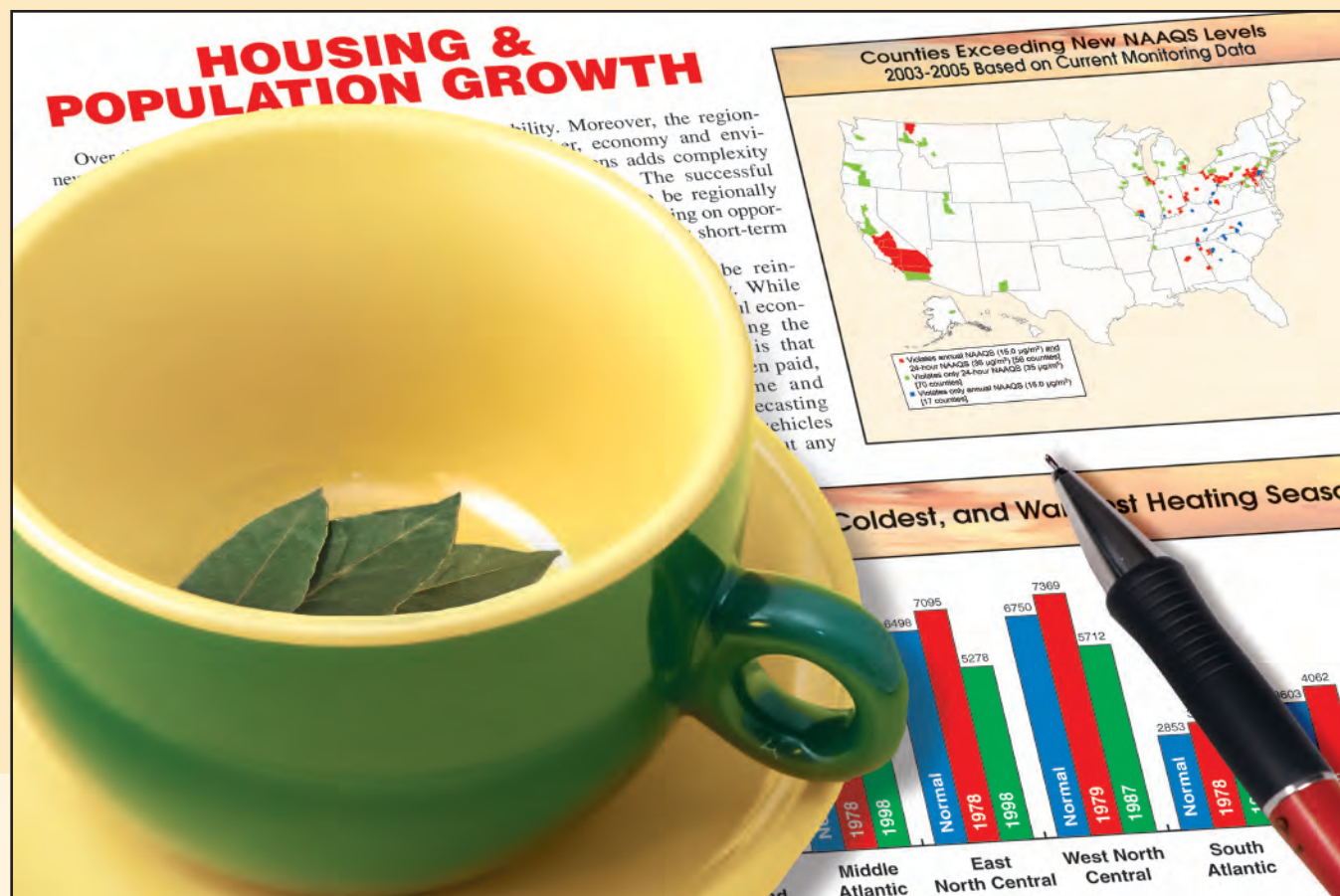


by James E. Houck

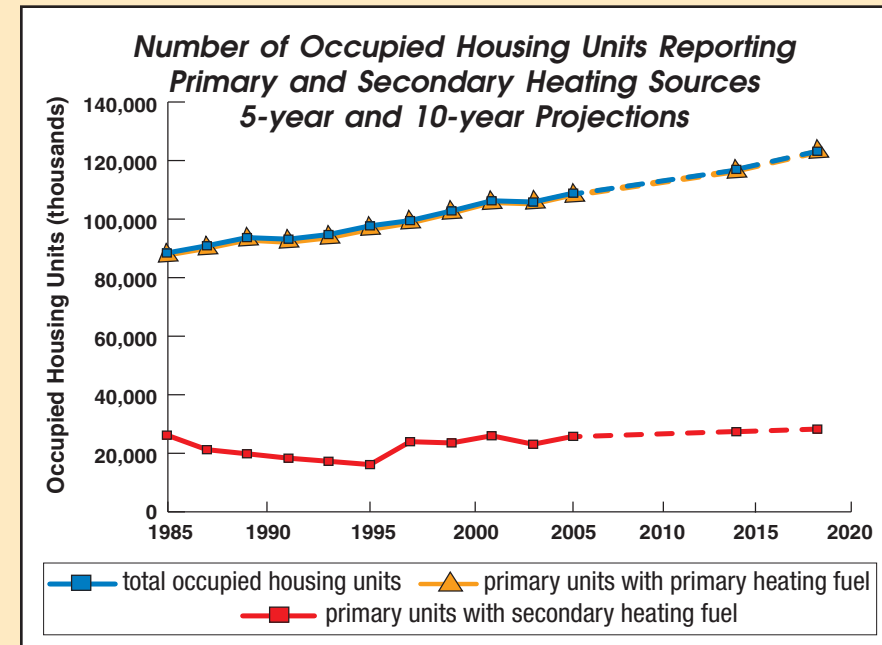
FACTS, FIGURES & THE FUTURE

Forget about tea leaves, let's examine the relevant data.



The prediction of future sales is the bottom line for any industry. In that regard, the hearth industry is in an enviable position in that the number of households in the United States certainly will continue to increase with population growth, and the need for heat will not go away; thus, moderate baseline growth is nearly guaranteed.

In contrast to the predictability of steady future growth in the number of households are short term fluctuations. Short-term fluctuations, due to consumer reactions to a particular fuel's cost and availability and year-to-year changes in weather and housing starts, are where the rub lies. These short-term drivers are difficult to predict and, make no mistake, can have substantial impacts. In some cases, such as weather and fuel availability, consumer response is reactionary and after-the-fact with a big impact being felt during the heating season following the occurrence of, for example, an unusual weather event or a fossil fuel cost spike. As such, there is often time to make prudent, interactive business decisions for the following year. Smaller influences that are some-



Nearly every household in the United States reports having a primary heating fuel, many have one or more secondary heating fuels.

what more predictable are related to environmental regulations and perceptions, and changing demographics.

Over the last 10 years, the number of new, one-family houses completed each year in the U.S. has averaged 1.4 million, and the number of new units in multifamily buildings completed has averaged 333,000. The population of the U.S. is predicted to climb by more than 17 million over the next 10 years. Not only will there be a continued and expanded demand for space heating units in new dwellings, but older space heating units also will need to be routinely replaced.

According to the U.S. Department of Energy, more than 25 percent of the residential space heating equipment in place was more than 20 years old as of 2001, and there were 108,871,000 occupied households in the U.S. as of the end of 2005. Beyond utilitarian heat, the fascination with fire seems almost primordial; 55 percent of new, one-family houses completed in 2005 had one or more fireplaces. This demand won't change overnight.

Barring a catastrophe of national or global scale, there will be a large market for residential space heating equipment in the foreseeable future. Not surprisingly to those with a history in the hearth industry, the real issue is not a lack of confidence in the long-term market, but the partitioning of consumer demand among the various home heating options (notably

including centralized heating systems), as well as just simply surviving as a business during short-term downturns.

