MINORITIES AND ENERGY: A REVIEW OF RECENT FINDINGS AND A GUIDE TO FUTURE RESEARCH

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ABSTRACT

This report discusses the results of the research on minority energy consumption and expenditures being conducted by Argonne National Laboratory for the U.S. Department of Energy's Office of Minority Economic Impact. After summarizing what was known about minorities and energy prior to 1982, the paper briefly reviews current research results in the areas of minority residential and transportation energy use patterns, energy policy assessments, and minority energy business development. The results suggest that, when income and location (transportation) or climate (residential) are statistically controlled, black households differ from nonblack households in their ability or willingness to make long-term capital investments in energy-efficient consumer durables (e.g., automobiles and appliances). Two hypotheses to explain these results are proposed, relating to the culture of minority poverty and structural constraints. Implications of the current results and proposed hypotheses are then briefly discussed.

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INTRODUCTION

This paper discusses the effort at Argonne National Laboratory (ANL), sponsored by the U.S. Department of Energy (DOE) Office of Minority Economic Impact (OMEI) under contract No. W-31-109-ENG-38, to understand the relationship between minorities and energy. For the purposes of this report, the term *minorities* is defined to include Negroes (or blacks), American Indians, Eskimos, Aleuts, Orientals, and Spanish-speaking persons of Spanish descent. The paper proceeds in four steps. First is a literature review, showing that very little quantitative research has addressed the subject. Second, the results of our research effort to date are reported, with emphasis on differences from previous research results and the shortcomings of existing data and analysis methods. Third, two hypotheses are proposed, relating to the culture of minority poverty and structural constraints, to explain observed differences in energy patterns among different population groups. Fourth, directions for future research are suggested.

Much of our research supports earlier research findings, i.e., that income, climate (for the residential sector), and location (for the transportation sector) are the key variables affecting minority energy use. Perhaps our most important discoveries are that (1) relative to white households, black and Hispanic households have been less successful at adapting to the energy price shocks of the past dozen years, (2) black and Hispanic households have also on a whole been less successful at conserving residential or transportation energy or at taking advantage of new business opportunities created by changes in energy markets, (3) minority energy use patterns are not simply a matter of economics, climate, and metropolitan location, and (4) poor black households exhibit energy use patterns that differ significantly from poor nonblack households. We set forth two hypotheses to explain this last point. Shortcomings in available national energy data bases limit our ability to reach unequivocal conclusions, however. Further quantitative analysis, in-depth case studies, and a national minority energy research conference and network are necessary to improve understanding of the relationship between minorities and energy.

LITERATURE REVIEW

Energy was a matter of little concern to most Americans until the 1973 and 1979 oil supply interruptions, which stimulated a surge of interest in energy policy. But even after several years of analysis and debate, energy policy remained fragmented. In principle there was agreement that efficiency in the production and use of energy should be encouraged. But even this was subject to considerable debate. While some argued that rising prices would stimulate energy-conserving behavior and technological substitutions, others reasoned that reliance on prices alone would place an inequitable burden on population groups and regions that were most dependent on price-inflating fuels or that were constrained by structural conditions from making major reductions in their energy consumption. No consensus emerged with regard to new supply options.

Interest in energy as a policy issue has declined significantly since 1981, in effect keeping pace with the decline in oil prices. Research has continued, but at a less intense level. A key theme of recent research is that prior energy policy studies tended to ignore the regional, ethnic, occupational, and local effects of energy policy.[1-4] Of particular interest to the present paper is the omission of minority groups from mainstream energy policy research. With few exceptions, the relationship between minority groups and energy supply and consumption has gone largely unexplored. The predominant assumption has been that minority groups are of concern only to the extent that they are poorer, hence less able to purchase energy-conserving goods and services and more likely to be hurt by energy price increases. It is unknown whether minority energy behavior -- when climate and location are statistically controlled -- is a matter simply of price and income or of other sociopolitical and cultural factors related to race and ethnicity as well.*

Minorities: A Large and Heterogeneous Population

Census data indicate that in 1980 roughly 46 million Americans (or about 20% of the total U.S. population) belonged to one of the six minority subpopulations of concern in this paper.[5] Roughly 58% were black, 32% Hispanic, 7% Oriental, 3% native American, and 0.1% Eskimo or Aleut. Heavily weighted by the residential patterns of blacks and Hispanics, about 70% of

*At no point in this discussion do we mean to imply that the energy-related behavior of minorities differs from that of nonminorities purely as a result of racial or ethnic factors. Rather, we suggest that such factors have led over time to social, economic, and political differences that do affect energy-related behavior.

these 46 million people lived in 12 states. On average, members of these groups tended to be poorer, less well-educated, younger, more likely to be unemployed or employed in unskilled jobs, less likely to own a car, and more likely to live in urbanized areas (particularly central cities) than the national average. With certain notable exceptions, their collective historical experience has been characterized by an inability to share proportionately in the past benefits of American industrial growth and geographic expansion. For example, native American, Eskimo, and Aleut peoples were systematically depopulated by war and disease, while blacks spent hundreds of years in slavery. Many Japanese were placed in internment camps during World War II, while the Spanish/Mexican forefathers of Hispanics in California, New Mexico, and Texas saw their land expropriated in the mid-1800s.

