



RESEARCH SUMMARY

EFFECTS OF RISING UTILITY COSTS ON ALASKA HOUSEHOLDS

By Ben Saylor and Sharman Haley

Households in remote rural places face utility costs 50% higher now than in 2000. In Anchorage those costs are up 35% and in other large or road-system communities about 39%, as Figure 1 shows.

The share of household income going to utilities is also up. Utility costs in urban and rural areas are now anywhere from about 3% to 10% of income for the typical household.

Those are median figures for all households. Utilities take a much bigger share of income among low-income households. Utility costs now amount to more than a third of income among low-income households in remote places.

These are among the findings of an ISER analysis of how rising energy prices have increased utility costs for Alaska households since 2000. By “utility costs” we mean costs for heat, electricity, and water and sewer systems. We divided Alaska communities into three regions, based on their size and location. A map on the back page shows the areas in each region.

The 2000 costs we use are annual out-of-pocket costs Alaska households reported in the spring 2000 U.S. census. The spring 2006 figures are ISER estimates for the same households, based on increases in energy prices since the census.

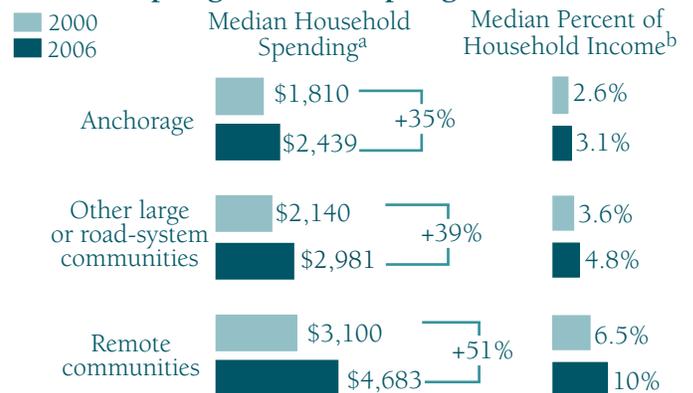
Utility costs were higher to start with and have increased more in remote places because they rely mostly on diesel for heating houses and generating power. Anchorage and a few other places have access to natural gas. (See map, page 2.) Both diesel and natural gas prices are up sharply, but diesel is still more expensive. Households paid on average four times more for diesel than for gas in 2005, measured by energy content (Figure 2).

Incomes in remote areas are also lower, which exacerbates the effect of higher utility costs. So it’s not surprising that Alaskans in remote places use less household energy—roughly half as much per person as places with natural gas (Figure 3).

The inside pages show more about energy and utility costs. But to put utility costs in perspective, remember they’re only a part of total housing costs—and total housing costs are significantly higher in urban Alaska (see back page). Also, higher energy prices directly affect transportation costs and indirectly affect many other costs. We only report effects on utility costs.

And “income” here includes only cash. Public programs that help households pay medical, housing, or other costs also effectively add to household incomes. So do the wild fish and game many Alaskans harvest. But the value of such non-cash contributions doesn’t show up in traditional income measures.

Figure 1. Utility Costs for Alaska Households, Spring 2000 and Spring 2006



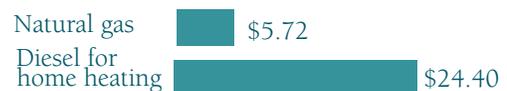
^aSpring 2000 costs are out-of-pocket costs for previous year, reported by Alaska households in the 2000 U.S. census. Spring 2006 costs are ISER estimates for previous year, based on changes in energy prices from 1999 through 2005.

^bBased on 1999 cash incomes Alaska households reported in 2000 U.S. census and estimated 2005 household cash incomes, adjusted for Permanent Fund Dividends not reported in the census.

Sources: See list of sources on page 4.

Figure 2. Prices Households Pay for Natural Gas and Diesel, 2005

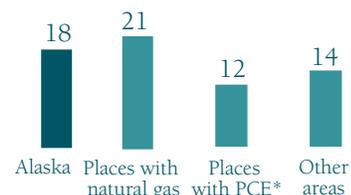
(In Dollars per Million BTUs*)



*British thermal units, a standard measure of energy content

Source: ISER calculations with data from Alaska Housing Finance Corporation and Regulatory Commission of Alaska