Historically, downturns have been precipitated by virtually unpredictable events such as unusually warm winters, economy-linked episodic reductions in new housing starts, and global and politically initiated fluctuations in fuel costs and availability. Moreover, the regionalism of weather, economy and environmental regulations adds complexity to business strategies. The successful hearth business needs to be regionally flexible, capable of capitalizing on opportunities, and able to weather short-term market downturns.

There have been attempts to forecast the future for the various hearth industry products, but they have not been remarkable. (See, for example, the article entitled "A Report Card" *Hearth & Home*, October 2006.)

Forecasting

The wheel doesn't have to be reinvented for the hearth industry. While some may debate how successful economists have been in predicting the future, what is not debatable is that arguably more attention has been paid, and more investment in time and resources has been made, forecasting the performance of financial vehicles than for predictions in just about any

Remember that experts can be wrong, very wrong, in their forecasts.

"Stocks have reached what looks like a permanently high plateau."
— Irving Fisher, professor of economics, Yale University, 1929

"1930 will be a splendid year for employment."
— U.S. Department of Labor, 1929

"I think there is a world market for maybe five computers."
— Thomas Watson, chairman of IBM, 1943, on seeing the first mainframe computer.

"You better get secretarial work or get married."
— Emmeline Snively, director of the Blue Book Modeling Agency, advising would-be model Marilyn Monroe in 1944.

And great minds agree that caution is prudent when considering forecasts.

"There are two kinds of forecasters: those who don't know, and those who don't know they don't know."
— John Kenneth Galbraith, economic advisor to four presidents.

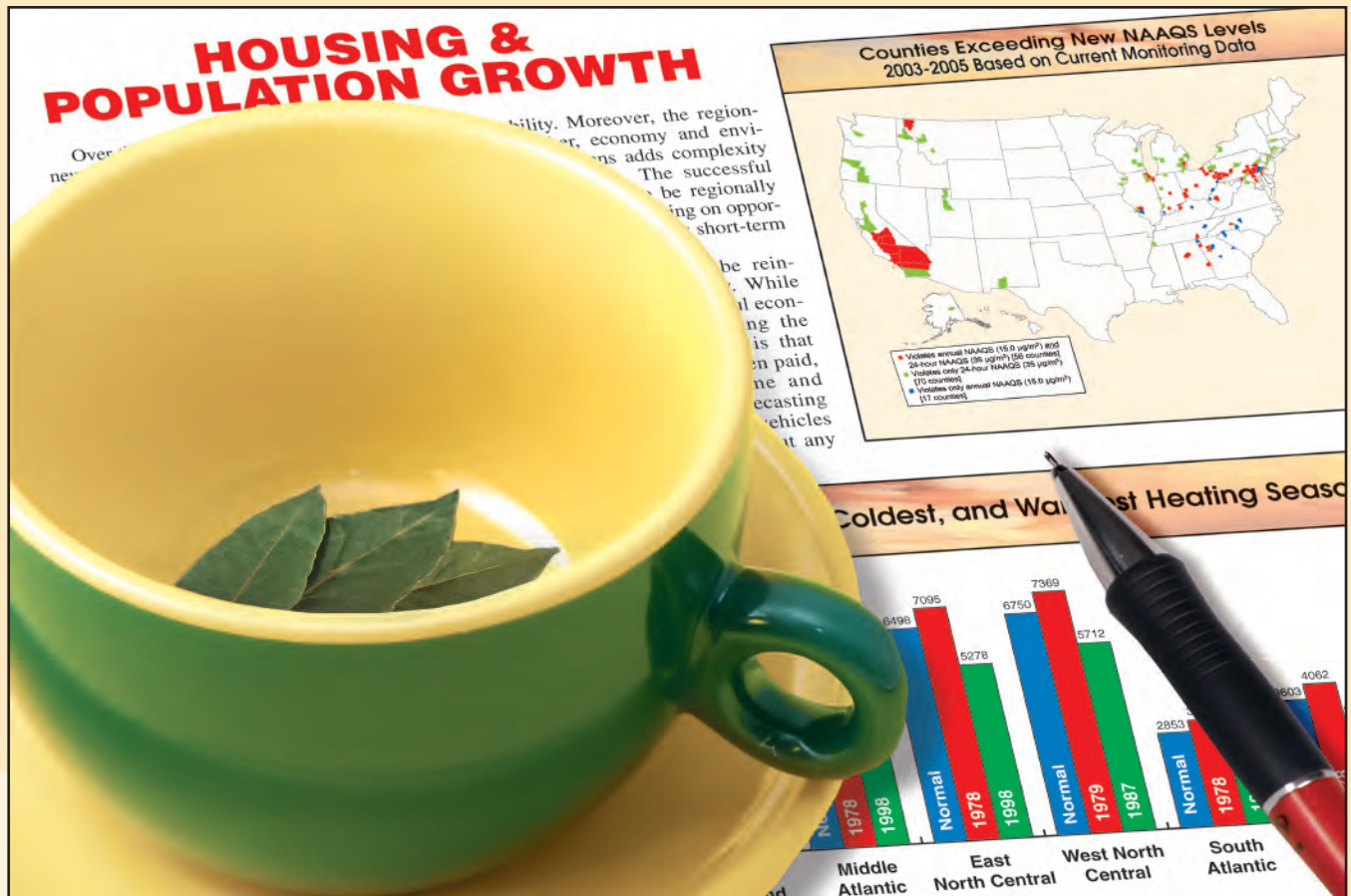
"How come you never see a headline like 'Psychic Wins Lottery'?"
— Jay Leno

"Whatever will be will be. The future's not ours to see."
— Doris Day, "Que Sera, Sera"

by James E. Houck

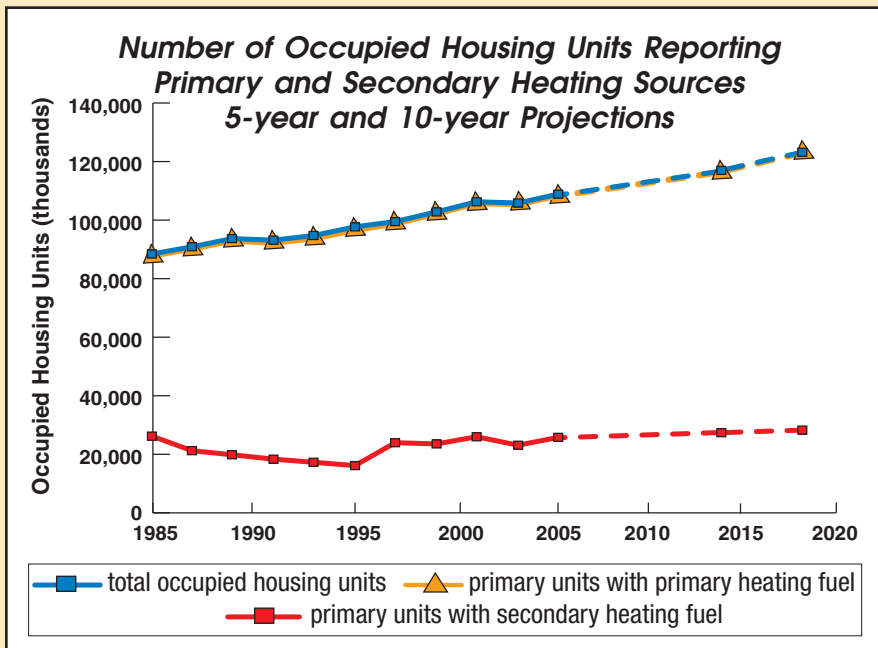
FACTS, FIGURES & THE FUTURE

Forget about tea leaves, let's examine the relevant data.



