

How Would \$1,200 Per Person State Payments Compare With Increased Household Costs for Energy Use?

By Ben Saylor and Steve Colt

Note No. 3 • Revised July 11, 2008

In the face of sharply rising energy costs, Alaska's governor, Sarah Palin, has proposed to pay every Alaskan \$1,200 to help cover those increased costs. The Alaska Legislature will be considering the governor's proposal in the special session that began July 9.

How would the proposed payments—about \$3,300 for the average-size Alaska household—compare with recent increases in energy costs? We looked at that question and present our estimates here. But these truly are estimates, because there's not much current information about the types and amounts of energy Alaska households use.

As a basis for estimating increases in home-energy costs—mainly electricity and heating—we used household data from the 2000 U.S. census. That allows us to estimate changes in costs by region and income. With today's much higher costs, many households probably use less energy now than in 2000—but since we don't have current data, we had to assume the amounts of energy households consume are the same as in 2000.

We have no data on differences in consumption of gasoline or other motor fuel by region or income level—so we estimated increased household costs for gasoline only at the statewide level, assuming households buy 1,000 gallons per year. What did we find statewide?

- Alaska households overall are paying about 70% more for home-energy and gasoline now than in 2006 and 180% more than in 2000 (assuming the same energy consumption as in 2000). See Figure 1.

- Proposed state payments would cover increases since 2006 in combined home-energy and gasoline costs for 38% of Alaska households and would be less than increases for the other 62% (Figure 2).

These statewide figures mask big differences in energy costs among households by region and income. We weren't able to estimate increases in gasoline costs by region or income level, but we did estimate variations in home-energy costs.

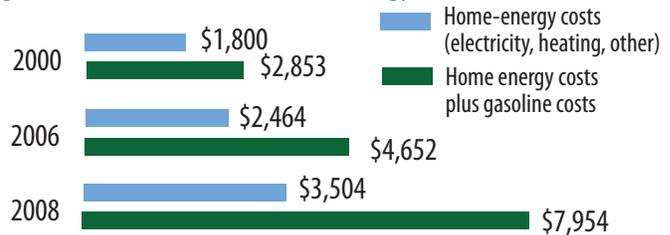
The poorest households in general spend less than wealthier households—because on average wealthier households have bigger homes and use more energy. But as Figure 3 shows, the poorest remote-rural households pay nearly twice what the wealthiest Anchorage households pay for home energy. Anchorage has access to natural gas, while most remote places rely on diesel—which on an energy-equivalent basis is much more expensive (Figure 4).

Home-energy costs in the Kenai Peninsula and the Mat-Su boroughs are higher than in Anchorage but lower than in remote places, because about half the households in those boroughs have access to natural gas.

Most households elsewhere in Alaska rely on diesel (Figure 5), and their home-energy costs vary by how severe the winters are—Fairbanks has among the coldest—and by whether they rely on diesel for both generating electricity and home-heating. Juneau and some other places use diesel for heating but have less-expensive hydro-powered electricity.

The variation in home-energy costs by region and income—as well as differences in average household sizes—mean that the effects of the pro-

Figure 1. Estimated Median Annual Energy Costs for Alaska Households



Notes: Figures are not adjusted for inflation and assume same home-energy consumption as in 2000. Also assumes all households buy 1,000 gallons of gasoline per year.

Figure 2. How Would Proposed Payments Compare with Median Increases in Energy Costs for Alaska Households since 2006?

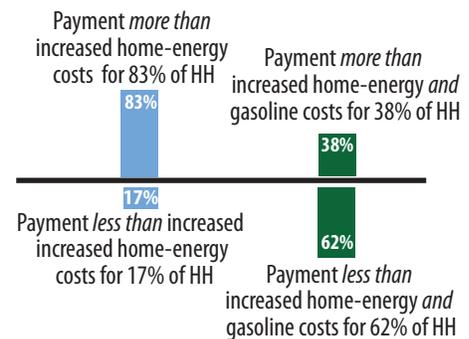
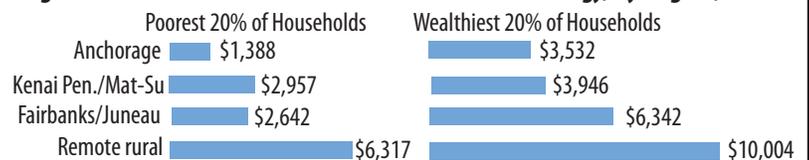


Figure 3. Estimated Median Annual Costs for Home Energy, by Region, 2008



Notes: Figures include costs of electricity, heat, and other home-energy uses but not gasoline or other motor fuel. Fairbanks/Juneau region also includes other road communities outside the Kenai Peninsula and Mat-Su boroughs. Poorest 20% of households are those with annual incomes of \$28,715 or less; wealthiest 20% have incomes more than \$119,777.