While these 46 million people share much in common, they also differ in significant ways. The individual subpopulations are also not homogeneous. Table I summarizes some of the factors contributing to the diversity. Whereas most blacks live east of the Mississippi River, most Hispanics live in the Southwest, Illinois, Florida, and New York, and most Orientals live in California and Hawaii. Native Americans are more dispersed throughout the country, while virtually all Eskimos and Aleuts live in Alaska. The cultural patterns of northern urban blacks differ from those of southern rural blacks or of recent black immigrants from Africa or the West Indies, while Hispanics are divided into at least four distinct groups (Mexicans, Puerto Ricans, Cubans, and Hispanos). Native Americans are fragmented into at least 282 culturally distinct tribes, and Orientals represent roughly 25 different cultural groups. Excepting recent Southeast Asian refugees, Orientals tend to have higher incomes and a generally higher socioeconomic status than the other groups. Similarly, Cubans (most of whom are refugees from the Castro revolution of the late 1950s) tend to be better off economically than other Hispanics. Further, while the vast majority of minorities live in urban areas, native Americans, Eskimos, and Aleuts are much more likely to live in rural areas. Lastly, many recent Hispanic and Southeast Asian immigrants do not read, speak, or write English well.

The Sparsity of Knowledge about Minority Energy Patterns

The existing body of empirically based literature on the patterns of minority energy consumption or participation in energy businesses is rather thin.[6] Newman and Day report that black households used less energy for residential and transportation purposes than did other households, but that their energy consumption increased with increasing income.[7] In addition to differences in income, Newman and Day attributed lower energy consumption by black households to limitations on home ownership, restrictions on residential choice, smaller house size, and fewer appliances. Conversely, they also found

Table I. Summary Characteristics of Minority Subpopulations.[a]

Subpopulation	1980 Population	Degree of Cohesion: Cultural Diversity	Degree of Cohesion: Spatial Compactness	Degree of Urbanization	Historical Experience	Role in Energy Market: Production	Role in Energy Market: Consumption	Housing Ownership	Other
Blacks	26,495,000	Minimal	Mostly in South and Midwest; 50% in 5 states, 75% in 15 states	78% in SMSAs[d]	Long history of slavery, segregation, and discrimination	Minimal	34% below poverty line	44% own homes	
Hispanics	14,609,000	At least 4 distinctly different groups	Majority in Southwest; 50% in 2-3 states, 75% in 5 states	86% in SMSAs[d]	Land conquered by U.S. Large numbers of immigrant undocumented workers	Minimal	27% below poverty line; less serious for Cubans and South Americans	43% own homes	Many recent immigrants speak only Spanish
Orientals (Asians and Pacific Islanders)	3,260,000	At least 25 distinctly different groups	Majority in West; 50% in 2 states, 75% in 7 states	Urbanized	Considerable early exploitation of Japanese and Chinese; many recent refugees from Southeast Asia	Minimal	13% below poverty line	53% own homes	Recent immigrants speak little English
Native Americans	1,355,000	282 tribes	50% in 5 states, 75% in 14 states	Rural	Depopulated by war, disease, and exploitation	Substantial ownership of coal and uranium resources	28% below poverty line, including Eskimos and Aleuts	53% own homes, including Eskimos and Aleuts	
Eskimos and Aleuts	65,000	2 distinctly different cultures	Concentrated in Alaska	Rural		Substantial ownership of oil resources	e	e	
Total	45,784,000[b]	Tremendous diversity; gradual acculturation	50% in 5 states[c]	Heavily urbanized	Long history of segregation and exploitation; large number of recent immigrants	Minimal for most	Tendency to lower income	Tendency to rent	Language problems among recent immigrants

[a]Source: Ref. 5 and general literature concerning minority subpopulations.

[b]Represents 20% of the total U.S. population.

[c]California, Texas, New York, Florida, and Illinois.

[d]Standard metropolitan statistical areas.

[e]Aggregated with native Americans for this data category.

that black households were less likely to adopt energy conservation measures and to install home insulation. Subsequent research by Perlman and Warren, Grier, Cose, researchers for DOE, and others supported these findings.[8-11] In 1983, Cooper and others at the Consumer Energy Council of America reported that, due to rising energy prices from 1972 to 1982, low-income families suffered a large loss of household purchasing power, low-income rental stock deteriorated (e.g., as landlords shifted maintenance funds to energy expenditures), and local governments lost some of the resources needed to provide basic services (also as a result of budget shifts to energy purchases). However, specific effects on minority households were not addressed.[4]

The transportation literature indicates that while certain aspects of minority travel behavior and motor fuel use had been examined previously, these investigations had been either tangential to the main purpose of the work or limited to a discrete subset of travel behavior (e.g., the journey to work).[4,7,12-14] Blacks were reported to rely disproportionately on public transportation, to have substantially longer work trip travel times, and to spend more time commuting per hour worked than do whites. But no comprehensive analysis of overall travel behavior and energy use by minority and poor households could be identified in the literature.

