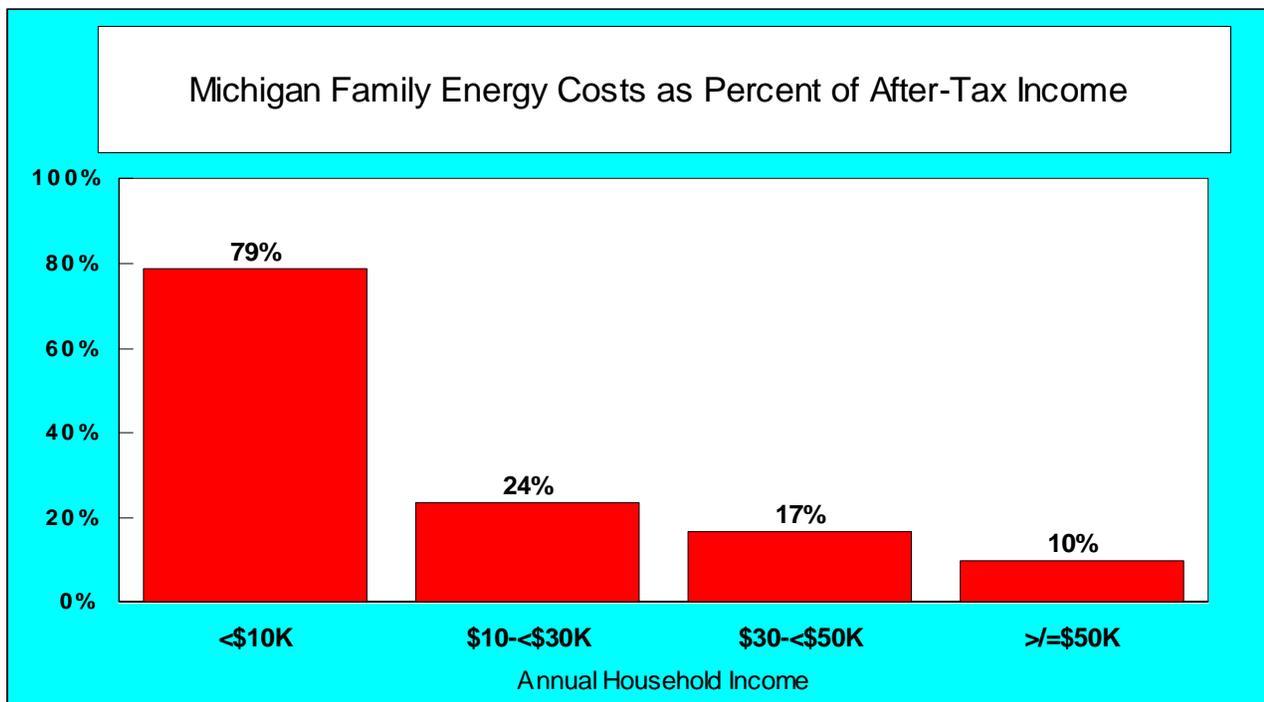


Energy Cost Impacts on Michigan Families

Energy prices continue to strain the budgets of Michigan's lower- and middle-class families. Michigan households with annual incomes below \$50,000, representing 53% of Michigan's population, spend an estimated average of 21% of their after-tax income on energy. Energy bills for the poorest households earning less than \$10,000 represent 79% of their family incomes, before accounting for any energy assistance programs. Increased energy costs are competing with other necessities for lower- and middle-income family budgets across Michigan.



Energy Cost Impacts on Michigan Families

This paper assesses the impact of energy costs on Michigan households using energy consumption survey data and current energy price data from the U.S. Department of Energy's Energy Information Administration (DOE/EIA).¹ Energy costs are summarized by household income group using Michigan data from the U.S. Bureau of the Census.² Energy expenditures as a percentage of after-tax income are estimated for the effects of federal and state income taxes and federal social insurance payments.

Key findings include:

- Some 53% of Michigan's families have gross annual incomes of \$50,000 or less, with an average after-tax income of \$22,790, less than \$2,000 per month. The median gross household income of Michigan families in 2011 was \$45,981, 8% below the national median household income of \$50,054. The average gross income of Michigan households in 2011 was \$61,926, 11% below the national average.
- Measured in constant 1990 prices, residential electricity prices in Michigan are 3% above 1990 levels. The price of residential natural gas, despite recent price declines, has increased by 20% in real terms since 1990. Michigan's average residential electric price through November 2012, 14.1 cents per kilowatt-hour (measured in 2012 prices), was 18% above the U.S. average of 11.9 cents per kWh. A portion of Michigan's recent electric price increases is due to compliance with new U.S. EPA clean air regulations.
- Energy costs are consuming the after-tax household incomes of Michigan's low- and middle-income families at levels comparable to other necessities such as housing, food, and health care. Michigan families spend an estimated average of 12% of their after-tax incomes on energy. The 2.0 million Michigan households earning less than \$50,000 devote an estimated average of 21% of their after-tax incomes to energy.
- The 922,000 Michigan families with annual incomes of \$10,000 to \$30,000, nearly one-quarter of the state's population, spend an estimated average of 24% of their after-tax family budgets on energy.
- The 328,000 poorest families in Michigan, living well below the federal poverty line and earning less than \$10,000 per year, are being squeezed hardest by energy cost increases. Many of these families receive state and other energy assistance to help reduce energy costs. Yet for most lower-income families and for 1.2 million Michigan households receiving Social Security – representing 32% of all Michigan households – rising energy costs are competing with other basic necessities for the family budget.

Michigan Household Incomes

U.S. Census Bureau data on Michigan household incomes in 2011 (the most recent available) provide the basis for estimating the effects of energy prices on consumer budgets.³ The table below shows estimated 2011 after-tax incomes for Michigan families in different income brackets. The Congressional Budget Office has calculated effective total federal tax rates, including individual income taxes and payments for Social Security and other social welfare programs.⁴ State income taxes are estimated from current Michigan income tax rates.⁵

Michigan households by pre-tax and after-tax income, 2011

Pre-tax annual income:	<\$10K	\$10-<\$30K	\$30-<\$50K	≥\$50K	Total/avg.
Households	328,207	922,266	764,805	1,757,155	3,772,433
Pct. of total households	8.7%	24.4%	20.3%	46.6%	100.0%
Avg. pre-tax income	\$4,924	\$19,821	\$39,701	\$104,351	\$61,926
Effec. fed tax rate %	1.8%	4.5%	10.6%	19.5%	12.5%
Est. state tax %	0.0%	2.0%	3.5%	4.0%	3.1%
Est. after-tax income	\$4,835	\$18,533	\$34,103	\$79,829	\$52,296

Some 53% of Michigan families had estimated pre-tax incomes below \$50,000 in 2011, compared with 50% nationally. After federal and state taxes, these families had average annual incomes of \$22,790, equivalent to an average monthly take-home income of \$1,900. In 2011, the median gross household income of Michigan families was \$45,981 - 8% below the national median household income of \$50,054.⁶ The average gross income of Michigan households was \$61,926, 11% below the national average.

Residential and Transportation Energy Expenses

The principal residential energy expenses are for electricity and natural gas for home cooling, heating, and household appliances. Many Michigan homes also use propane fuel and other heating sources such as wood.

As shown in Chart 1, the price of residential electricity in Michigan is 3% above its level in 1990, measured in real, inflation-adjusted terms. The real price of residential natural gas, despite recent price decreases, has increased by 20% since 1990. The relatively low cost of inflation-adjusted residential electricity prices since 1990 reflects, in part, Michigan's historic reliance on low-cost coal for a majority of its electric energy supplies. Through November 2012, coal-based generation provided 48% of the state's electricity.⁷ Michigan's average residential electric price through November 2012, 14.1 cents per kilowatt-hour (measured in 2012 prices), was 18% above the U.S. average of 11.9 cents per kWh.⁸