The prediction of future sales is the bottom line for any industry. In that regard, the hearth industry is in an enviable position in that the number of households in the United States certainly will continue to increase with population growth, and the need for heat will not go away; thus, moderate baseline growth is nearly guaranteed.

In contrast to the predictability of steady future growth in the number of households are short term fluctuations. Short-term fluctuations, due to consumer reactions to a particular fuel's cost and availability and year-to-year changes in weather and housing starts, are where the rub lies. These short-term drivers are difficult to predict and, make no mistake, can have substantial impacts. In some cases, such as weather and fuel availability, consumer response is reactionary and after-the-fact with a big impact being felt during the heating season following the occurrence of, for example, an unusual weather event or a fossil fuel cost spike. As such, there is often time to make prudent, interactive business decisions for the following year. Smaller influences that are some-



Nearly every household in the United States reports having a primary heating fuel, many have one or more secondary heating fuels.

what more predictable are related to environmental regulations and perceptions, and changing demographics.

Over the last 10 years, the number of new, one-family houses completed each year in the U.S. has averaged 1.4 million, and the number of new units in multifamily buildings completed has averaged 333,000. The population of the U.S. is predicted to climb by more than 17 million over the next 10 years. Not only will there be a continued and expanded demand for space heating units in new dwellings, but older space heating units also will need to be routinely replaced.

According to the U.S. Department of Energy, more than 25 percent of the residential space heating equipment in place was more than 20 years old as of 2001, and there were 108,871,000 occupied households in the U.S. as of the end of 2005. Beyond utilitarian heat, the fascination with fire seems almost primordial; 55 percent of new, one-family houses completed in 2005 had one or more fireplaces. This demand won't change overnight.

Barring a catastrophe of national or global scale, there will be a large market for residential space heating equipment in the foreseeable future. Not surprisingly to those with a history in the hearth industry, the real issue is not a lack of confidence in the long-term market, but the partitioning of consumer demand among the various home heating options (notably

including centralized heating systems), as well as just simply surviving as a business during short-term downturns.

Historically, downturns have been precipitated by virtually unpredictable events such as unusually warm winters, economy-linked episodic reductions in new housing starts, and global and politically initiated fluctuations in fuel costs and availability. Moreover, the regionalism of weather, economy and environmental regulations adds complexity to business strategies. The successful hearth business needs to be regionally flexible, capable of capitalizing on opportunities, and able to weather short-term market downturns.

There have been attempts to forecast the future for the various hearth industry products, but they have not been remarkable. (See, for example, the article entitled "A Report Card" *Hearth & Home*, October 2006.)

Forecasting

The wheel doesn't have to be reinvented for the hearth industry. While some may debate how successful economists have been in predicting the future, what is not debatable is that arguably more attention has been paid, and more investment in time and resources has been made, forecasting the performance of financial vehicles than for predictions in just about any

Remember that experts can be wrong, very wrong, in their forecasts.

"Stocks have reached what looks like a permanently high plateau."

— Irving Fisher, professor of economics, Yale University, 1929

"1930 will be a splendid year for employment."

— U.S. Department of Labor, 1929

"I think there is a world market for maybe five computers."

— Thomas Watson, chairman of IBM, 1943, on seeing the first mainframe computer.

"You better get secretarial work or get married."

— Emmeline Snively, director of the Blue Book Modeling Agency, advising would-be model Marilyn Monroe in 1944.

And great minds agree that caution is prudent when considering forecasts.

"There are two kinds of forecasters: those who don't know, and those who don't know they don't know."

— John Kenneth Galbraith, economic advisor to four presidents.

"How come you never see a headline like 'Psychic Wins Lottery'?"

— Jay Leno

"Whatever will be will be. The future's not ours to see."

— Doris Day, "Que Sera, Sera"

other field of human endeavor.

Some of the best minds have been tasked with predicting the future of stocks, bonds, currencies and commodities. Tomes have been written, the popular press is replete with periodicals, and television shows have attracted large audiences. The acquisition of wealth is a strong motivator. The question is: Can we learn from these activities and meaningfully apply the tenets of financial forecasting to the hearth industry?

We believe the answer is yes.

A Wall Street analyst uses one of two basic approaches to forecast the future performance of a financial vehicle. They are referred to as technical analyses and fundamental analyses. A technical analyst looks only at the price history, completely ignoring the nature of the company or commodity in question. The price history is the only factor used in predicting the future price. In contrast, a fundamental analyst considers the company or commodity in question, the performance of the company, the company's

products, supply and demand, etc.

Both the technical analysis and a fundamental analysis are complementary, and a wise investor considers both.

Technical Analysis

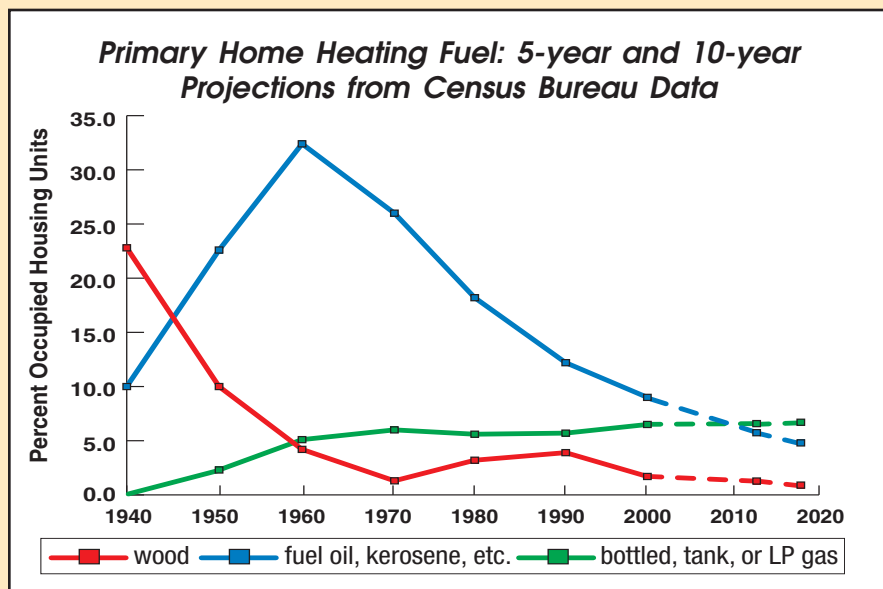
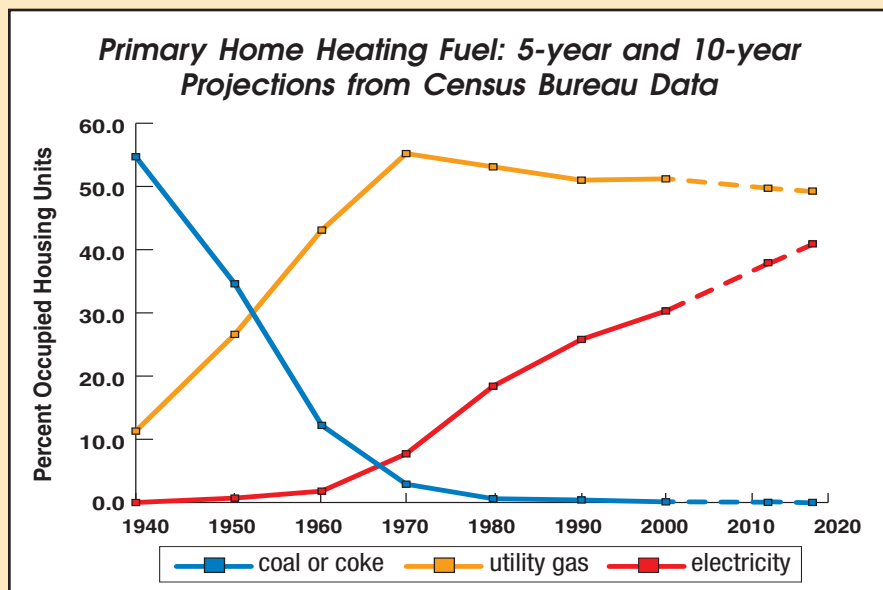
So where is the commonality between technical analyses as used in financial forecasting and an analogous approach for predicting the future for the various segments of the hearth industry? The hearth industry doesn't have the same kind of price chart to form the basis of a technical analysis as a given company or commodity subject to investment forecasting. What the hearth industry, along with companies dealing in centralized heating systems, do have is extensive and long-term unbiased governmental records by fuel type, by broad appliance categories, by end use categories, by region, by urban/rural status, by housing unit characteristics, by ethnicity, by income levels, etc.