Little is known about minority energy businesses. In 1977, there were about 560,000 minority-owned businesses in the United States (about 5.7% of all U.S. firms), almost 70% of which involved retailing or services.[15] One energy-related subsector, automotive dealerships and service stations, attracts many minority entrepreneurs and was, in 1977, the second largest minority subsector (in terms of gross receipts). Minorities (particularly blacks) tend to be severely underrepresented in business, having a participation rate one-fifth that of nonminorities.[16] A lack of role models, low status of business ownership in black communities, lack of start-up capital, social prejudices, and a lack of expertise are among the factors causing this low participation rate. The lack of business expertise is exacerbated in the energy industry by the underrepresentation of minorities in scientific and technical occupations. In 1981, for example, only 4.6% of all employed engineers were from minority groups. Asians comprised 2.8% of the total, blacks 1.4%, and Hispanics 0.3%.[17] No solid data are available on minority participation in energy businesses; however, indications are that the rate is quite small. According to DOE analyses of 1980 data, only 1.5% of scientists and engineers working in energy-related activities are black.[18] Reflecting a higher average level of education, Asians comprised 2.5% of the total.

In addition to this literature, at least 23 energy policy assessments have been prepared for OMEI by university researchers, and have been reviewed by Tanzman and others.[19] Most of the studies address either household consumption and expenditures or the energy business and employment patterns of

minorities; however, most of these assessments are oriented toward small parts of specific states (e.g., Richmond, Va.), and a plurality focus on blacks in the South. Only four of the reports address Hispanics or native Americans, and none look explicitly at minorities in the Northeast or Midwest. One shortcoming noted in almost all of these reports was that they did not yield findings that could be generalized to other time periods or locations.

In summary, the existing data and literature fall far short of presenting either a comprehensive description or an explanation of minority patterns of energy use and participation in energy businesses. Little has been discovered about how these patterns vary by region or minority group, how they have changed over time, or how they are affected by sociopolitical and cultural factors or by existing or potential governmental programs. Little is known about the energy patterns of 46 million Americans!

MINORITY ENERGY PATTERNS AND TRENDS

The OMEI was created by the U.S. Congress in 1979 for reasons that were not recorded at the time, but that reflected concern for the effect of energy shortages and rising energy prices on low-income and disadvantaged groups. As part of its effort to comply with its legislative mandate, OMEI asked ANL to begin a multiyear research program on minority energy consumption and expenditures. This section summarizes the nature and results of the first three and one-half years of that research. The discussion focuses on (1) residential energy, (2) transportation energy, (3) policy impact assessments, and (4) minority energy business development.

Our research during this period has been based primarily on quantitative analysis of a comprehensive residential and transportation energy data base consisting of 10 different sets of data, including DOE's *Residential Energy Consumption Surveys (RECS)*, which consists of five public use data tapes labeled NIECS, SCREENER, RECS1, RECS2, and RECS3; the U.S. Bureau of the Census's *Annual Housing Surveys (AHS)* and *1980 Census of Housing and Population*; the Federal Highway Administration's *Nationwide Personal Transportation Survey*; and DOE's *Transportation Panel (TP)* and *Residential Transportation Energy Consumption Survey*. Collectively, these data sets permit a detailed analysis of household energy consumption and expenditures at both the national and regional level.

Minority Residential Energy Patterns

To date, most of our primary data analysis has focused on the residential sector. This work has generated data on energy consumption, energy expenditures, and energy expenditures as a share of household income

for black, Hispanic, white, poor, nonpoor, elderly, and all households at the national and census region levels, for natural gas, electricity, fuel oil/kerosene, and all fuels. (Except where otherwise noted, the term *poor* means <125% of the weighted average poverty levels specified by the U.S. Census Bureau and published periodically in *Current Population Reports*. At times, however, the available data do not include family size. Thus, some of our research uses the terms *poor* and *low income* interchangeably.)

We have found (see Fig. 1) that residential energy consumption generally declined for all households from 1978 through 1982, that nonpoor households consume more energy than do poor households, and that -- contrary to the earlier findings of Newman and Day -- *black households now consume more energy than do whites.*[20,21] This research also indicates (see Fig. 2) that energy expenditures as a percentage of income increased from 1978 to 1981, then declined in 1982 for all groups, and that low-income households spent (in 1982) roughly 18% of their income on residential energy as compared with 15% for black, 6% for white, and 4% for nonpoor households.[21] With one exception, residential energy consumption (for each of these groups) is largest in the Northeast and steadily decreases through the Midwest, South, and West.[20,22,23] The one exception is that black households in the Midwest appear to consume more energy than do blacks in the Northeast. The natural gas consumption patterns of white and black households are shown in Table II. When climate is statistically controlled, blacks consume more energy than whites whether they be owners or renters, residents of single-family or multifamily units, in small or large households, in old or new buildings, or in large or small structures.[21] No such systematic patterns were found for low-income vs nonlow-income households. The cited references present the data in much greater detail.

A major tool for understanding how these differences among subpopulations will affect energy use and spending patterns is the Minority Energy Assessment Model (MEAM), an econometric forecasting model. Thoroughly described in Ref. 24, MEAM is energy policy- and price-sensitive and estimates final residential energy demand by subpopulations at the household level for any specific geographic region.

