Utility Prices:
The Alaska Food Cost Survey

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Background
The University of Alaska Fairbanks Cooperative Extension Service has conducted a quarterly state-wide food cost survey (FCS) since 1983 based on the USDA food plan for low income individuals. Along with food prices, a few non-food item prices have been collected, primarily fuels, but also lumber, water and sewage utility rates.

Methodology
Unlike food prices, no attempt was made to collect representative prices. Hence, the price of a 2x4 was taken by telephone from one of the larger retailers in each community, and similarly for fuel prices. Electricity, and sometimes water and sewage, was provided by a single utility, so sampling was irrelevant. The methodology for collecting fuel prices has changed over time, and is somewhat specific to the fuel. **Fuel oil and Gasoline.** The paradigm has been to obtain the price of a barrel of these fuels at a loading dock. Over time, this became less practicable in many communities. Gasoline pricing has simply become the pump price for a gallon of regular unleaded gas. Fuel oil pricing is not consistent among or within communities. With the demise of fuel docks providing a barrel of oil, pricing of fuel oil followed the per gallon price for a minimum delivery. Unfortunately, various fuel companies have different minimum delivery volumes, and some none at all, but have a single rate with a delivery flat rate surcharge. Still, the pricing of fuel oil has remained the per gallon price for a minimum delivery, often 300 gallons, where such pricing is available. And where it is not, then methodology amounts to the typical means of purchasing fuel on a by-community basis. For instance, some communities do not have a road system, and fuel is sold in small quantities using 4 wheelers. **Propane.** Originally, propane was priced as the fill price for a 235 gallon tank. This approach eventually proved impracticable, and has since been changed to the cost of filling a 100 lb tank, or 23.4 gallons. **Lumber.** Lumber prices are determined by a phone call to a local retailer. It is assumed that competition, if it exists, brings some consistency to
local pricing. **Electricity.** Many factors go into the price of electricity. It was assumed that 1000 kWh was a representative monthly usage, and one large enough to include the various steps in local residential power rates. Typically there is a membership fee, several other fees and taxes, and then a step-wise rate schedule. There also exists the Power Cost Equalization program, which subsidizes power costs in participating communities. A worksheet was developed for each community that was completed for each survey date.

**Findings**

**All Utilities.** The price trend for all utilities from 1996 to 2012 in all communities is shown in **Figure 1.** The two main features of these results are that nominal (not inflation adjusted) utility prices have been increasing but electrical and lumber prices have increased more slowly.

![Utility Prices in Communities of Alaska](image)

**Figure 1.** Utility prices in Alaska from 1996 to 2012, including #1 fuel oil, unleaded gasoline and propane by the gallon, 1000 kWh of electricity and an 8’x2”x4’ board. Electricity scaled down by 100.
**Fuel oil, Gasoline and Propane.** Petroleum prices began to increase rapidly in the early 2000's, and to make matters worse, electricity took a dramatic jump in price at the same time. These price increases had several effects around the state, including decreased elective road and air travel (especially among private light aircraft owners). The cost of heating a home at times competed directly with food purchases, a classic definition of food insecurity.

**Electricity.** Some areas in Alaska experienced rapid increases in electrical costs, such as Fairbanks, but taken together, a unit of heat generated by electricity has not increased as rapidly as for other fuel sources.

**Lumber.** Lumber prices have not increased dramatically over recent years, as can be seen in both Figure 1 and Figure 2, although prices have varied quite a bit quarter by quarter in some cases.

![Price of a Eight Foot 2x4 in Alaska](image)

**Figure 2.** Nominal (not inflation adjusted) lumber prices over recent years in Alaska.
Since other prices have been increasing, including the energy prices shown above, and food prices, shown in previous reports, it appears that lumber prices have decreased in real (inflation adjusted) dollars. **Figure 3** shows the price of an eight foot 2x4 in various communities relative to the price in 1996, expressed as spline curves. Splines are local 'smoothers', amounting to a running averages, and suppress the influence of outlier data points while retaining temporal trends. From 1996 to 2012, the greatest increase in price occurred in Unalaska, where prices increased 4.6% per year. Conversely, Wrangell enjoyed a decrease in lumber prices of 7.5% per year. Collectively, the nominal price of an eight foot 2x4 has increased by 3 cents per year across Alaska since 1996. In real dollars, the price of lumber has decreased by $0.29 per year over the same period (deflation).

![Lumber Inflation Since 1996](image)

**Figure 3.** The price of an eight foot 2x4 relative to 1996 prices in various communities.

In **Figure 4** is shown a plot of utility prices overlain by the cost of food for a family of four. Regression prediction lines with confidence intervals were added to the figure to enhance the distinction between petroleum and non-petroleum prices. To aid in scaling, the food and
electricity prices were scaled down by a factor of 100, and therefore appear close to the $1 interval. Lumber stretches across at about $4 and petroleum products lie at diagonals.

Figure 4. A comparison of weekly food cost for a family of four and utility prices in Alaska. Food cost and electricity are scaled down by a factor of 100. Electricity, 1000 kWh; gasoline, heating oil & propane, $/gal; lumber, eight foot 2x4.

The similarity between food and electricity in trend, variance and price history are remarkable. In fact, with adequate scaling the lumber prices will also track with food and electricity, although, as mentioned above, lumber is deflating.

Food prices are sensitive to energy prices, but at times not in the direct manner expected from energy input of production. The rapid increase in petroleum prices experienced in 2007 onwards profoundly influenced food prices through macroeconomic factors. Food prices and political stability are closely related. With rising energy costs, food and energy importing nations, and many nations are dependent on grain production in the Australia, Russia and the US, are precariously placed when energy costs increase dramatically. In
response, such countries buy grain futures, thus guaranteeing the ability to provide food in future years despite loss of purchasing power resulting from higher energy costs. The shortens the grain supply and since grains, particularly corn, are industrial ingredients and the foundation of many foods, all costs, particularly food costs, increase. Just such a sequence of events was experienced following the oil price increases of 2007. It may be tempting to see rising oil prices as translating into a higher annual Alaska Permanent Fund dividend check. Keeping in mind that the annual cost of food for a family of four may easily exceed $15,000, a few hundred additional dividend dollars is poor reward for additional thousands spent on food, heating and transportation.

For low income families, the effect of rapid food price increases can be painful, even harmful. There is widespread perception that energy dense foods, such as fruits and vegetables, are disproportionately expensive. While it has been thoroughly demonstrated that such foods are affordable, this is only so if a cash strapped family makes informed food purchase decisions. The tighter the cash, and rising energy costs certainly affect families in Alaska, the greater the need for disciplined shopping habits. Special attention may be required for certain segments of the population, particularly pregnant women and young families.

**Summary**

In Alaska there is an inescapable need to heat homes, and frequently for personal transportation. This puts food dollars in direct competition with fuel dollars, which in certain circumstances, can lead to some tough decisions.