These voluminous records are in the public domain and have been acquired and compiled with tax dollars by the U.S. Department of Energy (DOE), the U.S. Department of Housing and Urban Development (HUD) and the U.S. Census Bureau. Further, key trade organizations of this industry, notably the Hearth, Patio & Barbecue Association (HPBA) and the Pellet Fuel Institute (PFI), respectively, have maintained shipment records since 1999 by appliance category, and pellet sales records since the 1994-1995 heating season. These data provide a strong basis for a technical analysis. Certainly other pertinent data are also available from other energy related and natural resources organizations and from various marketing surveys that have been done.

Methodology: OMNI Environmental Services conducted a very cursory and simplified technical analysis and some of the results are shown here. Graphic projections were simply accomplished by calculating the correlation coefficient of exponential and linear "best fit" trends for each data set, and using the projections with the highest correlation coefficients. Remember that far more complex technical analyses are commonplace in financial circles and can be employed equally by the hearth industry. However, even a simplified approach yields considerable insight into future market trends.

Fundamental Analysis

As with financial forecasts, both a technical analysis and a fundamental



ABOVE: Very long-term, every 10-year Census Bureau data clearly show (1) the dramatic historic reduction in the percentage of homes using solid fuels (coal and wood) as their primary heating fuel, (2) the small resurgence of wood after the oil crises of the early '70s with a subsequent decline, (3) the continuing decline in fuel oil, (4) the continuing increase in electricity, and (5) the facts that on a percentage basis the use of natural gas, LPG and wood has not changed dramatically over the last 20 years. These data permit reasonable long-term predictions.

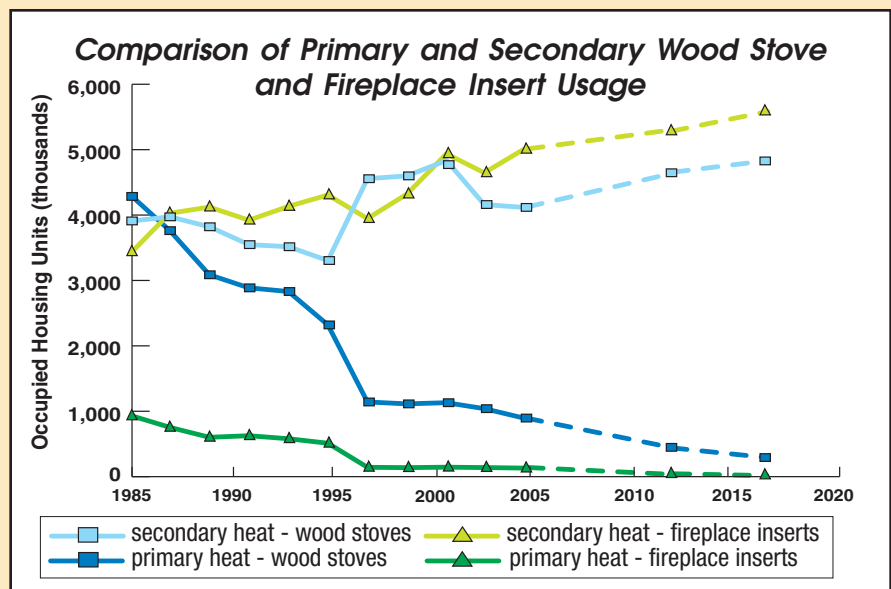
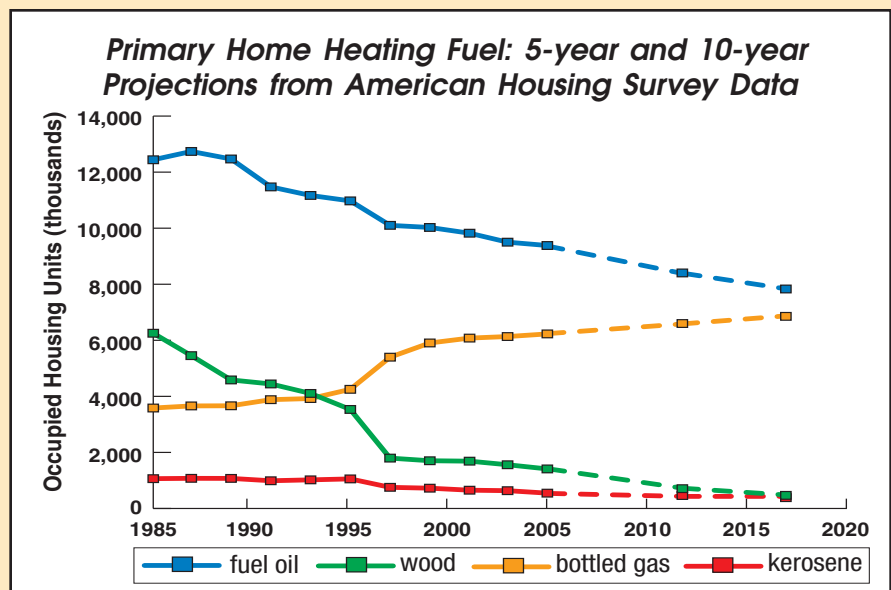
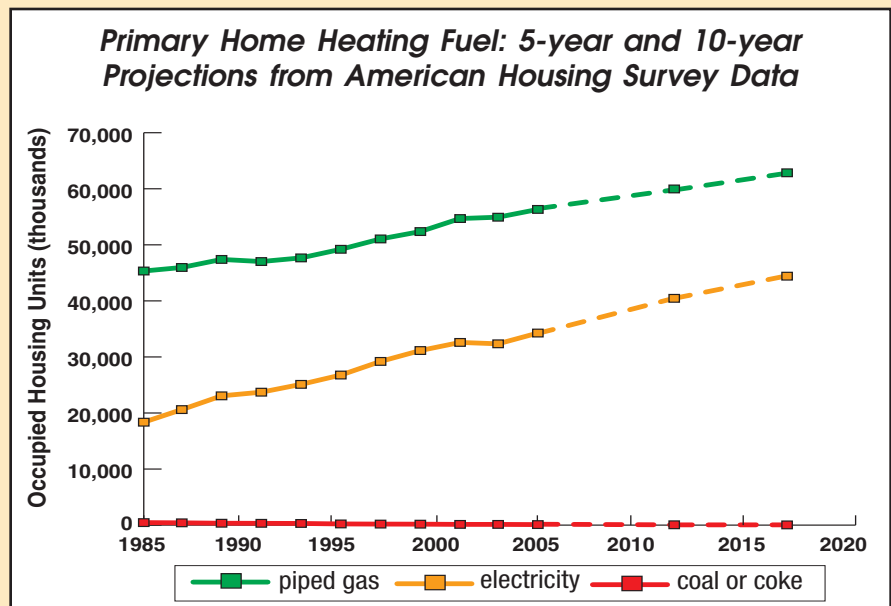
analysis offer complementary insight for hearth industry forecasting. As discussed, a fundamental analysis for financial vehicles considers the company or commodity in question, the performance of the company, the company's products, supply and demand, etc. An analogous fundamental approach for the hearth industry would consider such factors as (1) housing starts and remodeling activity, (2) fuel availability and cost, (3) weather, (4) environmental regulations and perceptions, and (5) demographic changes.