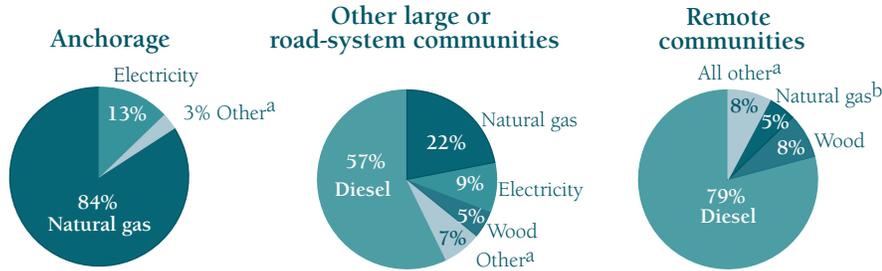
Figure 3. Estimated Annual Energy Consumption for Household Uses, Per Person
(Energy from All Sources, Converted to Barrels of Oil)



*The state Power Cost Equalization program subsidizes part of electricity costs in rural communities that generate electricity mainly with diesel.

Sources: Power Cost Equalization data base; Scott Goldsmith, *Alaska Power Statistics, 1960-2001*, ISER 2003; Steve Colt estimates, ISER, revised September 2006.

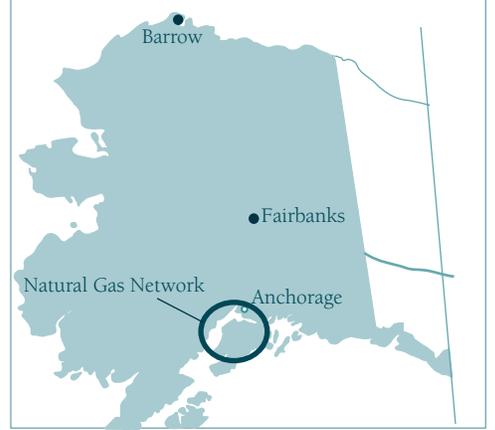
Figure 4. How Do Alaskans Heat Their Houses?
(Share of Households Using Various Energy Sources)



^aAny fuel type not specified. Sources of heat include natural gas, propane, electricity, diesel, coal, wood, and solar energy. ^bBarrow has access to natural gas from local wells.

Source: 2000 U.S. census

Places with Access to Natural Gas



ANALYSIS REGIONS AND DATA SOURCES

Our baseline data are from the 2000 federal census, and we defined utilities the way the U.S. Census Bureau does: electricity, heating fuels, and water and sewer systems. But analysts don't all agree about what should be considered as "utilities."

Our analysis regions are based on five Alaska regions the U.S. Census Bureau uses for reporting detailed household information—Public Use Microdata Areas, which group communities based on size and proximity to road systems. We combined the five into three: (1) Anchorage; (2) other large or road-system communities; and (3) remote communities. A map on the back page shows the regions.

We report median household utility costs—that is, the mid-point figure, with half of households spending more and half spending less. We report those medians for all households and for the wealthiest and the poorest households. Our data on energy prices come from a number of sources, cited in the figures and listed on the back page.

We used figures from the 2000 U.S. census and the 2005 American Community Survey to estimate changes in household income.

SOURCES OF ENERGY

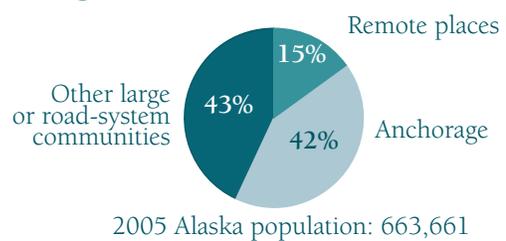
Natural gas and diesel are the two big sources of energy Alaskans use. For heating, households use gas or diesel directly. Electricity is mostly generated either with gas or diesel, depending on which is available. (For some towns, mostly in southeast Alaska, hydropower generates electricity.) Water and sewer utilities also get the power they need from gas or diesel.

Natural gas from Cook Inlet fields is available in Anchorage and some (but not all) places on the Kenai Peninsula to the south and the Mat-Su Borough to the north. Some Fairbanks households use liquified natural gas (LNG), which is trucked in, and Barrow has access to gas from local wells.

Other Alaska communities rely mainly on diesel. Figure 4 shows how households heat their houses. Only in Anchorage do most heat with gas. In remote places about 80% of households use diesel, as do more than half the larger or road-system communities.

The majority of Alaskans—about 85%—live in Anchorage and other large or road-system communities and 15% in remote places (Figure 5).

Figure 5. Where Do Alaskans Live?