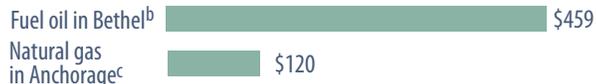
posed \$1,200 state payment per person would be quite different for different households. Keep in mind that these regional estimates don't include increased gasoline costs—and those increases have also been big.

- The poorest households in all regions are on average smaller than households with higher incomes—so their payments would be smaller.
- The proposed payments would cover recent increases in home-energy costs for almost all Anchorage households at all income levels. Natural gas prices have increased a lot—but not as much as diesel prices.
- For about half the remote rural households at all income levels, increased home-energy costs since 2006 outweigh the proposed payments.
- The proposed payments would cover increased home-energy costs for about 70% to 90% of households elsewhere in the state. Households in southcentral Alaska using natural gas have seen smaller increases, while Fairbanks and other places that rely on diesel have faced bigger increases.

Figures 4 and 5 explain a lot about regional differences in costs of energy. Figure 4 compares the cost of natural gas and diesel in 2007. The dollar figures are dated now, since prices have increased since then. But the figure still makes the point: diesel (fuel oil) in remote rural communities is about four times more expensive—on an energy-equivalent basis—than natural gas in Anchorage. Figure 5 then shows how Alaskans in different regions heat their houses—and in much of the state outside Anchorage, diesel is the main fuel source.

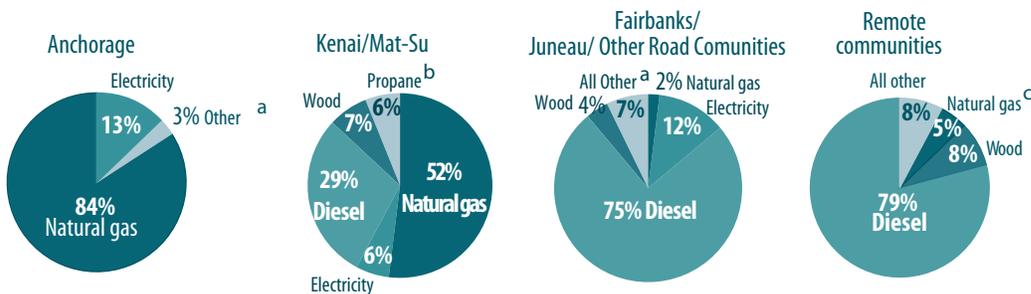
Figures 6 and 7 provide background for our estimates of how proposed state payments of \$1,200 per person compare with median increases in energy costs for Alaska households. Notice that the wealthiest 20% of households in all regions are also on average the largest—which could partly explain their higher incomes: more possible wage earners. Likewise, the poorest households are on average smaller—which also in part explains their smaller incomes: fewer potential wage earners.

Figure 4. Cost of 100 Gallons of Fuel Oil and Equivalent Energy from Natural Gas in Anchorage, 2007^a



^a Author's calculation: 100 gallons of fuel oil equals 138 therms of natural gas
^b Fuel oil at \$4.59 per gallon, reported by Cooperative Extension Service, University of Alaska Fairbanks, June 2007
^c Contract price for 2007, reported by Enstar Natural Gas Company

Figure 5. How Do Alaskans Heat Their Houses?
 (Share of Households Using Various Energy Sources as of 2000)



^a Any fuel type not specified. Sources of heat include natural gas, propane, electricity, diesel, coal, wood, and solar energy.
^b Includes small amount of other energy types
^c Barrow has access to natural gas from local wells.

Source: 2000 U.S. census

Figure 6. What Are Poorest, Middle, and Highest Annual Income Levels?*

Poorest 20% of HH	\$28,715 or less
Middle 60% of Households	\$28,716 to \$119,777
Wealthiest 20% of Households	More than \$119,777

*Based on 2007 income quintiles

Figure 7. Average Household Size and Payment Under \$1,200 Per Person Proposal

	Anchorage		Kenai Peninsula /Mat-Su		Fairbanks, Juneau, Other Road Communities		Remote Rural		Alaska	
	HH Size	Payment	HH Size	Payment	HH Size	Payment	HH Size	Payment	HH Size	Payment
Poorest 20% of HH	1.97	\$2,364	2.01	\$2,412	1.89	\$2,268	2.44	\$2,928	2.05	\$2,460
Middle 60% of HH	2.67	\$3,204	2.86	\$3,432	2.69	\$3,228	3.40	\$4,080	2.80	\$3,360
Wealthiest 20% of HH	3.13	\$3,756	3.28	\$3,936	3.15	\$3,780	3.76	\$4,512	3.22	\$3,864
All Households	2.66	\$3,192	2.73	\$3,276	2.63	\$3,156	3.17	\$3,804	2.73	\$3,276

Figures 8 and 9 provide two detailed breakdowns of how increases in home-energy costs would compare with proposed state payments. In these figures, we look not only at increases since 2006 but also since 2000—to give a longer-range perspective. Remember that increases in costs of gasoline are not included in these regional breakdowns.

