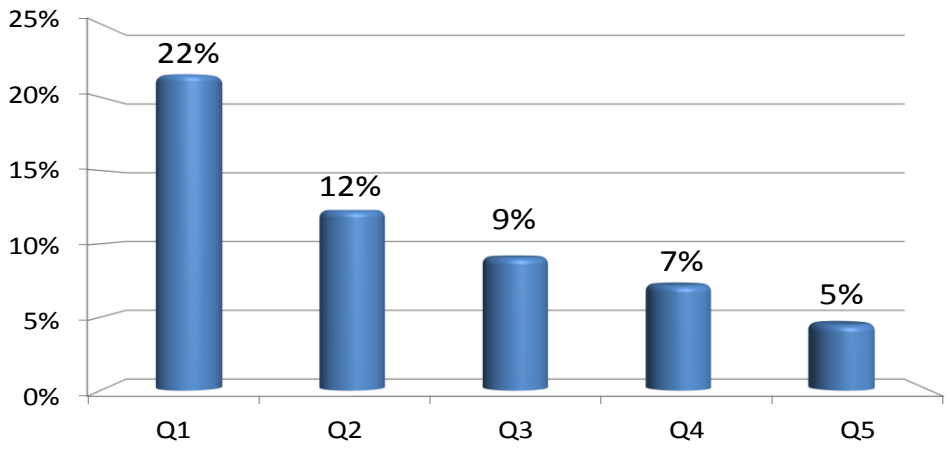
AMERICAN COALITION FOR CLEAN COAL ELECTRICITY

Energy Expenditures by American Families

Energy costs consume more than one-fifth of the after-tax incomes of America's poorest families, the 25 million households in the lowest income quintile. Increased costs for residential electricity have a more regressive impact on low-income consumers than cost increases for other basic necessities including food, gasoline, housing, clothing, and health care.



Source: Bureau of Labor Statistics, Consumer Expenditure Survey (April 2016). Includes expenditures for electricity, natural gas, other household fuels, and motor gasoline.

June 2016

Executive Summary

This report analyzes patterns of consumer expenditures for five categories of basic household necessities by income quintile as reported by the U.S. Bureau of Labor Statistics' Consumer Expenditure Survey for the period from July 2014 to June 2015. Each income quintile represents approximately 25 million American households.

Key findings of the analysis are:

- The average after-tax income of the two lowest income quintiles, representing 51 million households, is $19,719. This is equivalent to a take-home income of less than $1,700 per month.

- Residential electricity and motor gasoline are the largest energy expenditures for households in all income quintiles.

- Households in the very lowest income quintile spend 22% of their after-tax income on residential utilities and gasoline, while households in the two lowest quintiles spend 17%. This compares with 5% for households in the top income quintile.

- Black and Hispanic households account for 33% of households in the two lowest income quintiles, compared with 14% in the top income quintile. Senior citizens are similarly overrepresented in the lowest income quintiles.

- Among basic necessities, increases in residential electricity costs have the most regressive impact on low-income households. Electricity expenditures, the most common monthly utility bill, are the least likely to be reduced when a family is confronted with reduced income. Decreases in household income due to unemployment or other factors are more likely to result in greater cutbacks in consumer expenditures for clothing, food and gasoline than for electricity.

- Since 2005, national average electricity prices have increased by 33% in current dollars, and by 7% in constant 2005 dollars. A portion of this increase is due to compliance costs associated with new Clean Air Act and other environmental regulations.

- The real pre-tax incomes of American households have declined across all five income quintiles since 2001. The combination of lower real family incomes and higher residential electricity prices will continue to create difficult family budget choices among lower-income families.