2005 Alaska population: 663,661

Source: Alaska Department of Labor

Figure 6. Increase in Natural Gas Prices For Anchorage Households, 2000-2006

	2000	2006	Increase
Price per 100 cubic feet	\$.32	\$.61	91%

Sources: Regulatory Commission of Alaska and Enstar Natural Gas

Figure 7. Increase in Prices of Diesel for Home Heating, Per Gallon, Fall 2000 - Winter 2005

Anchorage	57%
Other large or road-system communities	70%
Remote communities	83%

Source: Population-weighted average prices, based on Alaska Housing Finance Corporation surveys.

Figure 8. Range of Diesel Prices for Home Heating, Per Gallon, Winter 2005



Source: Alaska Housing Finance Corporation

RISING ENERGY COSTS

Natural gas prices in Anchorage and diesel prices in remote places increased roughly the same percentage in recent years. Anchorage households paid nearly twice as much for natural gas in early 2006 as in 2000 (Figure 6). Diesel prices increased 83% in remote areas from fall 2000 through winter 2005 (Figure 7). Data on September 2006 diesel prices, collected by

the Alaska Division of Community Advocacy in a number of remote places, showed continuing increases in diesel prices.

And diesel prices have gone up more in remote places than in places closer to roads, because prices customers pay include the additional costs of transporting fuel and maintaining community storage tanks.

Fuel prices also vary a lot among remote places. In winter 2005, prices varied from a low of \$1.80 per gallon among North Slope communities to \$5.40 in Hughes, in the Interior (Figure 8). The average price in remote places was \$3.30.

North Slope villages are among the state's most remote communities, but they pay lower prices because the borough government subsidizes residential fuel costs. In other places considered "remote," some are much more remote than others—so the costs of getting fuel to them are higher. Also, the price households pay varies by when the fuel was purchased and how long the community supply bought at a specific time lasts.

Electricity rates have also increased, but not as much. The rate for customers of Anchorage's largest electric utility was up 28% between March 2000 and March 2006. Many remote communities receive Power Cost Equalization—a state program that subsidizes electricity costs in places that generate electricity mainly with diesel. In those places, rates went up 40% between 2000 and 2005, even taking the subsidy into account.

POOR AND WEALTHY HOUSEHOLDS

Figure 10 looks at how utility costs and shares of income going to utilities changed since 2000 among the state's wealthiest and poorest households—the 20% of households at the top of the income range and the 20% at the bottom.

Alaskans with lower incomes spend less for utilities than wealthier residents, because they live in smaller houses or apartments with fewer amenities.

In Anchorage and other urban places, many poor households rent and are more likely to heat with electricity. That's an expensive way to heat—but since prices for electricity didn't increase as much as prices of natural gas, utility costs for poor households in urban areas didn't increase as much as for wealthy households.

In remote areas, people with lower incomes are often homeowners who heat with diesel. In those places, poor households saw their annual utility costs increase 60%.

Costs for wealthier households statewide were higher to start with and went up more—because Alaskans with more money generally live in bigger houses that require more heat and electricity. Dollar costs for the wealthier households in urban areas went up 34% to 45% and in remote areas 54%.

But even though dollar costs for utilities are higher among wealthy households, utility costs take a much bigger share of

Figure 9. Increase in Electricity Prices, Rural Communities and Anchorage

Effective Rate for PCE residential customers
(Median price per kWh for first 500 kWh^a)

2000	2006	Increase
17¢	24¢	41%

Rate for Anchorage Households^b
(Per 1,000 kWh)

March 2000	March 2006	Increase
\$94.79	\$121.00	28%

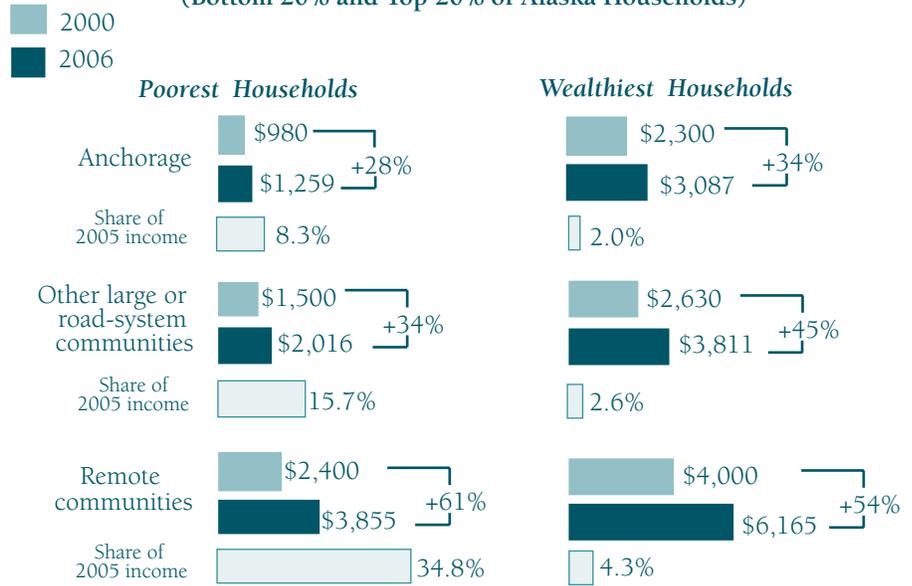
^aWeighted by number of Power Cost Equalization customers per community