Minority Transportation Energy Patterns

We have also been analyzing transportation data to see whether there are any systematic differences between white and minority households.[25,26] Not surprisingly, the data show that black, Hispanic, and poor households have substantially fewer automobiles available to them and are more likely to use public transportation than are white or nonpoor households (see Fig. 3). The vehicles available to minority and poor households tend to be substantially

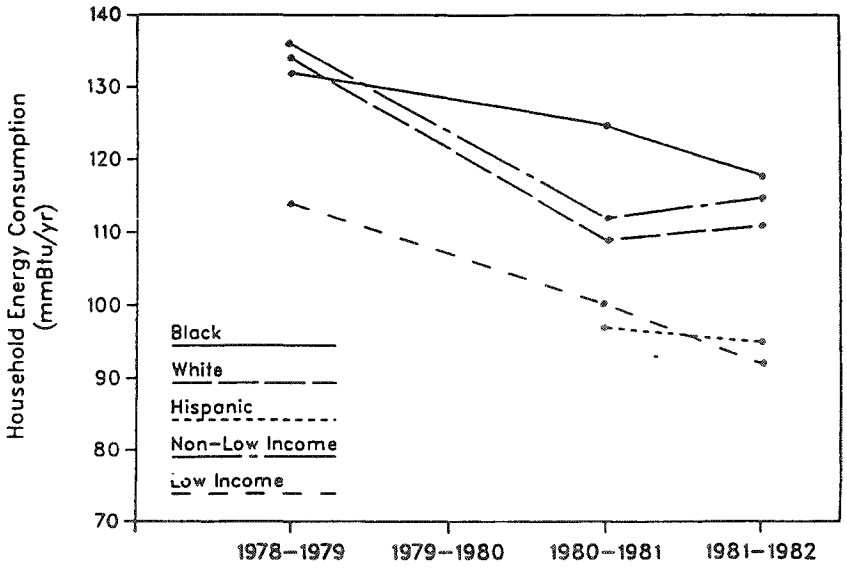

Figure 1. Trends in household energy consumption, 1978-1979 to 1981-1982 (Source: Ref. 21, which used the NIECS, RECS1, and RECS2 data tapes).

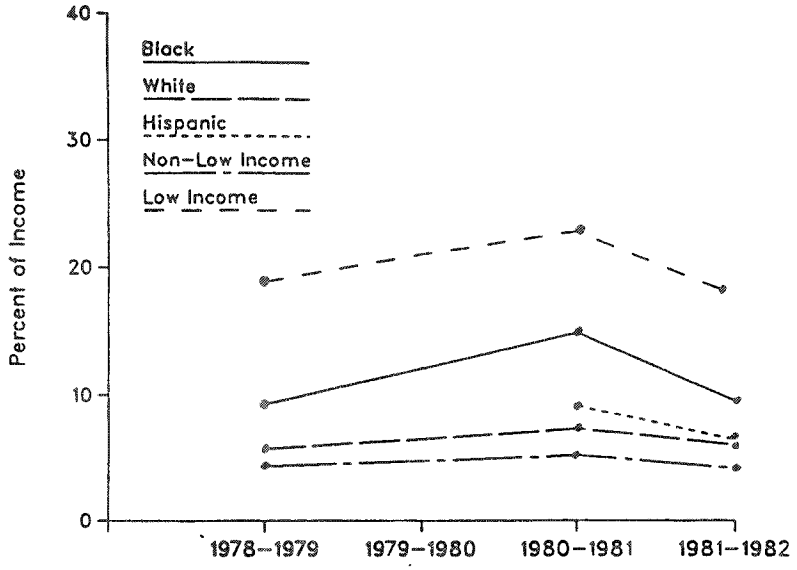

Figure 2. Trends in household energy expenditures as a percentage of income, 1978-1979 to 1981-1982 (Source: based on Ref. 21, which used the NIECS, RECS1, and RECS2 data tapes).

Table II. Effects of ownership and type of dwelling on household energy consumption, with climate statistically controlled, 1981-1982.[a]

Variables	Natural Gas Use (Btu/HDD[b]/households)				
	White	Black	Low-Income	Nonlow-Income	All
Home ownership status					
Own	18,300	24,500	19,400	18,800	18,800
Rent	14,000	21,100	18,200	14,100	15,200
Type of housing					
Single-family	18,400	25,000	20,000	18,900	19,000
Multifamily	11,600	16,800	15,400	11,400	12,400

[a]Source: Ref. 21; based on the RECS2 public use data tape.

[b]HDD = heating degree day.

older and less fuel-efficient (i.e., get fewer miles per gallon) than the vehicles available to white and nonpoor households (see Table III). At least since 1977, the disparity in miles per gallon appears to have widened as more-affluent households invested in newer, more fuel-efficient vehicles and older, less-efficient vehicles trickled down to minority and poor households. Minority workers also tend to have longer work trips and to spend more time commuting per hour worked than white workers,* but the total vehicle-miles that vehicle-owning minority households travel per year tends to be substantially less than the amount traveled by vehicle-owning white households. For the most part, these generalizations were found to hold even when controlling for household income and for residential locations (urban, suburban, rural). The cumulative effect on energy patterns is that black and Hispanic households consumed, on average, more fuel in 1983 than did white households even controlling for vehicle availability.

*This is consistent with the traditional value-of-time argument used by transportation system planners since the 1960s; i.e., new transportation systems could be justified by using a benefit proportional to the product of the time saved and the wage rate of the expected users. According to this argument, poor people value their time less, hence accept a lower level of transportation service supplied at less cost.

