY EFFICIENCY REQUIREMENTS FOR RESIDENTIAL HEATING EQUIPMENT

STATE	1. HVAC EQUIPMENT SIZING	2. HVAC EQUIPMENT EFFICIENCIES			3. WATER HEATER EFFICIENCIES		4. ADDITIONAL HVAC & DHW PROVISIONS/COMMENTS
		Gas/Oil Forced Air Furnaces <400,000 Btu/h input	Gas/Oil Gravity Furnaces & Other Vented Equipment <225,000 Btu/h input	Gas/Oil Boilers <400,000 Btu/h input	Electric <120 gals capacity & <12kW input	Gas/Oil <75,000 Btu/h input	

1. HVAC EQUIPMENT SIZING - Where HVAC equipment sizing is based on loads but no specific oversizing limitations are provided, the code only requires the loads be calculated as noted for the purpose of HVAC system sizing but no sizing criteria are provided.

2. HVAC EQUIPMENT EFFICIENCIES -

Minimum combustion efficiency (E_c) for Gas and Oil Fired Forced Air Furnaces with input capacities <400,000 Btu/hr.

Minimum combustion efficiency (E_c) for furnaces with input capacities <225,000 Btu/hr.

Minimum combustion efficiency (E_c) for Gas and Oil Fired Boilers with input capacities <400,000 Btu/hr.

Heating equipment combustion efficiencies are specified as combustion efficiency (E_c) and steady state combustion efficiency (E_{SS}). Combustion efficiency (E_c) is defined as 100 percent minus stack losses (ASHRAE 90-75 and 1977 MCHC), while steady state combustion efficiency (E_{SS}) is in accordance with the U.S. Department of Energy test procedures (ASHRAE 90A-1980 and 1983 MFC). Depending upon the basis of the energy code, E_c or E_{SS} criteria will be provided.

3. WATER HEATER EFFICIENCIES -

Maximum standby loss (SBL) criteria for Electric Water Heaters with <120 gallon capacity (V) and <12kW input.

Minimum recovery efficiency (E_r) and maximum standby loss (SBL) criteria for Gas and Oil Fired Water Heaters with <75,000 Btu/hr. input.

4. Additional Provisions and/or Comments - as necessary to explain the HVAC, DHW and energy distribution criteria.

(P) States having minimum efficiency standards.

A-180

Source: Directory and Compilation of Technical Administrative Requirements in Energy Codes for New Building Construction Used Within the United States, David R. Conover, Carolyn A. Fitch, RI. National Conference of States on Building Codes and Standards, 1984.

STATE ENERGY EFFICIENCY REQUIREMENTS FOR RESIDENTIAL HEATING EQUIPMENT IN NEW RESIDENTIAL BUILDINGS

STATE	HVAC EQUIPMENT SIZING	HVAC EQUIPMENT EFFICIENCIES			WATER HEATER EFFICIENCIES		ADDITIONAL HVAC & DHW PROVISIONS/COMMENTS
		Gas/Oil Forced Air Furnaces <400,000 Btu/h input	Gas/Oil Gravity Furnaces & Other Vented Equipment <225,000 Btu/h input	Gas/Oil Boilers <400,000 Btu/h input	Electric <120 gals capacity & <12kW input	Gas/Oil <75,000 Btu/h input	
CONNECTICUT	Calculate loads per 1977 ASHRAE Fundamentals Handbook	$E_{c} > 75\%$	$F_{c} > 75\%$	$F_{c} > 75\%$	SBL < 4w/ft ² per ANSI C72.1-72	$E_{r} > 75\%$ and SBL < 2.3+67/V per ANSI 221.10.3-74	
MAINE	Rated capacity of heating unit <25% more than design heating load (R)	$F_{gs} > 74\%$ (R)	$F_{gs} > 74\%$ (R)	$F_{gs} > 74\%$ (R)	SBL < 4w/ft ² per ANSI C72.1-72	$E_{r} > 75\%$ and SBL < 2.3+67/V per ANSI 221.10.3-74	Code provides equipment performance criteria by building type o Residential (R) from 1 to 10 families < 3 stories in height o Nonresidential (NR) > 10 families and < 3 stories in height. The differences are shown where the code provisions are different between (R) and (NR) buildings
		$E_{c} > 75\%$ (NR)	$F_{c} > 75\%$ (NR)	$F_{c} > 75\%$ (NR)			
NEW HAMPSHIRE (P)	Calculate loads per appropriate ASHRAE publications	$E_{c} > 75\%$	$F_{c} > 75\%$	$F_{c} > 75\%$	SBL < 4w/ft ² per ANSI C72.1-72	$E_{r} > 75\%$ and SBL < 2.3+67/V per ANSI 221.10.3-74	
NEW JERSEY (P)	Calculate loads per 1977 ASHRAE Fundamentals Handbook	$F_{gs} > 74\%$ ¹ (<225,000 Btu/h) $E_{c} > 75\%$ (>225,000 Btu/h)	$F_{gs} > 69\%$ ¹	$F_{gs} > 74\%$ ¹ (<300,000 Btu/h) $F_{c} > 75\%$ (>300,000 Btu/h)	SBL < 4w/ft ² per ANSI C72.1-72	$E_{r} > 75\%$ and SBL < 2.3+67/V per ANSI 221.10.3-74	
NEW YORK (P)	Calculate loads per 1981 ASHRAE Fundamentals Handbook	$F_{c} > 75\%$	$F_{c} > 75\%$	$F_{c} > 75\%$	SBL < 4w/ft ² per ANSI C72.1-72	Gas $E_{r} > 75\%$ and SBL < 2.3+67/V per ANSI 221.10.3-74 Oil $F_{r} > 80\%$ and SBL < 2.3+67/V per ANSI 221.10.3-74	Residential fireplace units <20cfm with damper closed and provided with outside combustion air.