^bFor customers of Chugach Electric Association

Sources: Alaska Energy Authority and UA Cooperative Extension Service

Figure 10. Median Utility Costs for Poorest and Wealthiest Households, 2000 and 2006

(Bottom 20% and Top 20% of Alaska Households)



Source: See list of sources, page 4.

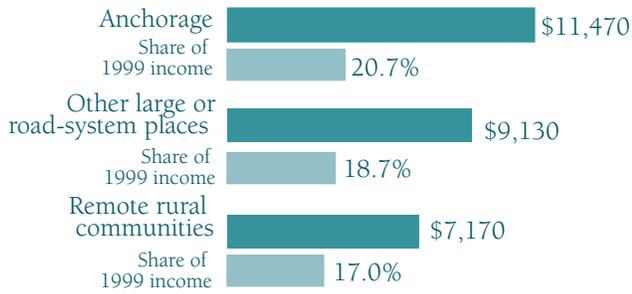
the smaller incomes of poor households. That's especially true in remote places, where incomes are lowest. Utility costs take from 8% to 35% of the income of poor households but about 2% to 4% among wealthy households.

TOTAL HOUSING COSTS

This analysis looks just at changing utility costs, but there are of course other housing costs—mortgages and rent payments being the biggest. Utility costs are higher in remote areas, but total housing costs are higher in urban areas. Most urban homeowners have mortgages, while many homeowners in remote places don't. Land values are higher in larger towns, and houses tend to be bigger and have more amenities.

Figure 11 shows that as of 2000, total housing costs were 60% higher in Anchorage than in remote places. We didn't estimate how total housing costs have changed since 2000, but we know they've gone up—since house prices, property taxes, and other costs are also up.

Figure 11. Total Household Housing Costs, 2000
(Median of Utility and All Other Housing Costs*)



*Housing costs reported in the 2000 U.S. census.

WHAT'S AHEAD?

It's not news to Alaskans that they're paying more to heat their houses and run their freezers than they did a few years ago. Many have probably done things like lowering their thermostats and increasing the insulation in their houses. We weren't able to estimate how household energy use may have changed as energy prices rose.

But economic studies tell us that Americans' energy use is relatively inelastic—that means they typically don't cut their energy use much, even when prices are rising. So to pay their energy bills, some may try to reduce what they spend on other things, or work longer hours.

Some just aren't paying their utility bills—which has a cascading effect on utilities and businesses they owe money. The largest utility in rural Alaska said in late 2006 that it was considering cutting off electricity for hundreds of customers who hadn't paid their bills.

Higher energy prices have also directly increased transportation costs (and increased many other costs indirectly)—which

we haven't talked about in this summary. Higher utility and transportation costs affect budgets not only of households but of businesses, local governments, and schools too.

There are state, federal, and private programs that provide municipal grants, community loans, and other energy assistance to households and communities. But such aid programs come and go and funding changes from year to year—and in any case they can't resolve the persistent issue for small communities where cash incomes are low and costs are high. A few rural communities are investigating the use of wind power to generate electricity.

Where energy prices will go from here is unpredictable. By fall 2006, worldwide prices of oil and natural gas had dropped considerably from their recent highs. But energy prices are notoriously volatile—as Alaskans have seen many times—and the link between world energy prices and consumer prices for products like diesel are neither direct nor instantaneous. It seems unlikely that utility costs are going to drop much any time soon.

This summary is part of an ongoing ISER study of the effects of higher utility costs on Alaska households. The work is being funded by the Rural Development section of the U.S. Department of Agriculture, Palmer office.

Editor: Linda Leask

Graphics: Clemencia Amaya-Merrill

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