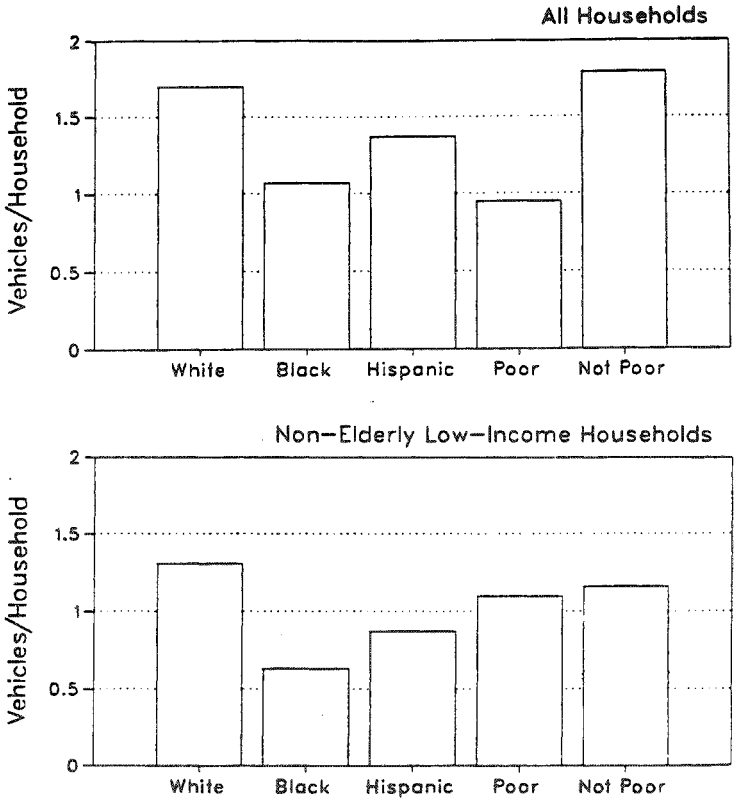

Figure 3. Vehicle availability of all households and nonelderly low-income households by population group, 1980 (Source: based on Ref. 25, which used the 1980 AHS tape).

Policy Impact Assessments

Given the current administration's policy to reduce federal intervention in the marketplace, we have had few opportunities to assess the impact of federal energy policy or programs upon minorities. To date, we have completed seven policy analyses.

One effort assessed the potential benefits of *residential energy conservation* for minorities. Analyzing RECS1 data, Teotia et al. found that black, Hispanic, and poor households are much less likely than the average U.S. household to live in well-insulated structures, and that they could (particularly in the Northeast) benefit greatly from taking a few basic energy conservation actions.[22,27] While only 14% of all U.S. single-family structures had no attic insulation in 1980, 36% of black-occupied structures had none. Similarly, only 21% of all windows in black-occupied multifamily structures had storms, while the equivalent percentage for all U.S. multifamily structures was 39%.

Table III. Average fuel economy of vehicles for each population group, 1979-1981.[a]

Fuel Economy Measure	1979	1980	1981	Change (%/yr)
Mpg[b]				
All households	14.8	15.3	15.5	2.3
White	14.8	15.3	15.7	3.0
Black	14.3	13.3	13.6	-2.5
Poor	14.3	14.6	13.8	-1.8
Nonpoor	14.9	15.3	15.6	2.3
Mpg ratios				
Black/white	0.97	0.91	0.86	
Poor/nonpoor	0.96	0.95	0.88	

[a]Source: Ref. 25; based on the TP public use data tape.

[b]Harmonic mean, June-September.

A second effort was to assess the impact of *residential energy tax credits* on minorities. Tanzman et al. found that low-income households are less likely to invest in energy conservation measures than are nonlow-income households, and that blacks and Hispanics are less likely to invest than are whites, when income is statistically controlled.[28] Further, they found that three factors (lower average income, a greater tendency to rent, and a greater likelihood of living in warmer climates) make it less likely that minority households would make the energy conservation investment needed to qualify for residential energy tax credits. Based on this, they concluded that minorities would benefit more from other ways to induce energy conservation (e.g., direct weatherization of homes, energy payment assistance, and shared savings).

Poyer used MEAM to project the effect of a *hypothetical 20% increase in the price of natural gas in the Midwest.*[29] This analysis concluded that households in the region, particularly those headed by blacks, would experience more adverse long-term effects than would households in other regions. A fourth (and similar) analysis, by Poyer and Wernette, assessed the effect of *two energy price scenarios* on Hispanics, and found that Hispanics would be hurt more than non-Hispanics by the assumed price increases.[31]

A fifth effort, by Rose and South, was to assess qualitatively the effect of *petroleum market deregulation* on minorities.[31] They concluded that no valid quantitative assessments of these effects had yet been produced. Consequently, a set of possible research topics was developed, based on economic theory, that would enable assessment of the price, consumption, and income effects on minorities of petroleum market deregulation.