Chart 1

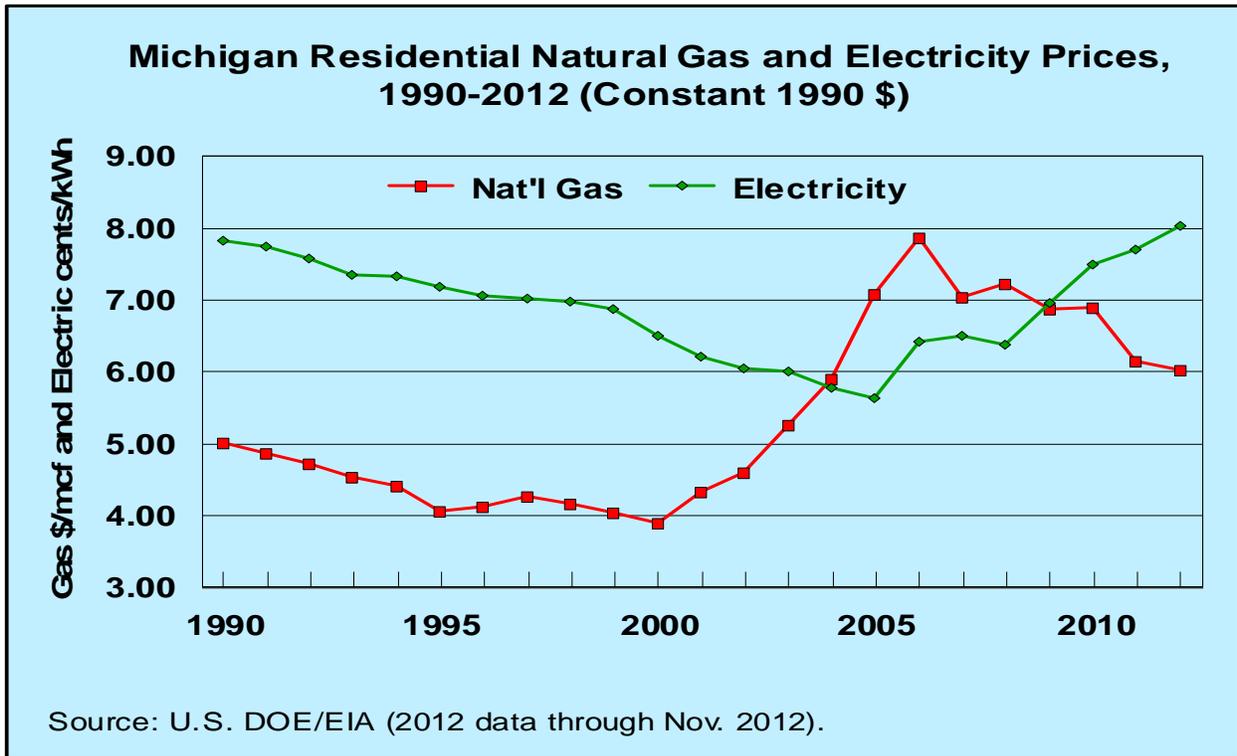


Chart 1 also reveals a steady increase in Michigan residential electric prices beginning in 2005 through 2012. A portion of these price increases can be attributed to new U.S. EPA clean air regulations, which have led to the retrofit of capital-intensive pollution controls on many Michigan generating units.⁹

Energy Expense Estimates

Estimated household energy expenses for Michigan are based upon DOE/EIA residential electric and natural gas sales data for Michigan through November 2012.¹⁰ Total household energy costs are distributed by income category using the most recent DOE/EIA residential energy survey data.

Gasoline prices have declined from their 2012 peaks, but are above \$3.50 per gallon in many areas. Gasoline accounts for the largest single increase in consumer energy costs since 2001. EIA's February 2013 Short-Term Energy Outlook projects 2013 average retail gasoline costs at \$3.61 per gallon, nearly two and a half times higher than the \$1.47 per gallon price in 2001.

The increase in gas prices follows a decade-long trend of increased market shares of pickup trucks and SUVs, and an increase in the average number of vehicles

owned per household.¹¹ Many families continue to own low-efficiency vehicles with low trade-in values.

DOE/EIA's 2001 Survey of Household Vehicles Energy Use (2005) provides information on regional gasoline use by household income category. These regional gasoline consumption data are updated using EIA's 2013 national average retail gasoline price projection of \$3.61 per gallon. To be conservative, household gasoline consumption is reduced by 10% from 2001 levels, reflecting trends in retail gasoline sales.¹²

The table below summarizes estimated Michigan household energy expenses by income group, with the percentage of after-tax income represented by energy costs:

Estimated Michigan household energy costs by income category

Pre-Tax Annual Income:	<\$10K	\$10-<\$30K	\$30-<\$50K	≥\$50K	Average
Residential energy \$	\$1,687	\$1,801	\$2,011	\$2,693	\$2,278
Electric \$	\$966	\$999	\$1,159	\$1,487	\$1,270
Natural Gas \$	\$537	\$598	\$635	\$899	\$751
Other* \$	\$184	\$205	\$217	\$308	\$257
Gasoline \$	\$2,127	\$2,597	\$3,740	\$5,067	\$3,938
Total energy \$	\$3,814	\$4,398	\$5,751	\$7,760	\$6,216
Energy % of after-tax income	79%	24%	17%	10%	12%

*Other includes LPG and wood.

The share of household income spent for energy falls disproportionately on lower- and middle-income families earning less than \$50,000 per year. The 24% of Michigan households earning between \$10,000 and \$30,000 spend an estimated 24% of their after-tax income on energy. While many lower-income consumers qualify for energy assistance, these government programs are hard pressed to keep pace with the escalation of energy prices. In 2012, Congress reduced annual funding for the federal LIHEAP energy assistance program from \$5.1 to \$3.5 billion.

