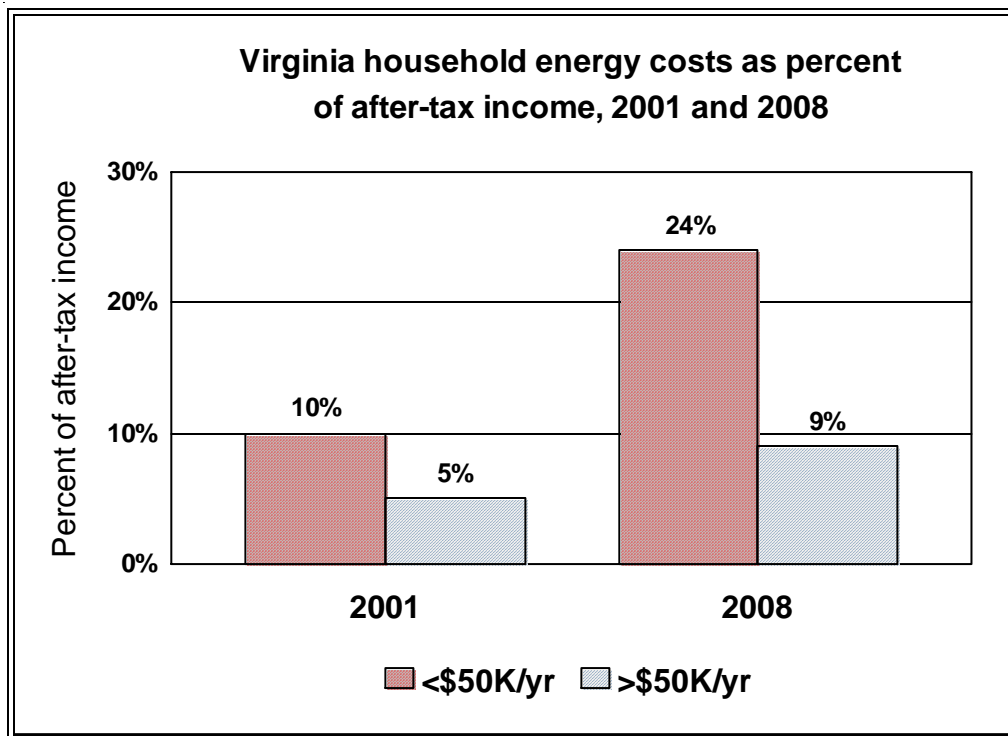


The Rising Burden of Energy Costs On Virginia Families

Higher gasoline and other energy prices are straining the budgets of Virginia's middle class, and impoverishing lower-income families. In 2008, 1.3 million Virginia households with annual incomes below \$50,000, representing 44% of Virginia's population, will spend one-quarter or more of their after-tax income on energy. The prices of gasoline and natural gas have skyrocketed, propelled by increased oil costs. Among consumer energy products, only electricity has maintained a stable price trend over the past decade.



By: Eugene M. Trisko
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The Rising Burden of Energy Costs On Virginia Families

This paper reviews consumer energy costs in Virginia from 2001 to 2008, using historical data and current energy price forecasts from the U.S. Department of Energy's Energy Information Administration (EIA).¹ Energy costs are summarized by household income group using Virginia data from the U.S. Bureau of the Census.² Energy expenditures as a percent of after-tax income are estimated for the effects of federal and state income taxes and federal social insurance payments.

Key findings include:

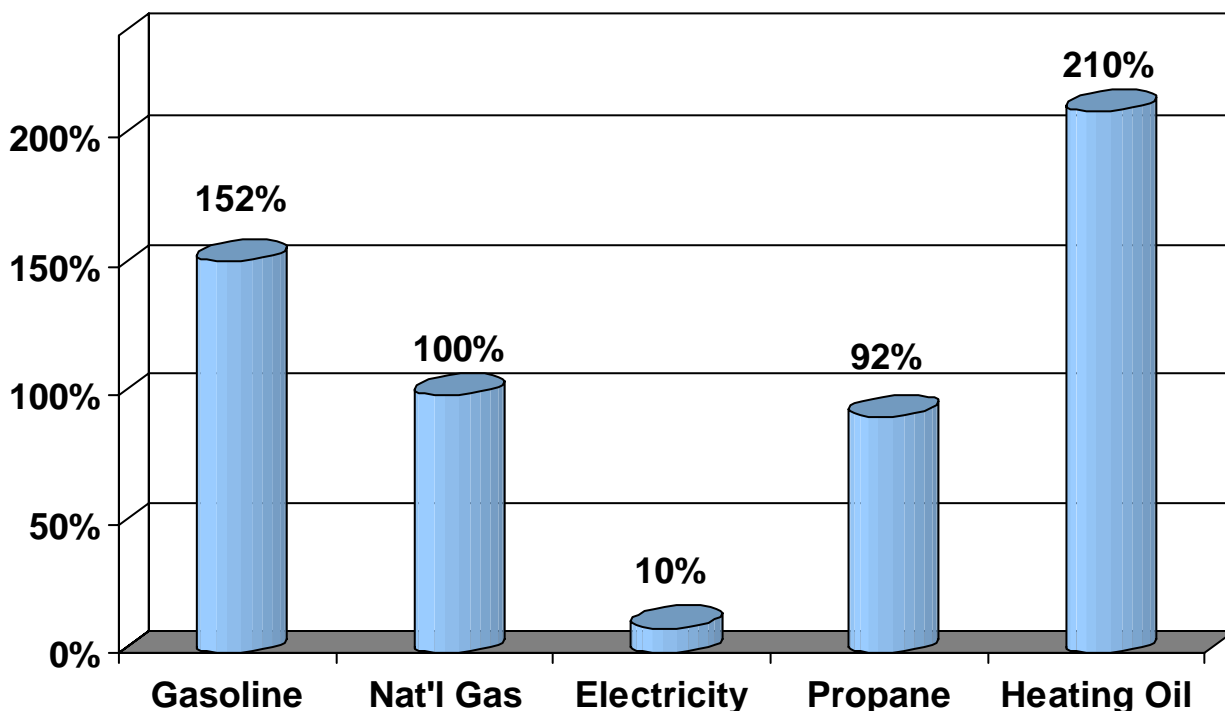
- Energy costs are consuming one-quarter or more of the after-tax household incomes of Virginia's low- and middle-income families, an amount usually spent on food, housing or health care. In 2001, Virginia families earning less than \$50,000 spent 10% of their after-tax income on energy. In 2008, energy will consume 24% of their after-tax family budgets. For the 19% of working families with gross incomes between \$10,000 and \$30,000, energy expenditures in 2008 will consume 30% of average after-tax incomes.
- Between 2001 and 2008, average energy bills for working families in Virginia earning between \$10,000 and \$50,000 per year will more than double, from \$2,866 in 2001 to \$5,855 in 2008. Most of this increase is due to higher costs for gasoline, which will jump from \$1,513 per family in 2001 to \$3,720 in 2008.
- Residential electric bills for the 1.1 million working Virginia families earning between \$10,000 and \$50,000 are projected to increase modestly from \$749 in 2001 to \$827 in 2008. The relatively low rate of electric price increase is due in large part to Virginia's reliance on low-cost domestic coal for one-half of its electric generation.
- Transportation's share of total energy bills for 1.3 million families earning less than \$50,000 – representing 44% of Virginia households in 2008 - will rise from 46% in 2001 to 60% in 2008. Residential electricity costs will decline from 29% of the energy budgets of these families in 2001 to 16% in 2008.
- The 183,000 poorest families in Virginia, below the federal poverty line and earning less than \$10,000 per year, are being squeezed hardest by recent energy cost increases. Their residential and transportation energy bills will rise from 27% of after-tax income in 2001 to 49% in 2008. Many of these families will receive state energy assistance to help reduce the burden of higher energy costs. Yet for most lower-income families, and for hundreds of thousands of Virginia households depending mainly on Social Security, the critical choice today is between fuel and basic necessities such as food and rent.