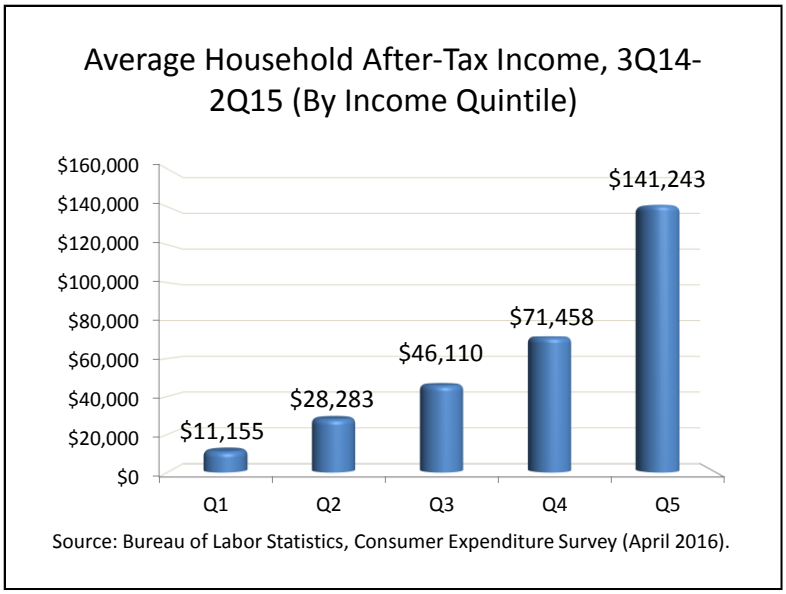
Energy Expenditures by American Families

This report examines consumer expenditures by income quintile as reported by the U.S. Bureau of Labor Statistics' Consumer Expenditure Survey for the period from July 2014 to June 2015 (3Q14-2Q15).[i] BLS surveys the income and expenditure patterns of American households and reports its findings by income quintile. Each income quintile represents approximately 25 million American households.

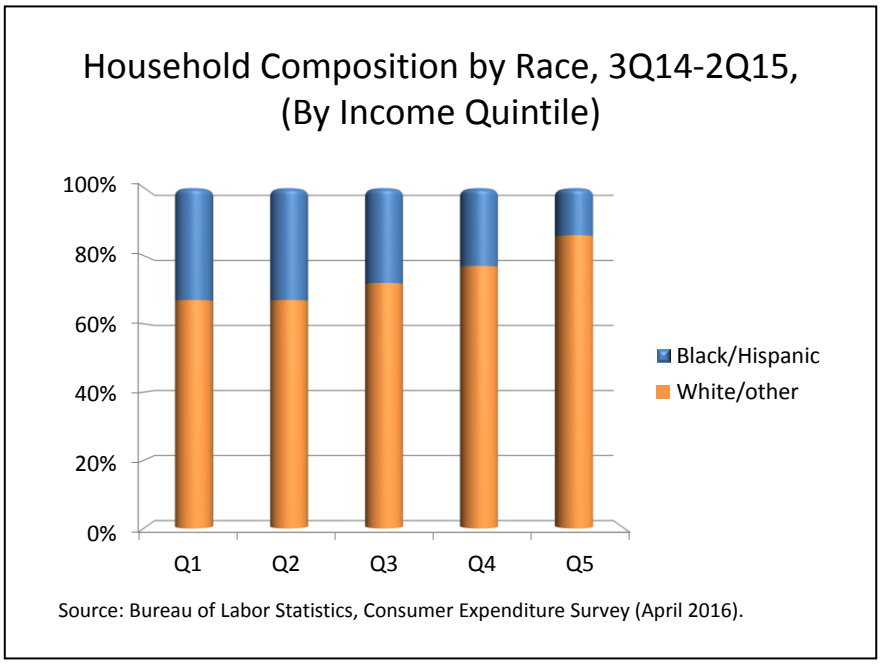
Household incomes

The BLS survey estimates that 128 million U.S. households had an average after-tax income of $59,633 in the 3Q14-2Q15 survey period. Average income before taxes for all U.S. households, including Social Security and other forms of transfer payments, was $68,662.

The distribution of average household incomes by income quintile is shown below. Households in the lowest income quintile had average after-tax incomes of $11,155. Households in the second income quintile had an average after-tax income of $28,283. The average after-tax income of the two lowest income quintiles, representing 51 million households, was $19,719. This is equivalent to a take-home income of less than $1,700 per month.