The average Michigan family with an after-tax income of \$52,296 spends an estimated \$6,216 on energy, or 12% of the family budget. The 2.0 million Michigan households earning less than \$50,000, representing 53% of households, allocate 21% of their after-tax incomes to energy. The large share of after-tax income devoted to energy poses difficult budget choices among food, health care and other necessities.

Disproportionate Impacts on Senior Citizens

The impacts of increased energy costs are falling disproportionately on Michigan's 1.2 million households of Social Security recipients, representing 32% of the state's households. In 2011, Social Security recipients in Michigan had an average

household Social Security income of \$17,613.¹³ Some 72% of these senior households had additional retirement income averaging \$21,203 before taxes.

Unlike young working families with the potential to increase incomes by taking on part-time work or increasing overtime, many fixed income seniors are limited to cost-of-living increases that may not keep pace with energy prices. Maintaining the relative affordability of electricity and natural gas prices, and increasing low-income energy assistance, are essential to the wellbeing of hundreds of thousands of Michigan's senior and lower-income citizens.

Conclusion

The escalation of Michigan consumer energy prices - together with sluggish income growth among lower- and middle-income households - underscore the need to find ways to reduce energy cost impacts on Michigan families, especially lower- and fixed-income households.

Acknowledgment: This paper was prepared for ACCCE by Eugene M. Trisko, an energy economist and attorney in private practice. Mr. Trisko has served as an attorney in the Bureau of Consumer Protection at the Federal Trade Commission and as an expert economic witness before state public utility commissions. He represents labor and industry clients in environmental and energy matters. Mr. Trisko can be contacted at emtrisko@earthlink.net.

End Notes

¹ Data on residential energy consumption patterns by income category are from U.S. Department of Energy, Energy Information Administration, 2009 Survey of Residential Energy Consumption (2012). Michigan electricity, natural gas and other residential energy costs are based on 2012 state data from U.S. DOE/EIA Electric Power Monthly (January 2013), Natural Gas Monthly (January 2013) and State Energy Data System data available at www.eia.gov/state/seds. 2013 gasoline price projections are from DOE/EIA Short Term Energy Outlook (February 2013).

² Household incomes in Michigan by income category are derived from the distribution of household income in U.S. Census Bureau, American Fact Finder, Michigan Selected Economic Characteristics: 2011 (2012).

³ *Id.*

⁴ Congressional Budget Office, "Effective Federal Tax Rates Under Current Law, 2001 to 2014," (August 2004). Effective federal tax rates for the income categories employed in this paper were interpolated from CBO's tax rates by income quintile and adjusted for changes in the American Taxpayer Relief Act of 2013.

⁵ State tax data are estimated from state tax rates compiled by the Tax Foundation (2012).

⁶ U.S. Census Bureau, American Fact Finder, Michigan Selected Economic Characteristics 2011 (2012).

⁷ U.S. DOE/EIA, Electric Power Monthly (January 2013).

⁸ *Id.*

⁹ See, U.S. EPA, "The Benefits and Costs of the Clean Air Act from 1990 to 2020" (2011) at Table 3-2 (electric utility direct annual compliance costs increased from an estimated \$1.4 billion (\$2006) in 2000 to \$6.6 billion (\$2006) in 2010.) Since 2000, the Michigan utility sector has complied with the federal acid rain program enacted in the 1990 Clean Air Act Amendments, EPA's 1998 Ozone Transport Rule reducing nitrogen oxide emissions in 19 eastern states, Phase I of EPA's 2005 Clean Air Interstate Rule requiring further reductions of sulfur dioxide and nitrogen oxide emissions in the eastern U.S., and a variety of other federal and state air and water quality standards.

¹⁰ U.S. DOE/EIA, Electric Power Monthly (January 2013); U.S. DOE/EIA, Natural Gas Monthly (January 2013).

¹¹ U.S. DOT, 2001 National Household Travel Survey, "Summary of Travel Trends," (December 2004).

¹² The Department of Transportation's 2009 National Highway Transportation Survey (NHTS) reports that average vehicle-miles traveled per household declined from 21,187 miles in 2001 to 19,850 miles in 2009. DOE/EIA data indicate that retail gasoline sales in barrels per day declined by 10.1% from 2001 to 2012 on a household-adjusted basis. The regional household gasoline expenditure estimates presented in this report are comparable to the national expenditure data reported in the 2009 NHTS after adjustment for gasoline price differences.

¹³ U.S. Census Bureau, Michigan Selected Economic Characteristics: 2011 (2012).