A sixth effort, by Rose and others, assessed the impact of a U.S. Environmental Protection Agency (EPA) *proposal to reduce the lead content of gasoline*. This research did not aim at quantifying the costs and benefits of alternative actions.[32,33] That had already been done by EPA, resulting in an estimate that the total nationwide benefits of the proposed lead reduction ($1,289 million plus nonmonetized health benefits from reduced lead and conventional air pollutants) would exceed total costs ($503 million).[34] Rather, Rose et al. compared the extent to which the distribution of these costs and benefits varied among groups. To do so, they assumed that high benefits would accrue to households that are located in the central city portion of metropolitan areas and that have children less then seven years of age. The first criterion derives from observed patterns of air pollutant diffusion, while the second derives from health effects research that points to small children as being most susceptible to adverse effects from lead in the blood. Low benefits were assumed to accrue primarily to non-SMSA households with no children or only older children. They then assumed that the highest costs would accrue to households that owned only automobiles that require leaded gas, i.e., older cars. These costs arise from possible increases in the price of fuel for leaded cars and from possible maintenance cost increases. Low costs would accrue to households that either own only vehicles requiring unleaded gasoline or possess no car at all.

As Table IV indicates, Rose and others found that black, Hispanic, and poor households were much more likely to be in the high benefit/low cost category than were white or nonlow-income households.* Similarly, they found that black and Hispanic households were much less likely to be in the low benefit/high cost category than were white households. Poor households, on the other hand, were more likely to be in the low benefit/high cost category than nonlow-income households.

A final effort assessed the impact on minorities of *transportation energy conservation strategies*.[35] LaBelle, Anderson, and Conley found that minority households would benefit from rising new car fuel economy, effective car and

*It is important to note that the table excludes intermediate costs and benefits, which cover the majority of households. For example, this table covers only 28.9% of all black households; the remaining 71.7% have intermediate costs and benefits.

van pool promotion, and strategies to speed turnover in the personal auto fleet. Perhaps more importantly, they found that there had been a rapid rise in vehicle availability (hence a rise in mobility) for minority households throughout the 1970s (Fig. 4) and that minority households had been more likely to turn to carpooling for work trips during the period of gasoline price increases from 1977 to 1980 (Fig. 5).

Table IV. Distribution of high and low costs and benefits of removing lead from gasoline (% of households).[a]

	Benefits[b]	
Costs[c]	Low	High
Low		
All	9.3	3.2
White	9.7	1.7
Black	9.2	11.3
Hispanic	5.2	8.9
Poor	15.0	7.9
Nonpoor	8.0	2.1
High		
All	7.8	2.0
White	8.6	1.4
Black	4.8	3.6
Hispanic	4.2	6.9
Poor	10.7	3.6
Nonpoor	7.1	1.6

[a]Source: Ref. 32; based on the RECS1 public use tape. Excluded are the majority of households, which have medium costs and benefits.

[b]Low-benefit households are not in central cities and do not have children younger than age 7. High-benefit households are the opposite in both respects.

[c]Low-cost households own either no automobile or only vehicles that require unleaded gasoline. High-cost households own only automobiles that require leaded gasoline.

Small Minority-owned Energy Business Assistance

A third effort at ANL has been to help minority entrepreneurs start or develop new energy-related businesses by reducing their front-end costs and risks. We have tried to do this in two ways. First, a guide to sources of financial, technical, and energy technology commercialization assistance was prepared.[36,37] After widely distributing this guide, we held follow-up workshops for minority energy businesses in Chicago, Los Angeles, and New York. One other workshop is planned for Atlanta in late 1986.

Second, we have been developing projections of the market penetration of three energy technologies (residential heat pumps, packaged cogeneration systems, and photovoltaics). Three reports have been produced. The first reviews and evaluates the applicability of alternative market penetration modeling methodologies to these three technologies.[38] The second describes the major types of residential heat pumps and lists organizations conducting heat pump research and development work.[39] The third projects market demand for electric heat pumps, by market segment, to the year 2000,[40] based on a discrete choice model. The report projects that shipments are likely to double by that year. It was also found that, even when income and climate are statistically controlled, white households are more likely to live in homes that have heat pumps than are black households (see Fig. 6). In addition to these reports, we have others in preparation concerning the likely market penetration of photovoltaics and packaged cogeneration systems.

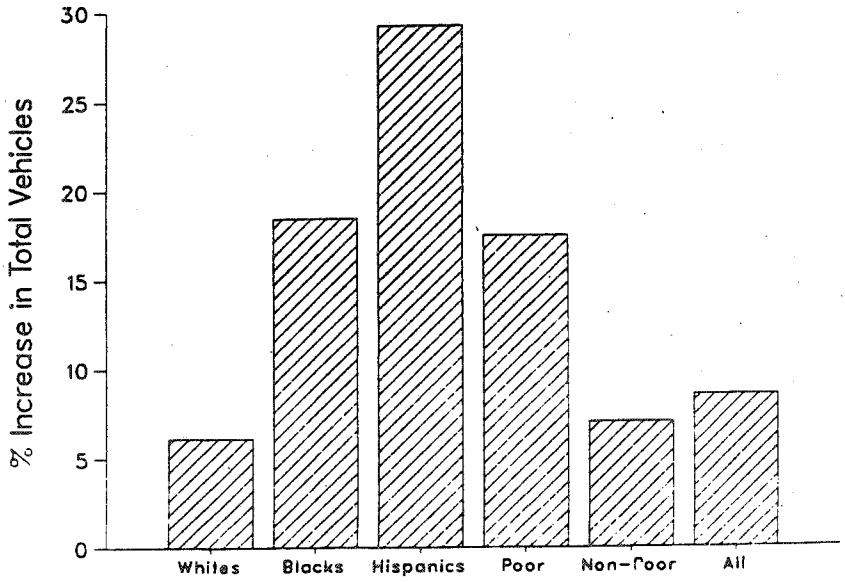

Figure 4. Increase in number of household vehicles by race and poverty status, 1977-1980.