Black and Hispanic families are disproportionately represented among the lower income quintiles. Black and Hispanic households account for one-third of households in the two lowest income quintiles, compared with 14% in the top income quintile. Senior citizens are also overrepresented in the two lowest income quintiles. In 2014, the pre-tax median household income of senior households aged 65 or more was $36,895, 31% below the U.S. median income of $53,657.[ii]



The real pre-tax incomes of American households have declined across all five income quintiles since 2001, measured in constant 2014 dollars. As shown below, the largest percentage losses of income are in the two lowest income quintiles. Households in the lowest quintile lost 14% of their real income between 2001 and 2014. The largest losses of purchasing power – nearly $3,000 – occurred in the second and third income quintiles, representing lower- and middle-income working families. These declining real incomes increase the vulnerability of low- and middle-income households to rising costs for food, energy, and other household necessities.

Average real U.S. pre-tax household incomes by income quintile,
2001-2014
(In constant 2014$)

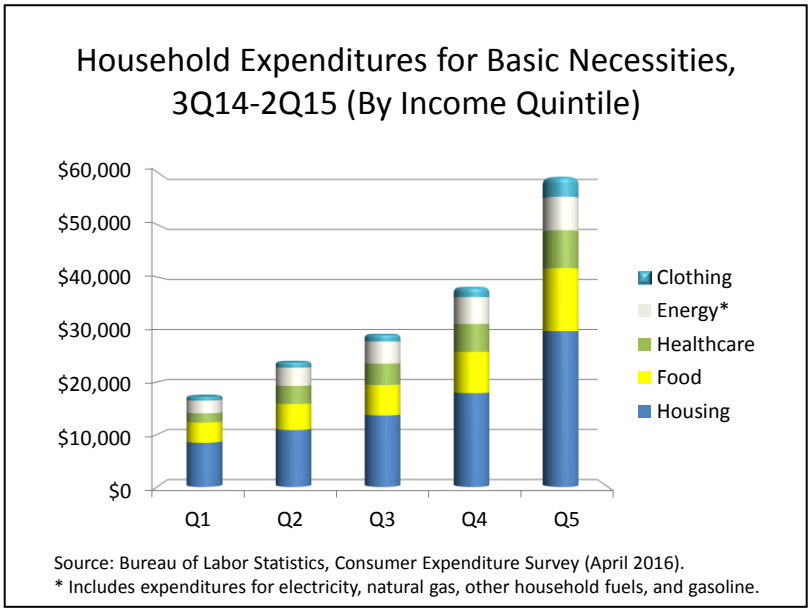
	1Q	2Q	3Q	4Q	5Q
2001	$13,553	$34,055	$57,002	$88,597	$195,188
2014	$11,676	$31,087	$54,041	$87,834	$194,053
% Chg	-14%	-9%	-6%	-1%	-1%
$ Chg	($1,877)	($2,968)	($2,961)	($763)	($1,135)

Source: https://www.census.gov/hhes/www/income/data/historical/household/

Real median household income - the midpoint of the income distribution among all households - was $53,657 in 2014, 6.5% lower than the pre-recession 2007 median, and 7.2% lower than the median household income peak ($57,843) that occurred in 1999.[iii]

Consumer expenditures

The BLS survey estimates household expenditures for all categories of expenses, from basic necessities such as food and housing to luxury items such as jewelry. The chart below shows the increasing levels of expenditures by income quintile for five categories of basic necessities: housing (rent or mortgage payments), food, energy, health care, and clothing. Energy expenditures include those for residential utilities such as electricity, heating oil and natural gas, and motor gasoline.