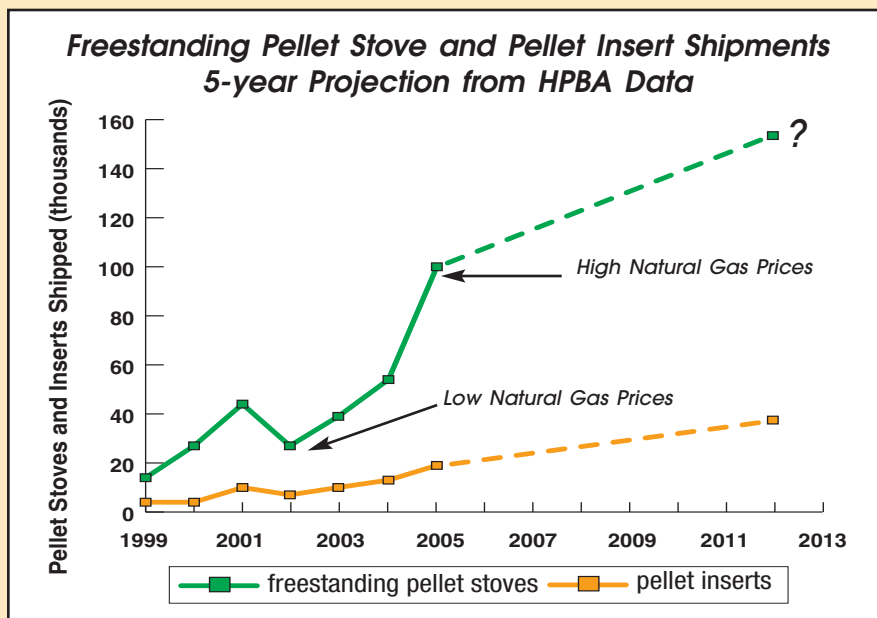
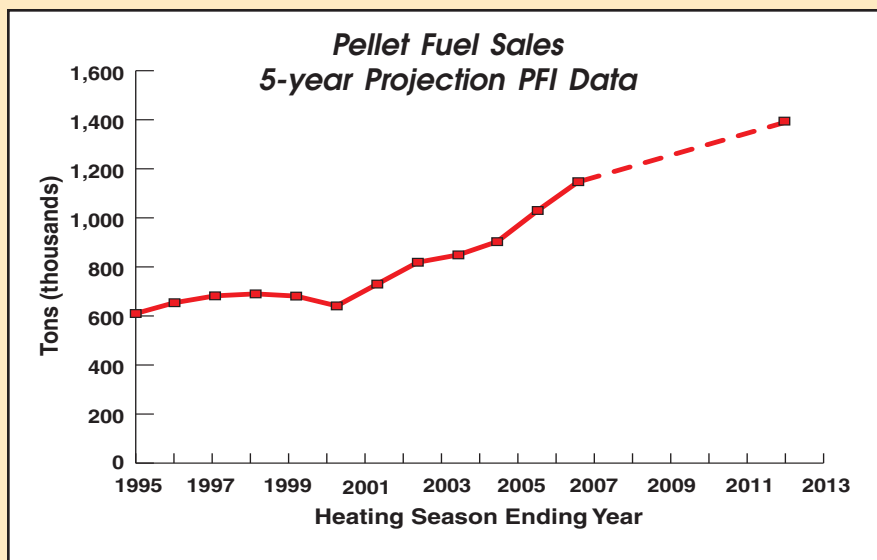
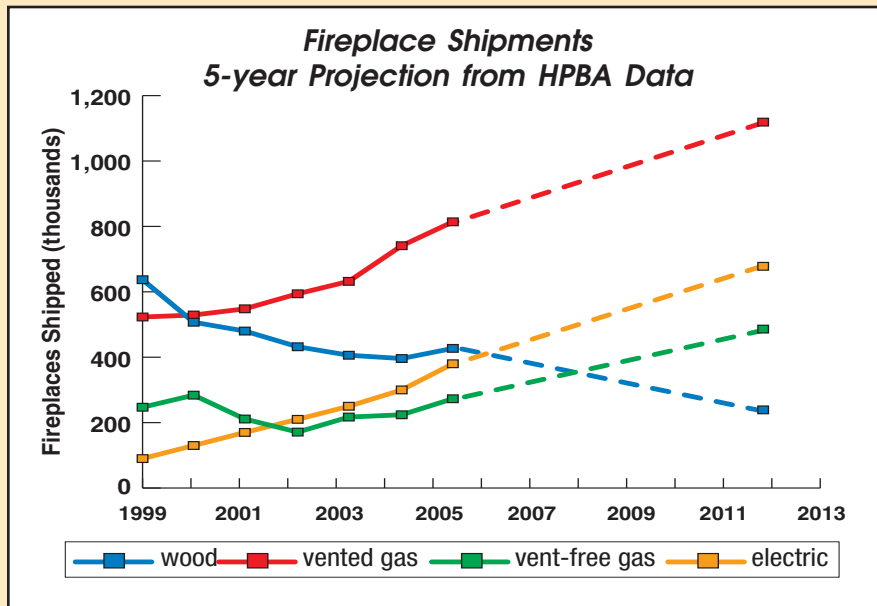
With the exception of demographic changes and the effect of some environmental regulations scheduled for promulgation, these factors are difficult to predict and to quantitatively plug into a technical analysis for long-term trends, but rather are more often responsible for the short-term fluctuations superimposed onto the long-term trends. Their occurrence is often regional. Some can be "seen coming" while others are almost impossible to predict but still can provide an after-the-fact opportunity for a measured response since part of their market impact occurs in the following heating season.

ABOVE and CENTER: The data collected every two years by the American Housing Survey confirms and refines the projections obtained from the every-10-year census. The number of households reporting the use of electricity as their primary heat is rising; the use of wood is slowly declining; the use of fuel oil is declining; the use of bottled gas is increasing; and coal use is in the doldrums.

Interestingly, even though the census data predicts a slight decline on a percentage basis in households using "utility gas," the American Housing Survey still shows a strong increase in the number of total households using "piped gas" as their primary heating source. This is simply due to the fact that there will be many more households in the U.S. in five and 10 years.

BELOW RIGHT: Remember that, for room (or "zone") heaters, such as fireplace inserts and stoves of all kinds (cordwood, pellet, natural gas and LPG), their roll is predominantly as a secondary heating source and, as such, trends for primary heating fuels and appliances only tell part of the story in predicting their future.





Housing Starts and Remodeling Activity

It's no surprise that a strong economy coupled with low interest rates supports high levels of new home construction, remodeling activity and consumer spending for "big ticket" items such as heating equipment. At the time of this writing, it is hoped that the present housing slump will be abated by the Federal Reserve reducing interest rates fast enough to stimulate such activities as home buying, remodeling and the purchase of big ticket items, but slow enough to keep inflation at bay. While there is always disagreement among economists, it is generally believed that the housing

"The U.S. economy is poised to shake off the housing slump and regain momentum by the end of the year."
 — The Wall Street Journal
 Jan. 2, 2007

ABOVE LEFT: HPBA shipment records compiled since 1999 show a strong increase in all fireplace shipments, and presumably sales, except for wood-fueled units. Wood-fueled units are on the decline. While the duration of HPBA record keeping was deemed too short to make 10-year predictions, it was encouraging to note that, at five years, the results were similar to predictions made with American Housing Survey data.