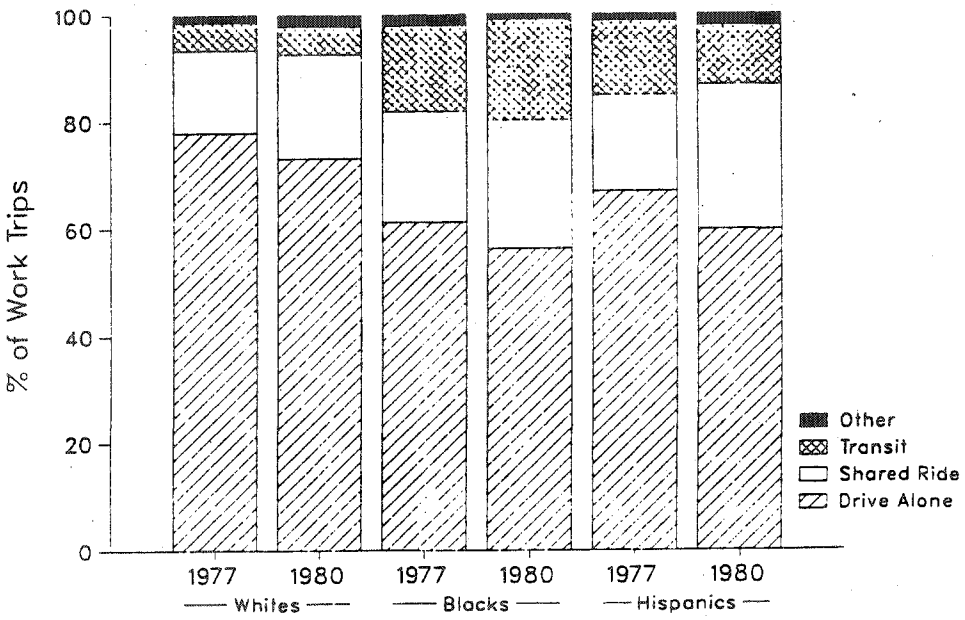

Figure 5. Change in the means of travel to work, by race, 1977-1980.

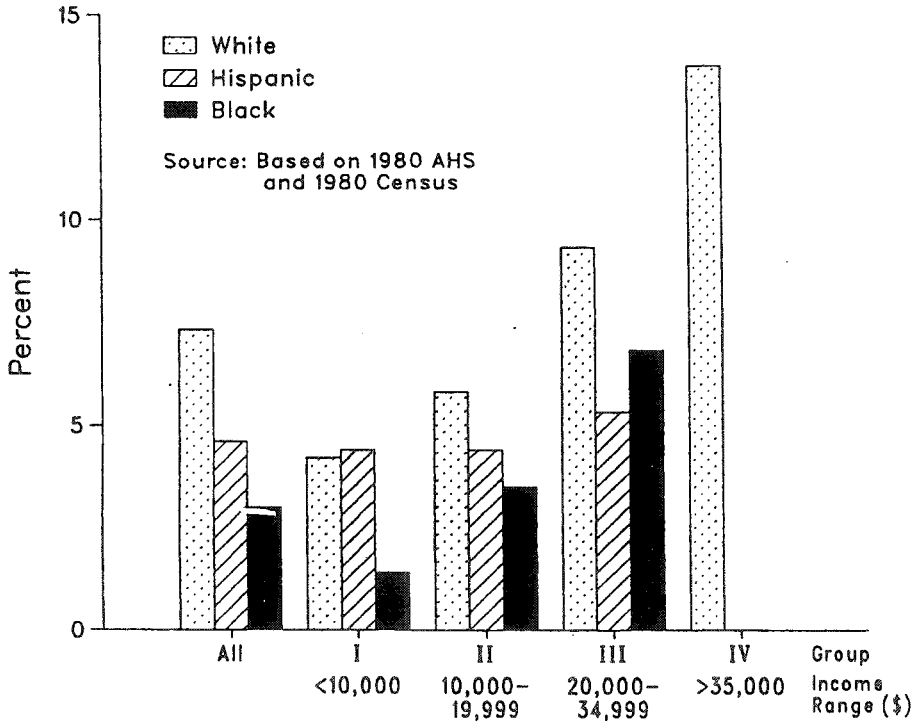

Figure 6. Heat pump market penetration in the south by race or ethnic origin of households, 1980 (Source: Ref. 40, based on the 1980 AHS and the 1980 census).