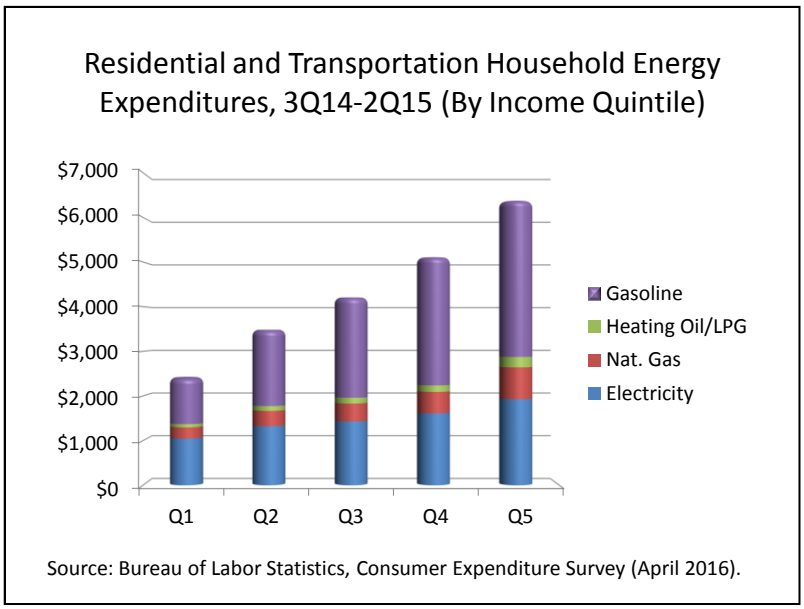


The largest expenditure category across all income quintiles is housing, followed by food. Expenditures for housing average $16,085 for all households, compared with $6,887 for food. Energy and health care expenditures are $4,318 and $4,379, respectively.

Energy expenditure patterns

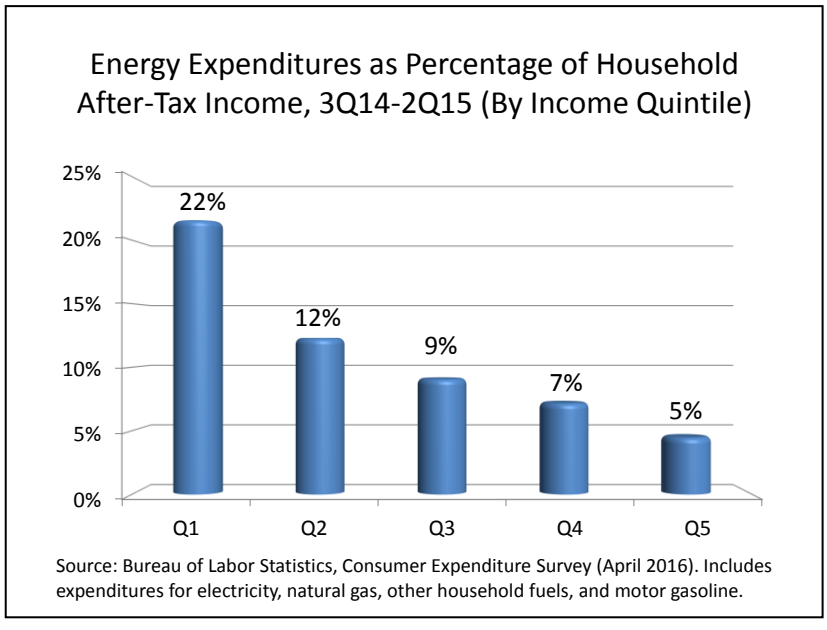
Residential electricity and motor gasoline are the largest energy expenditures for households in all income quintiles. As shown below, expenditures for motor gasoline increase rapidly with higher household income, reflecting increased numbers of vehicles and greater vehicle-miles traveled per household. The average U.S. household had 1.9 vehicles in 3Q14-2Q215. Households in the lowest income quintile had 0.9 vehicles per family, while those in the top income quintile had 2.8 vehicles per household.

Household expenditures for electricity increase gradually with higher household income due to larger residential floor space and the increased number and use of appliances and other electronic equipment.[iv] With higher incomes, consumers also tend to substitute natural gas for electricity in home heating, and to increase the efficiency of electricity in lighting and space heating and cooling.



Energy cost impacts on family budgets

The share of after-tax income represented by expenditures for residential and transportation energy is depicted in the chart below. Households in the lowest income quintile spend 22% of their after-tax income on residential utilities and gasoline, compared with 5% for households in the top income quintile. Households in the two lowest income quintiles, representing 51 million households, spend an average of 17% of their after-tax incomes on residential energy and gasoline. On average, energy expenditures represented 7% of after-tax income for all U.S. households in Q314-Q215.