Relative Energy Price Increases

Chart 1 summarizes key consumer energy price increases since 2001. Prices for gasoline have increased by 152%, while natural gas and propane for residential heating are projected to increase by 100% and 92%, respectively. Compared to these fuels, residential electricity prices in Virginia will increase by only 10%.

Chart 1

Virginia Consumer Energy Price Increases, 2001-08

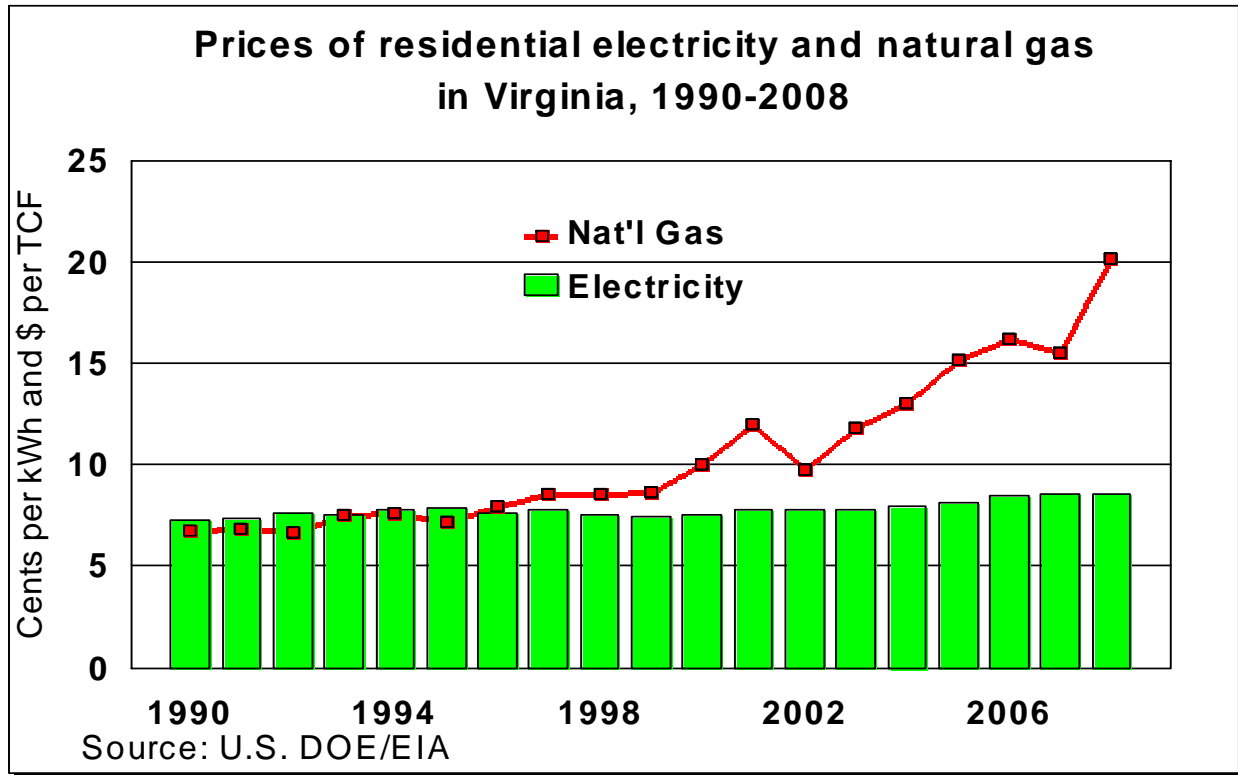


Source: U.S. DOE/EIA Short-Term Energy Outlook (August 2008) and Virginia natural gas and electric historical data. DOE/EIA electric and natural gas data are for Virginia, other data are for U.S. EIA's forecast for average 2008 U.S. gasoline prices is \$3.70/gallon.

The modest rate of price increase for residential electric services reflects, in part, Virginia's historic reliance on low-cost coal for slightly more than half of its energy supplies. Virginia's two nuclear plants, another major source of low-cost power, supply about one-third of the state's electricity needs.