In 2012, the sum of wood and vented gas fireplace sales projected from the American Housing Survey data was 1.2 million, and from the HPBA data it was 1.4 million. (HPBA data courtesy of Don Johnson, HPBA's director of market research.)

CENTER and BOTTOM LEFT: Pellet-burning heaters represent a growth industry, but the growth trend is obscured by short-term fluctuations. The low point in 2002 shipments was in response to low gas prices during the 2000/2001 and 2001/2002 heating seasons. The strong spike seen in the shipment of pellet stoves in 2005 was consumer response to high fossil fuel costs and concern over possible shortages. (Final 2006 data were not available at the time of this writing, however, it is expected that shipments will be flat.)

slump will be over by the end of 2007.

To be blunt, if one is able to credibly predict national economic trends, the hearth industry was the wrong career choice. There are, however, some obvious things that can be taken into consideration for business planning. For example, there is often (as there is now) a large backlog of unsold houses associated with housing slumps. Until that backlog is sold, the fireplace market will be negatively impacted.

Another key factor is that trends in housing starts are not generally uniformly distributed across the country. There can be regional bright spots or areas with more than average downturns. The National Association of Home Builders (NAHB) maintains a host of national and regional housing market and remodeling statistics and provides a resource for choosing regional markets for focus.

Fuel Availability and Costs

Fuel cost, fuel availability and consumer perception about future supplies have wreaked havoc, both good and bad, with the hearth industry. The Arab oil embargo of 1973 precipitated a jump in cordwood heater sales. The spike in heating oil and natural gas prices during the 2005/2006 heating season is associated with stellar sales of pellet heaters.

The extensive construction of gas pipeline networks in the '50s and '60s, making inexpensive domestic natural gas widely available, caused natural gas to become the most common home heating fuel by the early '60s. Topically, the higher consumer cost and shortage of pellet fuel in the 2006/2007 heating season has spawned concern over potential pellet heater sales in 2007.

The Energy Information Administration (EIA) regularly compiles detailed information on trends and projections. Historical records and the current energy picture permit some guarded general observations about the possible future of various fuel sources.

Fuel Oil – Currently, about two-thirds of the U.S. petroleum consumption is met by imports; this is unlikely to change significantly in the near future. Fuel oil prices are very likely to trend upward, with short-term fluctuations in response to global events causing future consumer anxiety about availability and cost.

Annual Housing Starts (x 1000)				
	Northeast	Midwest	South	West
2005	189.7	357.4	996.1	525.1
2006	169.2	279.2	912.4	439.9
Difference in Number of Housing Starts	-20.5	-78.2	-83.7	-85.2
% Difference	-10.8%	-21.9%	-8.4%	-19.4%
<i>NAHB data</i>				

The decrease in the number of housing starts from 2005 to 2006 was similar for the Midwest, South and West; however, on a percentage basis the decrease was more than two times less in the South. Even with the national downturn, the South, with its 912,400 housing starts in 2006, remained a more robust market.

Further, in terms of population growth between July 1, 2005 and July 1, 2006, Texas, Florida and Georgia were responsible for 73 percent of the population growth for the entire South and, except for the extreme subtropical tip of Florida, that's where a large market still exists for fireplaces and zone heaters.

Average U.S. Consumer Prices for Heating Fuels During the Winter			
	2001/2002	2005/2006	2006/2007
Natural Gas	\$7.45/mcf	\$14.64/mcf	\$12.49/mcf
Heating Oil	\$1.16/gallon	\$2.45/gallon	\$2.37/gallon
Propane	\$1.16/gallon	\$1.95/gallon	\$1.86/gallon
Electricity	\$0.080/kwh	\$0.096/kwh	\$0.101/kwh
<i>Energy Information Administration data</i>			
<i>In the five years starting in the '01-'02 heating season and ending in the '05-'06 heating season, the consumer's cost for natural gas and heating oil approximately doubled, and propane increased dramatically. During the '06-'07 heating season, the prices moderated slightly. The consumer's cost for electricity has increased at a more measured pace.</i>			

Natural Gas – About 80 percent of natural gas is produced domestically, with the majority of the remaining 20 percent imported from Canada. Only about four percent is imported from overseas in the form of liquefied natural gas (LNG). With its dominant North American source, natural gas is buffered from global events, but because 22 percent of its end use is for residential purposes (namely heating), price and availability are sensitive to the severity of weather. Further, since the competing commercial, industrial, transportation and electric power end uses are expanding, the

demands for natural gas along with its cost are likely to trend upward.

Propane – Propane is the by-product of both natural gas processing and petroleum refining. Even though propane is from both these sources, in general, its price is mainly influenced by the cost of crude oil. This is because propane competes mostly with crude oil-based fuels.

Propane prices occasionally spike, increasing disproportionately beyond that expected from normal supply/demand fluctuations. This is because propane is produced at a relatively steady rate year-round by refineries

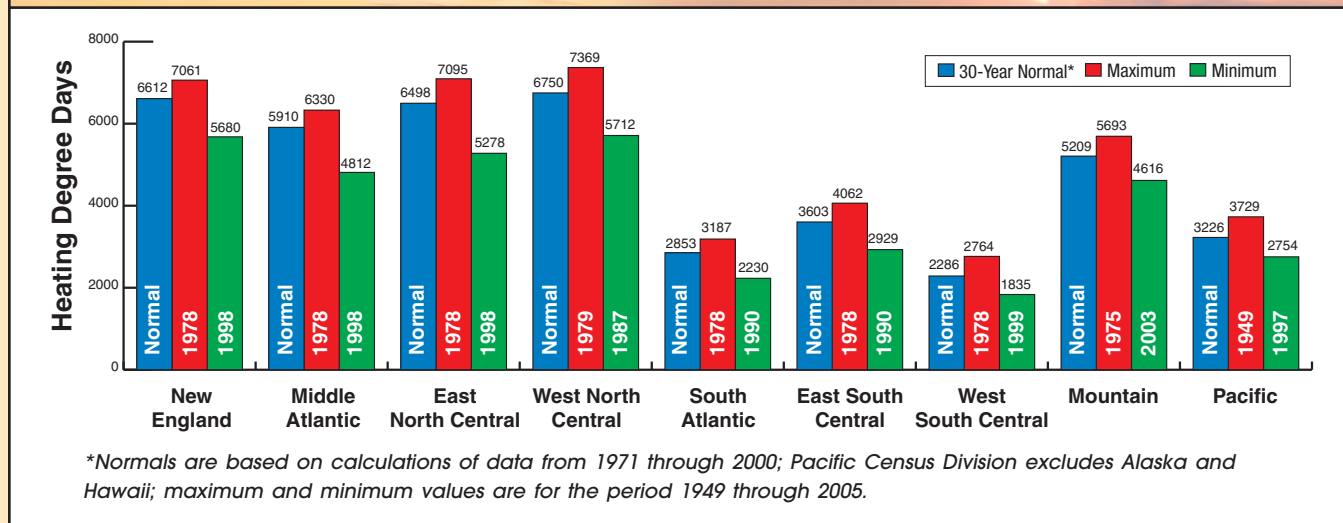
and gas-processing plants, and there is no ready source of incremental production when supplies run low during a spike in heating demand caused by inclement weather.

Electricity – Over half of the electricity produced in the United States is from coal combustion. Environmental issues notwithstanding, realistically the magnitude of the existing infra-

pellet-manufacturing facilities operated at near maximum production levels. The spike in pellet heater sales during the previous year was responsible for the shortage, which was in turn due to the response of consumers to high fossil fuel costs. Future pellet costs are likely to increase due to more costly raw materials needed to fill demand and the amortized capital costs of building new pellet plants.

and near-term future market preferences can be assessed. While the influence on natural gas, propane and heating oil supply and costs is real, the year-to-year impact of changes in winter severity is in one sense only perceptual, as even in the warmest year, for example 1998 in New England, every household still needed a heating appliance.