SUMMARY AND CONCLUSIONS

The research summarized in this report largely supports the findings of prior research -- that income, climate, and metropolitan location have major effects on minority energy use and spending patterns. However, the research also documents an important shift in energy use by black households between 1973 and 1983. Whereas black households used to consume less energy for residential or transportation purposes than did whites, they now consume more.[21,25] Even though all households have practiced energy conservation, we must conclude that white households have had greater success in purchasing, installing, and using newer, more energy-efficient capital stock. The slow market penetration of heat pumps into the black residential market lends further support to this conclusion.[40]

These findings imply that both sides of a key energy policy debate of the late 1970s were correct: as predicted, rising energy prices led to reduced energy use and to technological substitutions, but the economic welfare of black households was reduced more than that of nonblack households. When income and location or climate are statistically controlled, minority groups (especially blacks) appear to differ from the majority population in

their ability or willingness to make long-term capital investments in energy-efficient consumer durables (e.g., automobiles and appliances).* Likewise, it appears that inexperience in business and a lack of scientific and technical education have rendered blacks and Hispanics less able to take advantage of business opportunities created by the energy price increases since 1973.

Reflecting back on our research results, we now conclude that it is appropriate to propose two different hypotheses to explain the observed differences in energy consumption and expenditure patterns. The first is a *culture of minority poverty* hypothesis, i.e., the minority poor have distinct values, aspirations, and psychological characteristics (such as a shorter time horizon) that produce behavioral tendencies, such as an unwillingness to make energy-saving capital investments or to do needed repair and maintenance on their cars or home heating systems. According to this cultural hypothesis, these tendencies may be transmitted across generations through socialization of the young.[41-43] An alternative hypothesis is that the minority poor hold mainstream values and aspirations but are unable to live by them because of *structural constraints* imposed by the wider society. These constraints would include lack of money or access to capital, inadequate educational opportunities, greater instability in income from year to year and an associated inability to accumulate wealth, and a greater incidence of households headed by persons (elderly, disabled, women) who for diverse reasons are less able to perform repair and maintenance on cars and homes.[44,45] Red-lining, lack of access to energy conservation information, and several of the other aforementioned factors would mean that market mechanisms fail for these households.‡

At present we have no strong evidence to support either hypothesis, and it is highly unlikely that we could obtain the needed evidence solely from national surveys such as RECS or AHS. Further, because of the limitations of available national surveys, observed differences in black and white household energy patterns may simply be a result of sample selection and interviewing procedures. A central problem is that the samples do not contain enough minority households or else that enough energy-specific information is not obtained to permit confident statements to be made about minority energy patterns below the national aggregate level.[46,47] Indeed, it is not even possible to make confident statements about the energy consumption patterns of Orientals, native Americans, Eskimos, and Aleuts at the national level.

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*We are indebted to Millar et al.[25] and Yehuda Gur of Technion University in Israel for first drawing this potentiality to our attention.

‡We are currently preparing a paper that will explicitly test these hypotheses with all the research results at our disposal.

We are thus confronted with three distinct possibilities with regard to the observed differences between blacks and whites when income and climate or location are statistically controlled: that these differences are primarily a result of (1) data base deficiencies, (2) situational differences, or (3) cultural differences.

Clearly, the data base problem must be overcome if rational energy policies relative to minorities are to be developed. One step would be to oversample minority and low-income households in future RECS surveys. This would permit detailed comparisons of minority and nonminority energy use and expenditure patterns, but it has the drawback of requiring additional budgetary outlays in an era of fiscal constraints and would not improve the utility of currently available data bases. Another alternative would be to find a way to combine the strengths of separate data bases. An example of this approach would be to use AHS and 1980 census data to characterize the demographic and housing patterns of population groups by region in combination with RECS to simulate (using regression analysis) energy use patterns of households. A similar approach could be used for transportation patterns by combining the NPTS with the RTECS of 1983. We are currently investigating the viability of these approaches.

Either of these data enhancement alternatives would enable researchers to assess whether the apparent differences between black and white residential and transportation patterns of energy consumption are data artifacts or real differences. Data bases enhanced in these ways would not, however, enable us to determine whether the differences are due to cultural or situational factors. To make this distinction, two parallel investigations are necessary. The situational hypothesis can be tested by identifying several situational variables (e.g., female-headed households), then systematically measuring their effect on energy-related behavior, controlling for the effect of other key variables. The cultural hypothesis can be tested by conducting carefully designed pairs of energy-related behavioral case studies in a major metropolitan area in the Northeast or Midwest and a rural community in the South or Southwest.* These case studies would focus on whether low-income blacks (and other minorities) have energy-related tastes and preferences that differ from those of low-income whites, or (in economic terms) whether minority subpopulations have different energy demand patterns because of culturally determined differences in marginal utility.

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*The Chicago, New York, Detroit, and Philadelphia urban areas would rank high on the list of candidates. Of the slightly more than 108 million people living in the Northeast and Midwest regions in 1980, over 14 million (13.1%) were black or Hispanic. Of this 14 million, 45% (or 6.3 million) lived in those four cities.[5]

We suspect that the investigations just suggested would reveal that black/nonblack differences in energy consumption are real due primarily to situational differences, particularly segregated residential and business patterns that lead blacks to live in older structures and use older automobiles and appliances. We do not yet have the evidence needed to support this claim, however. Further, we are open to the possibility that our expectations are completely wrong. Therefore, we conclude that it is vitally important for the research community to explore each of the proposed hypotheses and to see which one is most firmly supported by the facts. Energy policy researchers and practitioners need a forum in which to do this. Accordingly, we have recommended to OMEI that it sponsor a minority energy research conference in the spring of 1987. Current indications are that the conference will be held in Washington, D.C.

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