Figure 8 shows that the proposed payments would cover increases in home-energy costs since 2006 for most households, at all incomes levels, in Anchorage and the nearby Mat-Su and Kenai Peninsula boroughs. Those percentages drop somewhat when we consider cost increases since 2000.

For the region including Fairbanks and Juneau, proposed payments would cover increases in costs since 2006 for about three-quarters of households, but only about half if we consider increases since 2000.

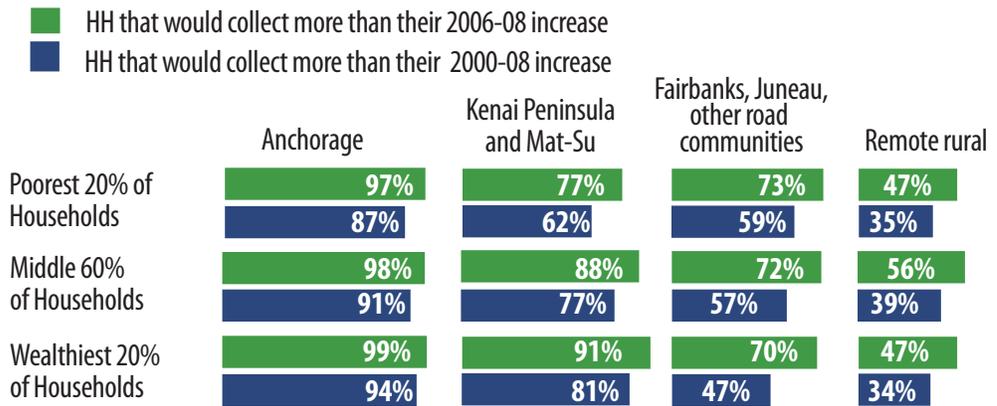
For remote rural households, the proposed payments would cover increases in home-energy costs since 2006 for about half the households. But if we take into account increases since 2000, the payments would cover those increases for only about a third of households.

Figure 9 offers a different way of looking at increases in home-energy costs versus proposed payments. It shows, for the median household in each region and at

different income levels, how much more or less the payments would be than the increases—both since 2006 and since 2000. It shows that the payments would be more than the increases in home-energy costs for the median household in most regions, both since 2006 and since 2000.

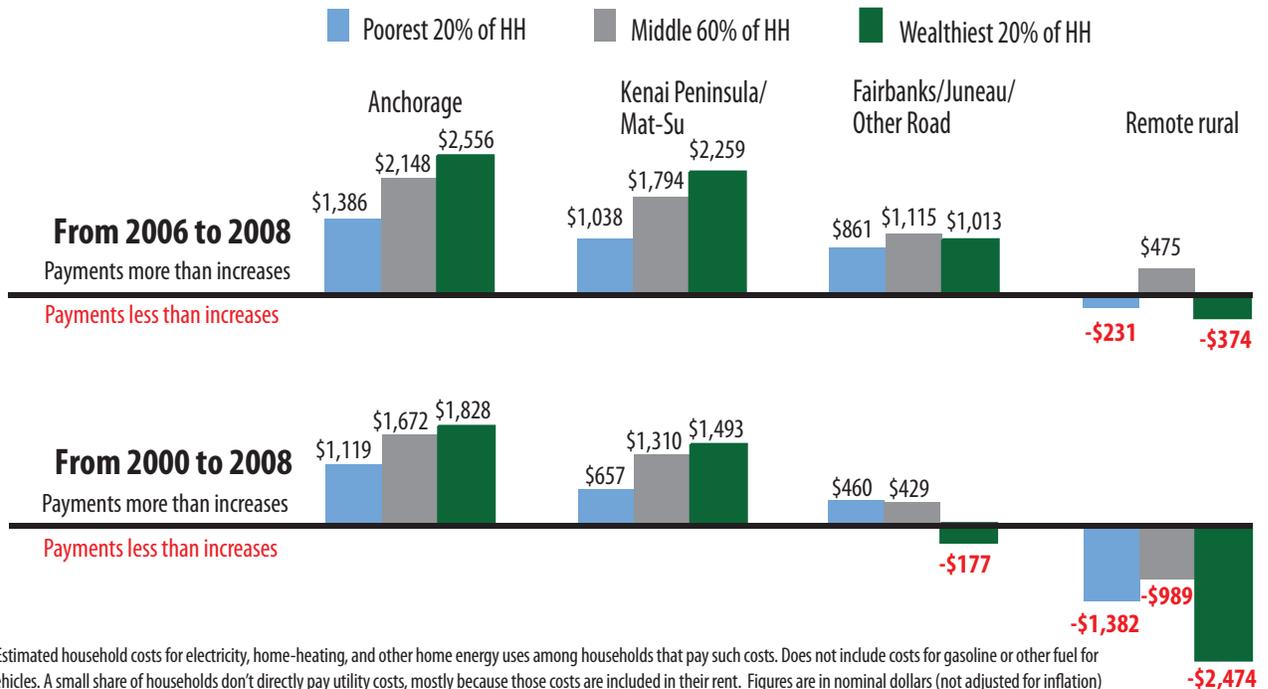
The exception is remote rural Alaska, where increases in costs would be more than the payments for both the poorest and the wealthiest households. But because the wealthier households spend so much more for home-energy, it is for the wealthiest households that the gap between payments and cost increases would be the largest.