30-Year Average, Coldest, and Warmest Heating Seasons by Census Division



structure and economic ramifications preclude any substantive change in coal utilization in the near future. The United States has 27 percent of the world coal reserves. In nominal dollars, the cost of the production of a ton of coal today is about the same as it was 20 years ago.

The cost of electricity will increase, but not at anywhere near the rate of natural gas, propane or fuel oil, nor will it be subject to strong fluctuations. The volatility in electricity cost is further buffered by the fact that production of that portion of electricity not produced by coal is spread over numerous minor sources. These include petroleum, natural gas, propane, hydroelectric, nuclear, wood, biomass waste, geothermal, solar and wind.

Biomass – Three biomass fuels are viable for the hearth industry – cordwood, wood pellets and corn. In addition there has been considerable interest in utilizing other agricultural and forestry wastes.

Available resources do not currently limit cordwood use.

Pellet shortages occurred during the 2006/2007 heating season even though

Corn is a domestic fuel with the U.S. producing 40 percent of the world’s corn harvest. Corn is a traded commodity, and corn as a fuel competes with direct food, seed, ethanol, sweetener, animal feed and starch usage. At the time of this writing, farmers are being paid the highest prices for corn in history due to the demands of fuel ethanol distilleries.

The utilization of biomass fuels other than cordwood, wood pellets and corn for residential heating remains very small scale or in a research status.

Weather

The National Oceanic and Atmospheric Administration (NOAA) compiles data from 8,000 weather stations. The factor known as heating-degree-days (HDD) is calculated by NOAA. It is an index used to determine the duration and intensity of winter cold.

The heating demand for the most recent month or for the previous heating season can be gauged by simply comparing the HDD data with long-term averages. From these data the related potential impact on consumer’s

By the very nature of the competing interests within the hearth industry, an unusually cold or warm heating season can provide opportunities for one faction of the hearth industry and, at the same time, spell trouble for another.

Apparently, not yet widely used by the hearth industry is the weather related insurance-like financial contract referred to as a weather derivative. Temperature-dependent weather derivatives have protected utilities, companies, retailers and other weather-dependent businesses and allowed them to hedge the risk associated with a decrease in earnings, crop losses or increases in costs due to unexpected temperature changes. Investments in weather derivatives could take some of the “ride” out of the year-to-year roller coaster experienced by the hearth industry.

Power outages caused by extreme winter storms are common weather-related events that have been shown to influence short-term, after-the-fact consumer purchases; hearth companies that are “fast on their feet” can respond to these events.

A notable example was the ice storm

that affected eastern Canada and the north-eastern U.S. in 1998. Studies have shown that, immediately after that storm, households undertook a number of activities to prepare for a future storm. More specifically, it was also documented that during the storm those household occupants who had electricity as their primary source of heat were the most likely to seek shelter elsewhere – clearly an unpopular option that could be avoided by zone heaters that do not require electricity.

Environmental Regulations and Perceptions

Environmental regulations and perceptions have played, and continue to play, an important role in shaping the future of the hearth industry. As home heating appliances are external combustion devices, environmental regulations focus on air emissions. There are four major categories of air pollutant emissions most important to the hearth industry: (1) greenhouse gas emissions (climate change), (2) fine particulate emissions (PM_{2.5} and PM₁₀), (3) sulfur dioxide and nitrogen oxide emissions and (4) air toxics.

The emissions of greenhouse gases and the emissions of sulfur dioxide and nitrogen oxides are more “big sky” pollutants having global, and regional, implications, respectively. (Sulfur dioxide and nitrogen oxides are associated with regional haze, acid precipitation and region-wide elevated secondary fine particulate levels primarily in the eastern half of the U.S.) In contrast, the direct emissions of fine particles and air toxics have a larger importance locally, as residential heaters emit their pollutants at near ground level (typically only three to 11 meters above ground) in residential areas where the very young, the very old and the infirm are subjected to the highest concentrations of pollutants.

Arguably, the regulation that has had the biggest impact on the hearth industry was the New Source Performance Standard (NSPS) for wood heaters that required all wood heaters sold after July 1, 1990 to be certified. The story that has circulated in the hearth industry is that, before the NSPS requirement, there were 300 wood heater manufacturers; after it, there were 30. Whether that statement is absolutely accurate is irrelevant. The high cost of developing and certifying a low-emission wood heater took its toll.

Perhaps the regulations with the second biggest impacts were the PM₁₀ and the old PM_{2.5} particulate standards. They spawned, either directly or indirectly,

numerous state and local regulations restricting the sale and use of wood-burning appliances, primarily in the West. The San Joaquin Valley of California, Maricopa County, Arizona, and Missoula and Libby, Montana are some well-known examples of where regulations have impacted the marketplace.

So what does the future hold in terms of environmental regulations and perceptions that will impact the hearth industry? Some things to watch:

- The new PM_{2.5} regulation will cause some western states to re-examine their wood-burning regulations and some eastern states to look critically at wood-burning for the first time. These new regulations can go both ways for the hearth industry. They can be Draconian and essentially eliminate wood-burning, or they can be progressive and encourage the replacement of old wood-burning appliances, creating a new market

COAL - A Wild Card?

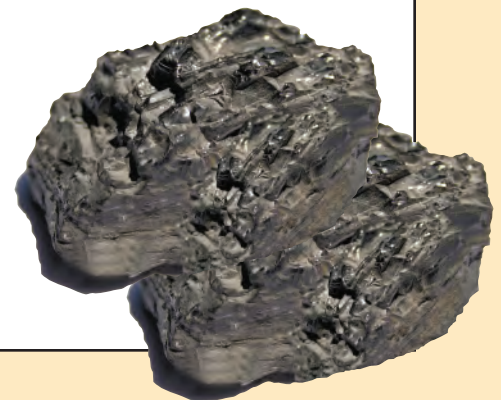
America has been called “the Saudi Arabia of coal.” The United States has 27 percent of the world’s coal reserves. Coal is present in 38 states and underlies 13 percent of the land area of the United States. Anthracite coal, the highest quality coal available in the world, occurs almost exclusively in northeastern Pennsylvania, within several hundred miles of more than 25 percent of the households in the United States. The cost of production of a ton of coal today is not much different than it was 20 years ago in nominal dollars. In 1940, 54.7 percent of households reported coal as their primary heating fuel. In 2000, 0.1 percent of households reported coal as their primary heating fuel. What happened?

There seems to be multiple factors for the decline in the residential use of coal. The extensive natural gas pipeline networks provided inexpensive natural gas to many homes by the early ‘60s. The convenience of natural gas, propane, electricity and even fuel oil compared to coal was a big factor.

It has been estimated that, on average in a typical home, one hour per day is needed to

tend to a coal furnace. In some areas regulations were instituted to ban coal burning due to its environmental and health impacts. Finally, and very importantly, the soot and sulfur smell from burning coal contributed to the consumer preference for other fuels.

Can coal make a residential heating comeback? It certainly could, even with the stigma it now carries. Modern coal stove room heaters can be made a lot cleaner than the coal furnaces of our grandparents. New technologies to de-sulfurize coal are also promising. The mandate to reduce our dependence on foreign oil provides an incentive. Coal is inexpensive. Finally, the use of coal for electricity is expanding (predicted to nearly double by 2030), and with it the infrastructure for its production and distribution will become even more established.



Qualitative Ranking of Environmental Issues by Home Heating Fuel*

Category	Cordwood	Pellets	Natural Gas	LPG	Fuel Oil/ Kerosene	Coal
Global Warming	*	*	*****	*****	*****	*****
PM _{2.5} and PM ₁₀	****	***	*	*	**	*****
Sulfur Dioxide and Nitrogen Oxides	*	*	**	***	****	*****
Air Toxics	*****	***	*	*	**	*****

*One star corresponds to the lowest problem, five stars the highest.