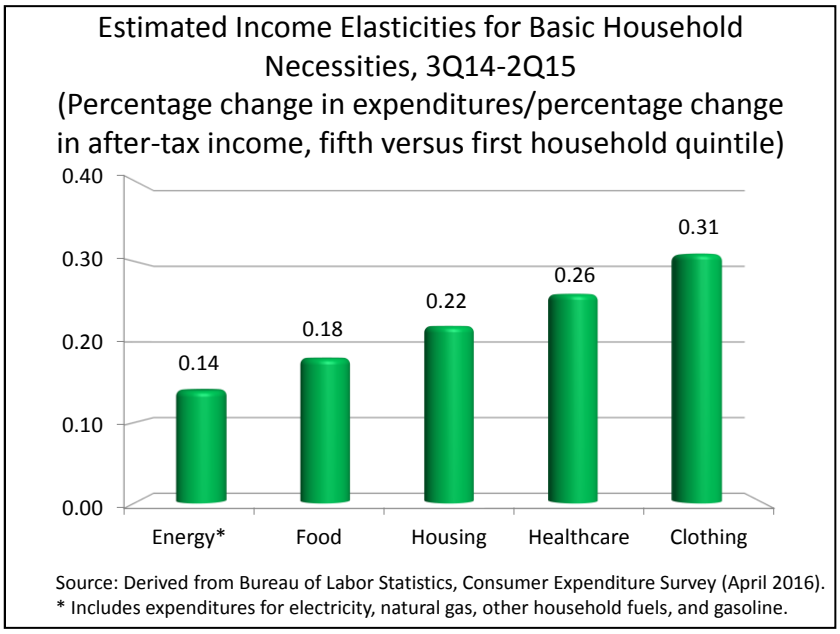


Inadequate Low-Income Energy Assistance

Many low-income consumers qualify for energy assistance programs such as LIHEAP, a federal block grant program that funds state energy assistance programs. LIHEAP appropriations have declined in recent years. The FY 2016 program was funded at $3.4 billion, compared with $5.0 billion in FY 2010.[v] In FY 2010, LIHEAP provided an average benefit of $467 per household to 8.1 million households.[vi] Only 22% of the 37 million low-income households potentially qualified to receive benefits that year participated in the LIHEAP program.

Income and Energy Use

Among consumer expenditures for basic necessities, energy is the least sensitive to changes in household income. The chart below shows the estimated income elasticities for five basic household expenditures. Income elasticity is a measure of the relative increase in expenditures for each of the five categories of basic necessities in relation to increased household incomes. It is calculated by dividing the percentage change in expenditures for each category of basic necessities by the percentage change in average incomes between the lowest and the highest income quintiles.