As shown in Chart 2, the price of residential natural gas in Virginia has nearly tripled since 1990. While recent electric rate increases have raised consumer electric bills somewhat, the overall trend of electricity and gas prices clearly underscores the volatility of natural gas prices compared to electric rates.

Chart 2



Household Energy Cost Estimates

The distribution of Virginia households by income categories in 2002 and 2006 provides the basis for estimating the effects of energy prices on consumer budgets in 2001 and 2008, using energy prices for these years.

U.S. Census data indicate that working family incomes have not increased in real terms during the past decade, while most income gains have been concentrated among the highest-earning families. In 2006, the top 5% of Virginia households earned 20% of total household income.³ Most of these households are concentrated in the affluent northern Virginia suburbs of Washington, DC. The 25% lowest income households, earning less than \$30,000, accounted for less than 6% of total Virginia household income in 2006.

EIA's 2001 Survey of Residential Energy Consumption (updated to 2008 with EIA's August 2008 forecast of residential energy prices) is the source for estimating energy expenditures for residential heating, cooling, electricity and other energy services. Virginia electric rates are used to estimate changes in residential electricity costs.

EIA's 2001 Survey of Household Vehicles Energy Use⁴ provides information for estimating transportation energy costs by income category. These transportation costs are updated using EIA's August 2008 national average retail gasoline price estimate for 2008 of \$3.60 per gallon, and changes since 2001 in vehicle fuel utilization. Virginia consumes 2.9% of U.S. motor gasoline, and accounts for about 2.5% of the U.S. population.

Household Incomes

The table below shows estimated after-tax incomes for Virginia 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.⁵ State income taxes are estimated from current Virginia income tax rates.

Virginia households by pre-tax and after-tax income, 2006

Pre-tax annual income:	<\$10K	\$10-30K	\$30-\$50K	>\$50K	TOTALS
Households (000)	183.0	546.2	554.9	1,621.0	2,905.1
Pct of total households	6.3%	18.8%	19.1%	55.8%	100.0%
Avg pre-tax income	\$7,459	\$20,079	\$39,934	\$114,641	\$75,764
Effec. fed tax rate %	2.0%	9.1%	14.1%	23.2%	17.8%
Est. state tax rate %	1.0%	3.0%	5.0%	5.75%	4.8%
Est. fed & state tax %	3.0%	12.1%	19.1%	29.0%	22.6%
Est. after-tax income	\$7,235	\$17,649	\$32,307	\$81,452	\$58,649

Some 44% of Virginia families had estimated pre-tax incomes below \$50,000 in 2006. After federal and state taxes, these 1.3 million families had average take-home incomes of \$23,146 (see Appendix Table 1.) The 44% of families earning less than \$50,000 in pre-tax income accounted for 16% of total Virginia household incomes.

Residential Energy Expenses

The principal residential energy expenses are for electricity and natural gas. Electricity accounts for 44% of home heating in Virginia, while 34% of homes use natural gas.⁶ Virginians also rely on home heating oil (13%), propane (5%) and other sources such as wood. On a per capita basis, Virginia consumed 345 million BTUs of energy in 2005, or 2% more than the national average of 339 million BTUs.⁷

The share of household income spent for residential energy falls disproportionately on lower-income families. While low-income consumers may qualify for energy assistance, these government programs are hard pressed to keep pace with

the rapid escalation of energy prices. It is primarily the poor, fixed income, and other low-income families who will bear the greatest burden of recent energy price increases.

The impacts of residential energy prices on low- and middle-income families are illustrated in the following table, based on 2008 energy prices and the distribution of Virginia household incomes in 2006. Residential energy costs consume 22% of the after-tax household incomes of the 183,000 lowest income families, with incomes less than \$10,000, and 11% of the after-tax incomes of the 546,000 families with pre-tax incomes of \$10,000 to \$30,000.