Figure 8. What Percentage of Households Would Collect More under Proposed \$1,200 Payment per Person Than They Paid in Increases in Annual Costs for Home Energy?*



*Includes household costs for electricity, home-heating, and other home energy uses for households that pay such costs. Some households don't directly pay utility costs, mostly because those costs are included in their rent. Figures are in nominal dollars (not adjusted for inflation) and assume same household consumption as reported in 2000 U.S. census. Figures do not include costs for gasoline or other fuel for vehicles.

Figure 9. Would \$1,200 Payments per Person be More or Less Than the Increase in Annual Home Energy Costs* (Excluding Costs of Gasoline) for Median Alaska Households, by Region and Income?



*Estimated household costs for electricity, home-heating, and other home energy uses among households that pay such costs. Does not include costs for gasoline or other fuel for vehicles. A small share of households don't directly pay utility costs, mostly because those costs are included in their rent. Figures are in nominal dollars (not adjusted for inflation) and assume same household consumption as reported in 2000 U.S. census.

Figure 10 provides a final perspective on home-energy costs around Alaska, by showing how costs have increased for households in all regions and all income levels, since 2006 and as far back as 2000. It shows that costs were higher to begin with outside Anchorage, especially in remote areas. Diesel has always been relatively more expensive than natural gas, and diesel prices in remote places are especially high because of the costs and difficulties of getting fuel to those places.

But prices have increased much more for diesel than for natural gas—so the difference in home-energy costs has gotten much bigger. For example, in 2000 home-energy costs for the poorest households in remote areas were about 2.5 times higher than for poor households in Anchorage. But by 2008, costs were about 4.5 times higher for the poorest rural households. The biggest part of that increase has been just since 2006.

Notes about Methods of Estimation

Comprehensive 2008 price data for electricity and other home-energy uses are not yet available. We did have current data on prices of natural gas and electricity in non-rural areas. We estimated current prices of heating oil and electricity in rural areas with statistical models of the relationship between oil prices and consumer prices.

We assumed all Alaska households consume 1,000 gallons of gasoline annually. That is the best available estimate of statewide gasoline consumption. We realize that consumption certainly varies among households by region and by income level. Common sense says that wealthier households on average own more and bigger vehicles and buy more gas—and that people who live off the road system use less gasoline. We hope that in the future we can get data about how gasoline consumption varies among households in different regions and with different incomes.

To calculate home-energy costs and increases in those costs, we began with household-level data from the 2000 U.S. census—that is, data from all households that filled out the longer, more detailed questionnaire. Then, for each household:

- We estimated annual home-energy costs for 2000, 2006, and 2008.
- We calculated the increase in costs from 2006 to 2008 and from 2000 to 2008.
- We calculated the sum of \$1,200 per person, based on the reported household size.
- We calculated the difference between the cost increase and the \$1,200 per person sum.
- Finally, we took the median of that difference across all households. We believe this is the best method for estimating increases in home-energy costs—but because we started with household-level data, readers can't simply compare the difference in the aggregated numbers in various figures in this memo. (For more detail on methods, see earlier ISER reports: *Effects of Rising Utility Costs on Household Budgets, 2000-2006*, by Ben Saylor and Sharman Haley, March 2007; and *Estimated Household Costs for Home Energy Use*, May 2008, by Sharman Haley, Ben Saylor, and Nick Szymoniak, June 24, 2008. These are available on ISER's Web site: www.iser.uaa.alaska.edu)

The median is the middle value of a distribution—in this case, the distribution of Alaska households. That's different from the average—which is the sum of all the values in a distribution, divided by the number of items in the distribution. Very high or very low values can make the average considerably different from the median.