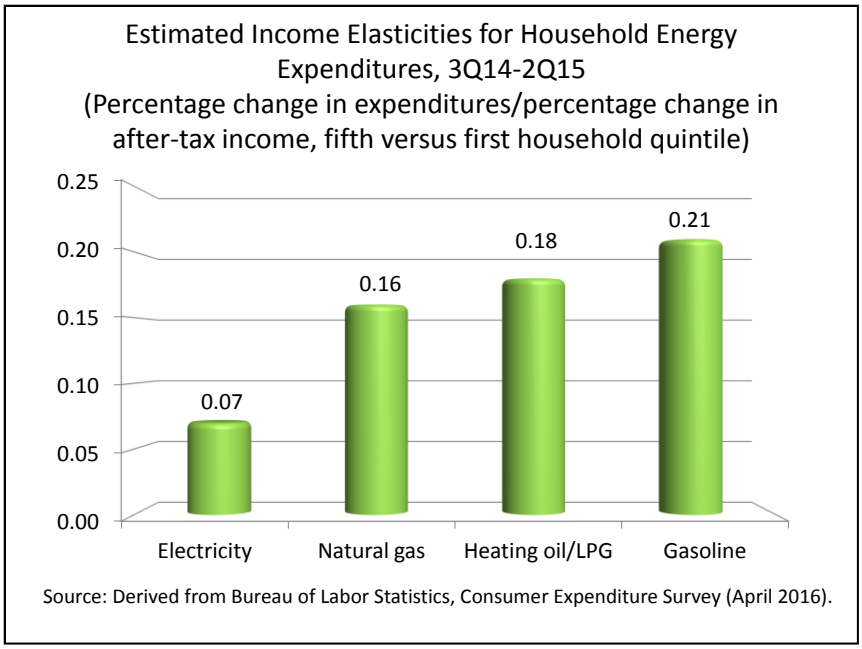


With rising household incomes, consumers tend to spend more on clothing, health care, housing, and food than on energy products and services. Similarly, when faced with reduced income, family budgets are likely to cut back expenditures for clothing to a greater extent than energy and other basic necessities.

The BLS survey reveals that residential electricity expenditures are the least sensitive to changes in income among the principal categories of energy expenditures (see chart

below.) As household incomes increase, consumers spend relatively more for heating oil, natural gas, and gasoline than for electricity.

On the other hand, decreases in household income due to unemployment or other factors are more likely to result in greater cutbacks in expenditures for gasoline or other basic necessities than for electricity. Electricity expenditures - the most common monthly utility bill - are the least likely to be reduced when a family is confronted with reduced income.



The Regressive Impact of Energy and Other Consumption Taxes

Any increase in the costs of basic household necessities serves as an effective tax on household income. The BLS Consumer Expenditure Survey provides the basis for estimating the relative regressivity of any consumption-based tax or price increase affecting basic necessities such as food or energy. A carbon tax on energy, an increase in electric prices due to government regulation, or higher sales taxes on food and clothing are examples of effective consumption-based taxes reducing available after-tax income.

The table below shows the effective reduction of after-tax household incomes by income quintile for an assumed across-the-board 10% increase in the costs of housing, food, clothing, health care, and energy. For all U.S. households, the largest impacts are in housing (2.7%) and food (1.2%), followed by energy (0.9%), health care (0.7%) and clothing (0.3%).

Impacts of Assumed 10% Increase in the Costs
of Basic Necessities as a Percentage of After-Tax Income,

by Income Quintile

Item	All H/Hs	1st Q	2d Q	3d Q	4th Q	5th Q	Q1/Q5*
Housing	2.70%	7.55%	3.83%	2.95%	2.50%	2.10%	3.6
Food	1.15%	3.44%	1.75%	1.25%	1.10%	0.85%	4.0
Health Care	0.73%	1.61%	1.22%	0.89%	0.75%	0.51%	3.1
Clothing	0.32%	0.77%	0.42%	0.31%	0.28%	0.28%	2.8
All Energy	0.72%	2.16%	1.23%	0.91%	0.72%	0.45%	4.8
Electricity	0.25%	0.94%	0.47%	0.31%	0.23%	0.14%	6.9
Heat. Oil	0.02%	0.07%	0.04%	0.03%	0.02%	0.02%	4.0
Nat. Gas	0.07%	0.22%	0.12%	0.09%	0.07%	0.05%	4.4
Gasoline	0.38%	0.93%	0.60%	0.49%	0.40%	0.25%	4.8

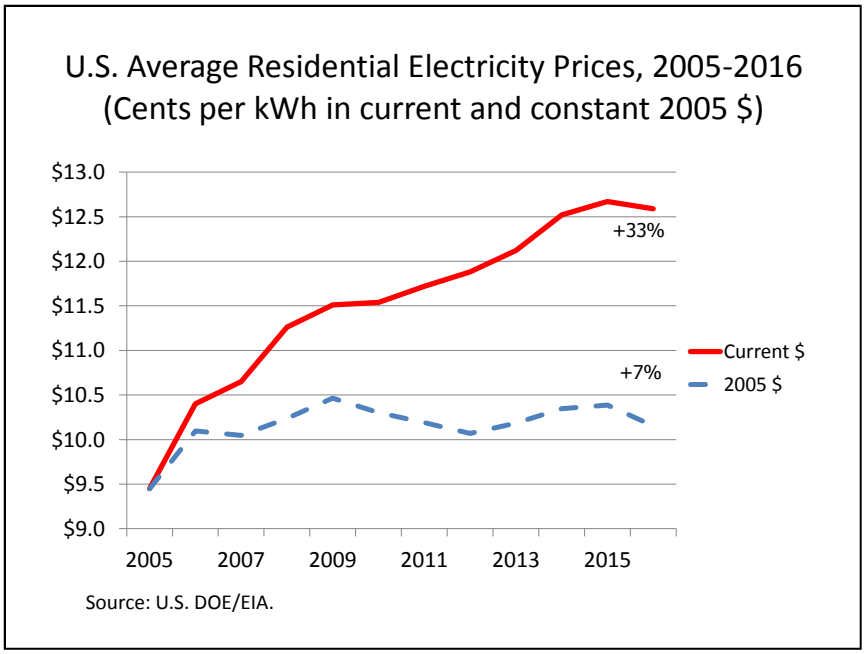
*Percentage impact on the lowest income quintile divided by the percentage impact on the highest income quintile. This factor measures the relative degree of regressivity of a 10% increase in cost for each good or service.