Projected Virginia energy costs by income category, 2008

Pre-tax annual income:	<\$10K	\$10-30K	\$30-\$50K	>\$50K	TOTALS
Est. after-tax income	\$7,235	\$17,649	\$32,307	\$81,452	\$58,649
Residential energy \$	\$1,586	\$1,912	\$2,194	\$2,752	\$2,414
Residential electric \$	\$613	\$753	\$900	\$1,144	\$990
Other resid. energy \$	\$973	\$1,159	\$1,294	\$1,608	\$1,424
Transport energy \$	\$1,948	\$3,398	\$4,198	\$4,698	\$4,185
Total energy \$	\$3,435	\$5,310	\$6,392	\$7,450	\$6,599
Energy % of after-tax inc.	49%	30%	20%	9%	11%
Resid. % of after-tax inc.	22%	11%	7%	3%	4%
Trans. % of after-tax inc.	27%	19%	13%	6%	7%
Elec. % of total energy \$	17%	14%	14%	15%	15%
Trans. % of total energy \$	55%	64%	66%	63%	63%

Source: See appendix table 1.

Transportation Costs

Imported oil prices crossed the \$100 per barrel mark in 2008 and have surged to more than \$140 per barrel before retreating in late summer. Gas prices jumped to more than \$4 per gallon in July, and remain high in most regions. Gasoline accounts for the largest single increase in consumer energy costs since 2001. EIA's August 2008 forecast projects 2008 average retail gasoline costs at \$3.70 per gallon, more than double the \$1.47 price prevailing in 2001.

The rapid increase in gas prices follows a decade-long trend of increased use of motor vehicles, measured in millions of vehicle miles driven annually, increased market shares of pickup trucks and SUVs, and an increase in the average number of vehicles owned per household.⁸ Many families are now burdened with low-efficiency vehicles with low trade-in values.

In 2001, 191 million American vehicles – cars, vans, SUVs, pickup trucks, and motorcycles – consumed 113 billion gallons of gasoline and traveled 2.3 trillion miles.⁹ The total bill for these fuel purchases was \$150 billion. In 2008, gasoline costs will

exceed \$400 billion. Virginia's 7.7 million citizens account for 2.9% of total U.S. retail gasoline sales and 2.5% of the U.S. population.

Total Household Energy Costs

Energy costs for natural gas, propane and gasoline are straining low- and middle-income family budgets. Heating, cooling and transportation are necessities of life, and the rapid increase in consumer energy costs is diverting low- and middle-income family budgets from other necessary goods and services such as improved health care, housing and nutrition.

In 2008, the average Virginia family with an after-tax income of \$58,649 will spend \$6,599 on energy, 11% of the family budget. The 1.3 million Virginia households earning less than \$50,000 - representing 44% of households - will devote 24% of their after-tax income to energy. For the 19% of working families with gross incomes between \$10,000 and \$30,000, energy expenditures in 2008 will consume 30% of average after-tax incomes.

The fraction of Virginia household incomes devoted to energy has nearly doubled since 2001 (see Appendix Table 1). In 2001, 1.2 million Virginia families earning between \$10,000 and \$50,000 spent 11% of their after-tax income on residential and transportation energy. In 2008, energy will account for 23% of the after-tax incomes of these working families. Rising gasoline prices account for most of these increases.

For a majority of Virginia's low- and middle-income families, energy costs today are consuming a fraction of after-tax household income comparable to that traditionally spent on major categories such as child care, food, housing or health care.¹⁰ A 2001 survey of middle-income families with two parents and two children living in eight diverse U.S. cities reported the following average expenditures, based on an average after-tax family income of \$43,962:

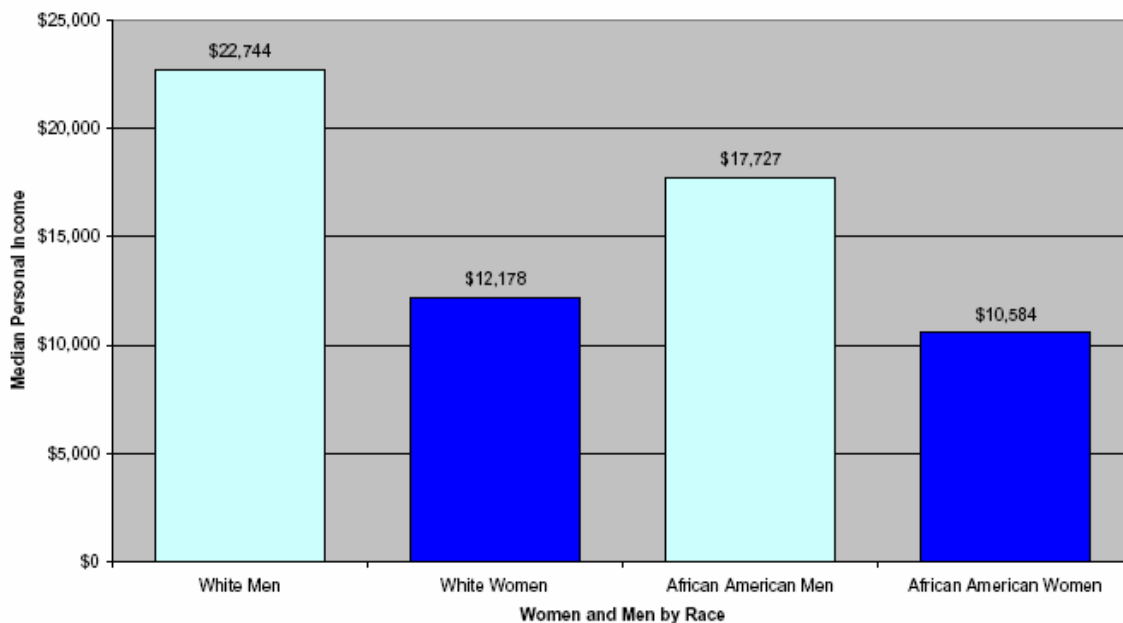
- Child care - \$12,420 (28%)
- Housing - \$10,836 (25%)
- Food - \$7,044 (16%)
- Health care - \$4,582 (10%)

The diversion of ever-increasing shares of family incomes to energy reduces available funds for other necessities of life such as housing and health care, diminishing both quality of life and the ability to save and invest for future needs. The combined effects of declining real estate values and skyrocketing energy costs are pushing many American families into foreclosures and bankruptcy.

Disproportionate Impacts on Women, Minorities and Senior Citizens

The greatest burdens of increased energy costs are falling on Virginia's more than 800,000 elderly citizens over 65, who depend mainly on fixed incomes with little opportunity to increase earnings from employment. The chart below summarizes median annual personal incomes for elderly Virginia citizens by race and sex. African-American women have the lowest median income, just \$10,600, while elderly white women have slightly higher incomes, about \$12,200. The median income of African-American males is \$5,000 below the average for white males.

Figure 1. Median Annual Personal Income in Virginia for Older Women and Men by Race (Aged 65 and Older)



Source: Institute for Women's Policy Research, *The Economic Security of Older Women and Men in Virginia* (The George Washington University, 2006).

Elderly individuals with low average annual incomes are more vulnerable to increasing energy costs even if their energy consumption levels are below those for households with similar annual incomes. Unlike young working families with the potential to increase incomes by taking on part-time work or increasing overtime, fixed income seniors are largely limited to cost-of-living increases that do not keep pace with energy prices. Maintaining relative stability in electric and gas rates, and increasing low-income energy assistance, are critical to the wellbeing of hundreds of thousands of Virginia's low-income senior citizens.

Conclusion

The prices of petroleum-based fuels have increased significantly in the past decade, while the residential cost of electricity has not kept pace with inflation. The rapid escalation of Virginia consumer energy prices - together with sluggish income growth among middle-income households and declining home equity values - underscore the need to find ways to reduce energy cost impacts on Virginia families. Expanding the use of our domestic coal resources - a primary source of low-cost electric energy generation in Virginia, and a potential source of ultra-clean fuels for industry and consumer uses - is an immediate, common sense policy response available to Virginia officials and to the U.S. Government.