Each fuel option has its environmental strong points and weak points that will impact marketing positions and influence, whether by regulation or by consumer preference, the national, regional and local sales of a particular appliance category.

for certified wood-burning and gas-fueled appliances. To date, the HPBA has been successful in encouraging wood stove change-out programs. However, while the areas impacted by the new PM_{2.5} regulation are important and with significant population, they still represent only a small fraction of the nation.

- Emissions from biomass fuels have

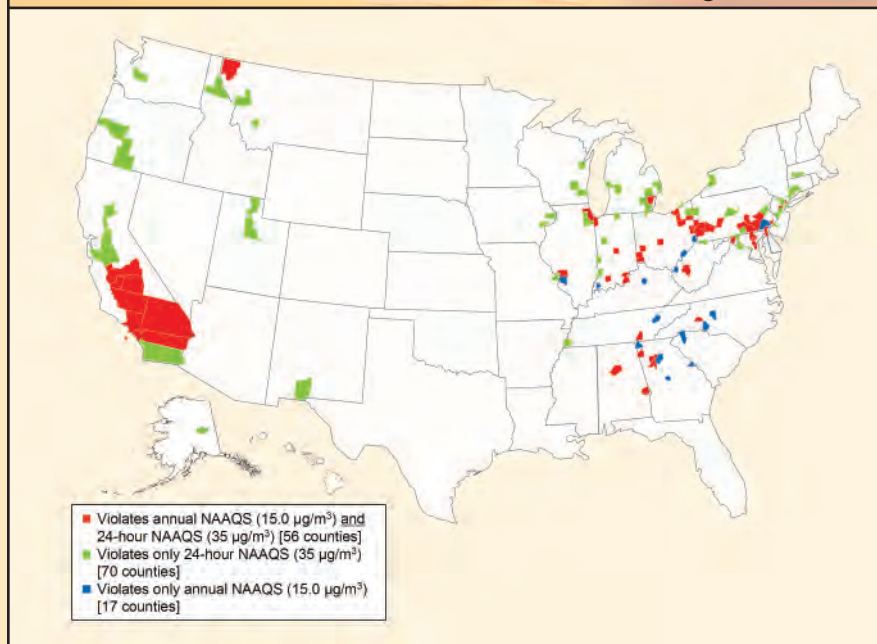
less of a global warming impact than fossil fuels. In states such as California, where aggressive greenhouse gas reduction directives have been issued, biomass fuels for home heating may have an advantage in the future.

- The products of incomplete combustion (PIC) from home heating sources, particularly from solid fuel-

burning devices, emit numerous recognized hazardous air pollutants (HAP). Again, because pollutants from home heating appliances enter the atmosphere close to the ground and in residential areas, they may receive future scrutiny.

- There continues to be considerable federal interest in reducing sulfur dioxide and nitrogen oxides emissions from utilities and other sources. Biomass fuels emit low levels of sulfur dioxide and nitrogen oxides compared to fossil fuel sources. They may play a role in future emission trading schemes such as those funded by utilities.
- NESCAUM (Northeast States for Coordinated Air Use Management) and the U.S. EPA are in the process of phasing in particulate regulations for outdoor wood boilers. Most in the industry feel the regulations are aggressive. Similarly, regulations for wood-burning fire-

Counties Exceeding New NAAQS Levels 2003-2005 Based on Current Monitoring Data



While there has been understandable concern about the impacts of the new PM_{2.5} standard (particulate standard), as can be seen, only a small portion of the U.S. is actually affected. Additionally, regulators in many of the nonattainment areas shown do not consider home heating a major contributor to the pollution in their airshed.

Whether Al Gore is right or wrong doesn't really matter. A lot of consumers think he is right and that will influence their buying decisions. The U.S. box-office earnings of Al Gore's movie "An Inconvenient Truth" were \$23.8 million.

place particulate emissions may be considered by the U.S. EPA over the next few years.

Demographic Changes

The role of demographic changes per se in the future of the hearth industry in the next five or 10 years is modest. Demographics change slowly. However, have no doubt about it; the impact of demographic changes will be real. Among all the drivers for the future of the hearth industry, perhaps demographic changes are the most predictable, the steadiest and the least likely to show short-term and unexpected fluctuations.

Central to the impact of demographics on the hearth industry is the difference in user practices in central city, suburban and rural settings, and the difference in fuel usage in different parts of the country. Because central city, suburban and rural populations and the populations in different parts of the country grow at different rates, the relative proportions of appliance types and fuels will change as well.

Notably, the number of occupied units in suburbs within metropolitan statistical areas (MSAs) increased by about 14 million from 1985 to 2005. Households within these suburbs have the highest percentage of fireplace ownership, with 42 percent of households currently owning one or more fireplaces. In comparison to households in the suburbs of MSAs, the number of occupied units outside of MSAs increased far less (4.5 million) from 1985 to 2005. Households outside of MSAs report the highest wood stove usage (8%).

Both the growth trends in suburban housing units within MSAs and housing units outside of MSAs are likely to continue. Taken alone, these demographic changes support the prediction that future fireplace sales will continue to grow (ignoring short-term fluctuations), probably at an increasing rate, whereas wood stove sales will be relatively less robust.

The dependence on different fuel types varies by region of the country. Because the difference in fuel usage in different parts of the country is in large part due to existing infrastructures (e.g., gas pipelines and fuel oil distribution networks), or due to local resources (abundant forests or nearby coal reserves), the fuel preferences are unlikely to change quickly within a region.

It is outside the scope of this review to project sales by individual geo-

Demographics of Home Heating (2005) - Percent of Total Occupied Housing Units			
	Central Cities in MSAs	Suburbs in MSAs	Areas outside MSAs
Woodstove Used	1%	5%	8%
Own Fireplace	27%	42%	28%
Piped Gas is Heat Source	75%	43%	45%
Bottled Gas is Main Heat Source	2%	7%	20%
Wood is Main Heat Source	4%	9%	13%

American Housing Survey data: Areas outside of MSAs consist of rural areas as well as urban and suburban areas associated with smaller and isolated population centers.

Primary Heating Fuel by Percent of Occupied Housing Units (2000)				
	Fuel-Oil	Wood	Natural Gas	Coal
U.S. Average	8%	2%	47%	0.1%
Maine	64%			
Vermont		8%		
Illinois			76%	
Pennsylvania				1%

U.S. Census Bureau Data can help you target most-likely prospects for your products; some states are much higher than the national average in their use of specific fuels.

graphic areas, but the data have shown clearly that, currently and most likely into the near future, different hearth products will be a better fit for different parts of the country. For example, if one is selling fuel-oil, cordwood, natural gas or coal heaters or accessories, Maine, Vermont, Illinois and Pennsylvania, respectively, offer the best per capita market.

A final demographic note – There has been considerable hoopla regarding the “graying” of America with its ramifications for products catering to convenience and “cocooning.” The average age of the U.S. population is indeed increasing, but the impact is probably less than envisioned by many. In 1995, 13 percent of the U.S. population was over 65. By 2020 this will only increase to 17 percent – a real but relatively small change.

Conclusion

Put away your horoscopes, tea leaves, tarot cards and crystal balls. For those familiar with the hearth industry, there is a plethora of data for business planning. Most are either in the public domain or are obtainable with little or no cost from trade associations, market surveying firms, or energy and natural resource organizations. The hearth industry is a marketer's dream. Virtually every household in North America is a potential customer, and the number of households is growing.

Dr. James E. Houck is president of OMNI Environmental Services; e-mail houck@omni-test.com; phone (503) 643-3788; web page www.omni-environmental.com.