

ECONOMIC OPPORTUNITY STUDIES

400 NORTH CAPITOL STREET N.W., SUITE G-80, WASHINGTON, D.C. 20001
Tel. (202) 628 4900 Fax (202) 393 1831 E-mail info@opportunitystudies.org

Electricity Usage by Low-Income Households in the Mid-Atlantic Region

Prepared for Ken Cartmell, Chief Policy and Legal Advisor
to Commissioner Ed Meyers D.C. Public Utility Commission
By Meg Power, Ph.D.
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Data from the U.S. Department of Energy's detailed Residential Energy Consumption Survey, Washington, D.C., 1997 show the electricity usage for a large sample of low-income households as well as for all other residences. 1997 was a year in which the heating and cooling degree-days were essentially normal. There are dramatic differences in Kwh used by different income groups nationally and in the Mid-Atlantic census region. Studies of all regions consistently show the same direct correlation between income and energy usage. (That region is used here as a proxy for the income and energy characteristics of D.C., even though D.C. is the South Atlantic census region, which includes Florida. DC's housing stock, climate, and income more closely resemble Philadelphia and Wilmington than Atlanta or Miami. The small sample size in R.E.C.S means groupings smaller than a Census region do not yield valid statistics.)

Table 1 shows the differences between low-income households' usage and all other residential consumers' usage nationally and regionally. (Low-Income is used here to mean eligible for Energy Assistance (LIHEAP) under the maximum income allowed by federal statute - 60% of the state median income or 150% of the poverty guideline.) While the poor use 75% as much electricity as others nationwide, in the region the gap is even wider.

Table 1
Kwh used by Low-Income Consumers vs. other residential Consumers, 1997

| | Kwh U.S. Average | Kwh U.S. Median | Kwh Mid-Atlantic Average | Kwh Mid-Atlantic Median |
|---|-----------------------------|----------------------------|---|------------------------------------|
| Low-Income (eligible for LIHEAP) | 8,268 | 6,650 | 5,150 | 3,866 |
| Not Low- Income | 10,796 | 9,019 | 7,976 | 6,093 |

Table 2 shows the same data for electrically-heated homes with that for all other homes, indicating that lower usage characterizes the poor in with electric heat and those that used other fuels. The data are shown only for the homes that had air-conditioning in 1997, as the majority of US homes in every income group have some air-conditioned space. The income/usage connection is still clear, but the usage gap is smaller when only homes with air-conditioning are considered.

Table 2
Kwh used by Low-Income Consumers v. other Residential Consumers with A/C
by heat source 1997

| | | U.S | U.S | Mid-Atlantic | Mid-Atlantic |
|--------------------------|----------------|----------------|---------------|---------------------|---------------------|
| | | Average | Median | Average | Median |
| Electric Heat | Low-Income | 13,255 | 11,430 | 10,132 | 8,657 |
| Electric Heat | Not Low-Income | 16,674 | 15,871 | 15,742 | 15,723 |
| Not Electric Heat | Low-Income | 8,022 | 6,786 | 5,217 | 4,507 |
| Not Electric Heat | Not Low-Income | 9,535 | 8,335 | 6,583 | 5,496 |

The differences in the means of the income groups are statistically significant as well as consistent. Further, analysis of the correlation between income and usage shows that these are positively correlated, at a high level of certainty (.0001), i.e., as income drops, so do Kwh.

When other variables are examined to see the degree to which they explain usage levels, the most predictive is the number of rooms in a home. This explains nearly half of consumption; income explains another 26% of the variation. However, income is, not surprisingly, highly predictive of the number of rooms in a home. Therefore, income can be interpreted as accounting for about half of the variation in electricity usage either directly or indirectly as it affects the size home.

Nevertheless, the poor, like all Americans, are increasing the number of electric appliances and of televisions they own. While their usage is rising, it remains far below that of the rest of the population however, the impact of energy bills on poor families is dramatically greater. Their energy 'burden', the percent of income they pay for all energy, is five times on average that for all other consumers.

Table 3
Energy Bills and Energy Burden of Low-Income Consumers vs. all other Mid-Atlantic Consumers

| | 1997 Bill for all Home Fuel | | 1997 Burden of all Fuels | |
|------------------------------------|------------------------------------|---------------|---------------------------------|---------------|
| | Mean | Median | Mean | Median |
| Mid Atlantic Low-Income | \$1337 | \$1192 | 10% | 6% |
| Mid-Atlantic not Low-Income | \$1770 | \$1611 | 2% | 2% |

Table 3 shows the problem. The table is based on the 1997 DOE data, but regulators can use current costs to estimate 2001 costs. In the Mid-Atlantic region data shown, the average 1997 delivered Kwh cost including customer charges, taxes, and fees was \$.084 in 1997. That year was essentially normal with respect to heating and cooling season weather. Electricity made up nearly 60% of the combined bills of the poor, as was the cost for all U.S. households.

* Power, Meg 'Electricity and the Poor', Economic Opportunity Studies, Washington, D.C. 2001

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