A-181

APPENDIX T-2

STATE ENERGY EFFICIENCY REQUIREMENTS FOR RESIDENTIAL HEATING EQUIPMENT

STATE	HVAC EQUIPMENT SIZING	HVAC EQUIPMENT EFFICIENCIES			WATER HEATER EFFICIENCIES		ADDITIONAL HVAC & DHW PROVISIONS/COMMENTS
		Gas/Oil Forced Air Furnaces <400,000 Btu/h input	Gas/Oil Gravity Furnaces & Other Vented Equipment <225,000 Btu/h input	Gas/Oil Boilers <400,000 Btu/h input	Electric <120 gals capacity & <12kW input	Gas/Oil <75,000 Btu/h input	
OHIO	Calculate loads per 1977 ASHRAE Fundamentals Handbook	$E_c > 75\%$	$E_c > 75\%$	$E_c > 75\%$	SBL < 4w/ft ² per ANSI C72.1-72	$E_r > 75\%$ and SBL < 2.3+67/V per ANSI Z21.10.3-74	
PENNSYLVANIA (P)	Heating system capacity for fossil fuel boilers and furnaces < 1.6xU _o xATD	$E_{ss} > 74\%1$	$E_{ss} > 74\%1$	$E_{ss} > 74\%1$	SBL < 4w/ft ² or insulated to >R-5	SBL < (2.3+67)/V ¹ or insulated to >R-5	Provisions apply to 1 and 2 family, townhouse, rowhouse and garden apartments < 3 stories when each dwelling unit has its own HVAC system. Heating capacity based on overall envelope (A) and winter design temperature difference (TD). Supply ducts R>5.0 and return ducts R>3.5 with exceptions from ASHRAE 90-75 (5.11.1) hot water and steam piping R>4.0 with exceptions from ASHRAE 90-75 (5.10.1)
RHODE ISLAND (P)	Calculate loads per 1977 ASHRAE Fundamentals Handbook	$E_c > 75\%$	$E_c > 75\%$	$E_c > 75\%$	SBL < 4w/ft ² per ANSI C72.1-72	$E_r > 75\%$ and SBL < 2.3+67/V per ANSI Z21.10.3-74	
VERMONT	Calculate loads per 1977 ASHRAE Fundamentals Handbook	$E_c > 75\%$	$E_c > 75\%$	$E_c > 75\%$	SBL < 4w/ft ² per ANSI C72.1-72	$E_r > 75\%$ and SBL < 2.3+67/V per ANSI Z21.10.3-74	Code does not apply to residential buildings < 3 stories. Values are provided for commercial construction not addressed in Part B of Section III.

A-182

1. Rating conditions are shown in ASHRAE standard 90A-1980

Appendix U

TWENTY LARGEST HOME BUILDERS

TWENTY LARGEST

HOME BUILDERS

1. Ryan Homes, Inc.
100 Ryan Ct.
Pittsburgh, Pa. 152-5
(412) 276-8000
2. U.S. Home Corp.
1800 West Loop South
Houston, Tex. 77027
(713) 877-2311
3. Jim Walter Homes
1500 North Dale Mabry
Tampa, Fla. 33607
(813) 871-4611
4. Pulte Home Corp.
6400 Farmington Road
West Bloomfield, Mich. 48033
(313) 661-1500
5. General Homes Corp.
7322 Southwest Freeway
Houston, Tex. 77074
(713) 270-4177
6. The Ryland Group, Inc.
10221 Wincopin Circle
Columbia, Maryland 21044
(301) 730-7222
7. Nash Phillips/Copus, Inc.
6010 Brooks Street
Austin, Tex. 78754
(512) 458-1141
8. Weyerhaeuser Real Estate Co.
Bldg. QB2
Tacoma, Wash. 98477
(206) 924-3271
9. American Continental Corp.
P.O. Box 29009
Phoenix, Ariz. 85038
(602) 957-7170
10. Gemcraft Homes, Inc.
9950 Westpark
Houston, Tex. 77063
(713) 266-3611
11. The Nat'l Housing Partnership
1133 15th Street, N.W.
Wash., D.C. 20005
(202) 857-5700
12. Trammel Crow Resid. Companies
2001 Bryan Tower
Dallas, Tex. 75201
(214) 742-2000
13. American Diversified
3200 Park Center Dr.
Costa Mesa, Calif. 92626
(714) 641-6660
14. Homewood Corp.
6079 Northgate Road
Columbus, Ohio 43229
(614) 846-3400
15. Havnarian Enterprises
10 Highway 35
Red Bank, N.J. 07701
(201) 747-7800
16. Miles Homes, Inc.
4700 Nathan Ln.
Minneapolis, Minn. 55440
(612) 553-8300
17. M/I Schottenstein Companies
1855 E. Dublin/Graville Road
Columbus, Ohio 43229
(614) 436-5600
18. Leon N. Weiner & Assoc., Inc.
4 Denny Road
Wilmington, Del. 19809
(302) 764-9430
19. Jack W. Blumenfeld & Co.
1500 Locust St.
Philadelphia, Pa. 19102
(215) 735-0300
20. Corcoran, Mullins & Jennison
One Heritage Drive
Quincy, Mass. 02171
(617) 328-3100

LIBRARY E A/BIBLIOTHEQUE A E



3 5036 20069756 6



60984 81800

Canada 

(aussi édité en français)