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End Notes

¹ Data on residential energy consumption patterns by income category are from U.S. Department of Energy, Energy Information Administration, 2001 Survey of Residential Energy Consumption (RECS). See, <http://www.eia.doe.gov/emeu/recs/contents.html>. Data for 2001 energy consumption by fuel type were updated to estimated 2008 values based on consumer residential energy cost projections in EIA's Short Term Energy Outlook (August 2008). Electric rates for Virginia were used to calculate 2001 and 2008 Virginia household electricity costs. Total Virginia residential energy costs were estimated at 102% of the U.S. average based on per capita energy consumption for Virginia in U.S. DOE/EIA, "State-Level Energy Consumption, Expenditures and Prices, 2005," (2007).

² Household incomes in Virginia by income category are derived from the distribution of household income in U.S. Bureau of the Census, American Community Survey, Virginia (2002, 2006 eds.)

³ *Id.*

⁴ U.S. DOE/EIA, "Household Vehicles Energy Use: Latest Data & Trends," (November 2005), available at: http://www.eia.doe.gov/emeu/rtecs/nhts_survey/2001/.

⁵ 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 based on the distribution of 2005 household incomes. State income tax rates were estimated from current Virginia tax rates summarized in Federation of Tax Administrators, http://www.taxadmin.org/fta/rate/ind_inc.html.

⁶ U.S. DOE/EIA, State Energy Profiles, Virginia (August 2008).

⁷ U.S. DOE/EIA, Energy Consumption by Source and Total Consumption per Capita, 2005 (2007).

⁸ U.S. DOT, 2001 National Household Travel Survey, “Summary of Travel Trends,” (December 2004).

⁹ U.S. DOE/EIA, “Household Vehicles Energy Use: Latest Data & Trends,” (November 2005), http://www.eia.doe.gov/emeu/rtecs/nhts_survey/2001/.

¹⁰ See, Economic Policy Institute, “Basic Family Budgets,” Briefing Paper (2001), available at <http://www.epinet.org/briefingpapers/165/bp165.pdf>.

APPENDIX TABLE 1

	ESTIMATED 2001 VIRGINIA HOUSEHOLD ENERGY EXPENSES BY INCOME CATEGORY					SUBTOTALS		
	<\$10K	\$10-30K	\$30-\$50K	>\$50K	TOTALS	\$10K-\$50K	<\$50K	>\$50K
Households	211,647	606,862	593,160	1,361,375	2,773,044	1,200,022	1,411,669	1,361,375
Pct of total households	7.6%	21.9%	21.4%	49.1%	100.0%	43.3%	50.9%	49.1%
Avg pre-tax income	\$6,540	\$20,179	\$39,726	\$101,801	\$63,342	\$29,841	\$26,347	\$101,801
Effec. fed tax rate %	2.0%	8.5%	13.4%	23.1%	17.3%	10.9%	9.6%	23.1%
Est. state tax rate %	1.0%	3.0%	5.0%	5.8%	4.6%	4.0%	3.5%	5.8%
Est. fed & state tax %	3.0%	11.5%	18.4%	28.8%	21.9%	14.9%	13.1%	28.8%
Est. after-tax income	\$6,344	\$17,858	\$32,416	\$72,482	\$49,486	\$25,391	\$22,889	\$72,482
Residential energy \$	\$1,062	\$1,281	\$1,482	\$1,869	\$1,615	\$1,380	\$1,333	\$1,869
Residential electric \$	\$556	\$683	\$816	\$1,037	\$876	\$749	\$720	\$1,037
Other resid. energy \$	\$506	\$598	\$666	\$832	\$739	\$632	\$613	\$832
Transport energy \$	\$671	\$1,180	\$1,853	\$1,619	\$1,501	\$1,513	\$1,386	\$1,619
Total energy \$	\$1,733	\$2,461	\$3,335	\$3,488	\$3,115	\$2,866	\$2,343	\$3,488
Energy % of after-tax inc.	27.3%	13.8%	10.3%	4.8%	6.3%	11.3%	10.2%	4.8%
Resid. % of after-tax inc.	16.7%	7.2%	4.6%	2.6%	3.3%	5.4%	5.8%	2.6%
Trans. % of after-tax inc.	10.6%	6.6%	5.7%	2.2%	3.0%	6.0%	6.1%	2.2%
Electric % of total energy \$	32.1%	27.8%	24.5%	29.7%	28.1%	26.2%	28.9%	29.7%
Trans. % of total energy \$	38.7%	47.9%	55.6%	46.4%	48.2%	51.5%	45.6%	46.4%