Source: Derived from Bureau of Labor Statistics, Consumer Expenditure Survey, 3Q14-2Q15 (April 2016).

This illustration shows that cost increases affecting energy goods and services have the most regressive impact on low-income households. Among all basic necessities, increases in residential electricity costs have the most regressive impact, followed by gasoline. Increases in the costs of food, housing, health care, and clothing all have less regressive impacts than energy cost increases.

Policy Implications

The highly regressive nature of electricity price increases, together with recent trends in household electricity prices, underscore the importance of maintaining stable and affordable electric prices for lower- and middle-income consumers. Since 2005, national average electricity prices have increased by 33% in current dollars, and by 7% in constant 2005 dollars (see chart below).



A portion of the increase in residential electricity prices since 2005 is due to the capital and operating costs associated with new emission controls to meet Clean Air Act and other environmental requirements, as well as state laws mandating the construction of renewable energy facilities. The trend toward steadily rising electricity prices is likely to continue:

> "We are now in an era of rising electricity prices," said Philip Moeller, a member of the Federal Energy Regulatory Commission, who said the steady reduction in generating capacity across the nation means that prices are headed up. "If you take enough supply out of the system, the price is going to increase.
>
> In fact, the price of electricity has already been rising over the last decade, jumping by double digits in many states, even after accounting for inflation. In California, residential electricity prices shot up 30% between 2006 and 2012, adjusted for inflation, according to Energy Department figures. Experts in the state's energy markets project the price could jump an additional 47% over the next 15 years.
>
> The problems confronting the electricity system are the result of a wide range of forces: new federal regulations on toxic emissions, rules on greenhouse gases, state mandates for renewable power, technical problems at nuclear power plants and unpredictable price trends for natural gas.[vii]

These diverging trends - lower real family incomes and rising residential electricity prices - will continue to create difficult family budget choices among lower-income families.

Acknowledgment – This report was prepared for ACCCE by Eugene M. Trisko, who has conducted state and national energy cost analyses periodically since 2000. Mr. Trisko is an attorney and energy economist who represents labor and industry clients. He previously served as an energy economist with Robert Nathan Associates, an attorney in the Bureau of Consumer Protection of the U.S. Federal Trade Commission, and as an expert economic witness on utility cost of capital. He may be contacted at emtrisko@earthlink.net.

End notes

[i] U.S. Bureau of Labor Statistics, Consumer Expenditure Survey (April 2016).
[ii] U.S. Bureau of the Census, Income and Poverty in the United States, 2014 (September 2015) at Table 1.
[iii] *Id.*, at 7.
[iv] *See*, U.S. DOE/EIA 2009 Residential Energy Consumption Survey, Table HC2.5, Structural and Geographic Characteristics of U.S. Homes, by Household Income, 2009, and Table HC3.5, Appliances in U.S. Homes, by Household Income, 2009.
[v] *See*, Congressional Research Service, LIHEAP: Program and Funding (July 29, 2015).
[vi] *Id.*, at Table 2.
[vii] "U.S. Electricity Prices May Be Going Up for Good," The Los Angeles Times, April 25, 2014.