	ESTIMATED 2008 VIRGINIA HOUSEHOLD ENERGY EXPENSES BY INCOME CATEGORY					SUBTOTALS		
	<\$10K	\$10-30K	\$30-\$50K	>\$50K	TOTALS	\$10K-\$50K	<\$50K	>\$50K
Households	183,019	546,154	554,868	1,621,030	2,905,071	1,101,022	1,284,041	1,621,030
Pct of total households	6.3%	18.8%	19.1%	55.8%	100.0%	37.9%	44.2%	55.8%
Avg pre-tax income	\$7,459	\$20,079	\$39,934	\$114,641	\$75,764	\$30,085	\$26,860	\$114,641
Effec. fed tax rate %	2.0%	9.1%	14.1%	23.2%	17.8%	11.6%	10.2%	23.2%
Est. state tax rate %	1.0%	3.0%	5.0%	5.8%	4.8%	4.0%	3.6%	5.8%
Est. fed & state tax %	3.0%	12.1%	19.1%	29.0%	22.6%	15.6%	13.8%	29.0%
Est. after-tax income	\$7,235	\$17,649	\$32,307	\$81,452	\$58,649	\$25,383	\$23,146	\$81,452
Residential energy \$	\$1,586	\$1,912	\$2,194	\$2,752	\$2,414	\$2,054	\$1,987	\$2,752
Residential electric \$	\$613	\$753	\$900	\$1,144	\$990	\$827	\$797	\$1,144
Other resid. energy \$	\$973	\$1,159	\$1,294	\$1,608	\$1,424	\$1,227	\$1,191	\$1,608
Transport energy \$	\$1,948	\$3,398	\$4,198	\$4,698	\$4,185	\$3,720	\$2,914	\$4,698
Total energy \$	\$3,534	\$5,310	\$6,392	\$7,450	\$6,599	\$5,855	\$5,524	\$7,450
Energy % of after-tax inc.	48.8%	30.1%	19.8%	9.1%	11.3%	23.1%	23.9%	9.1%
Resid. % of after-tax inc.	21.9%	10.8%	6.8%	3.4%	4.1%	8.1%	8.6%	3.4%
Trans. % of after-tax inc.	26.9%	19.3%	13.0%	5.8%	7.1%	14.7%	12.6%	5.8%
Electric % of total energy \$	17.3%	14.2%	14.1%	15.4%	15.0%	14.1%	15.6%	15.4%
Trans. % of total energy \$	55.1%	64.0%	65.7%	63.1%	63.4%	64.7%	60.3%	63.1%

Sources: Virginia population and income data are from U.S. Bureau of the Census, Area Community Surveys (2002, 2006 eds.) Residential energy costs estimated from U.S. DOE Residential Energy Consumption Survey (2001), with projections for 2008 based on changes in 2001-2008 residential energy costs from U.S. DOE/EIA Short-Term Energy Outlook (August 2008). Residential energy costs for Virginia estimated at 102% of U.S. average based on U.S. DOE/EIA State-Level Energy Consumption, Expenditures and Prices, 2005 (2007). Residential electric costs adjusted from U.S. averages based on Virginia residential electric rates (DOE/EIA 2001, 2008). Transport costs from U.S. DOE/EIA, Household Vehicle Energy Use: Latest and Trends (November 2005) and DOE/EIA Short-Term Energy Outlook (April 2008). Gasoline usage is calculated based on Virginia's 2.9% share of national motor vehicle gasoline consumption. Average effective federal tax rates are estimated from Congressional Budget Office, Effective Federal Tax Rates Under Current Law, 2001-2014 (August 2004). Effective state tax rates estimated from Virginia state income tax rate data for 2007.