

How much of an increase in home energy and gasoline costs do people think they can afford?

Results from 8 Quarterly Samples, Oct 2013 - Jul 2015

December 2015

KEY FINDINGS

Two newly developed indices measure the perceived affordability of energy by examining the levels of home energy bills and gasoline prices that U.S. consumers say they would find unaffordable.

- ▶ Consumer views on the affordability of energy were probed by asking about the costs at which respondents felt that they or their family would have to make significant changes in their daily lives because of energy expenses.
- ▶ Each energy affordability index was created with an open-ended scale anchored at zero, with the zero level reflecting a perception that a consumer's current energy expenses were already unaffordable (in the sense stated above).
- ▶ The scale is defined so that an affordability index of 100 reflects a consumer belief that the cost of energy would have to double before it is viewed as unaffordable.
- ▶ The average affordability index for gasoline over the past two years was 80. U.S. consumers say, on average, that \$5.50 per gallon of gasoline would be unaffordable. The national average pump price was \$3.16 per gallon over this period.
- ▶ The average affordability index for home energy over the past two years was 125. This is based on the monthly energy bill increase that consumers, on average, say would be unaffordable compared to their recent self-reported home energy bills.
- ▶ For higher income consumers, the affordability indices—99 for gasoline and 152 for home energy—were significantly higher than those for middle and lower income consumers.

To date, the affordability of energy has been typically studied through an economics lens. For example, researchers may set a household expenditure-based standard of living, then assess energy costs as a pre-determined share of a household budget assumed to sustain that standard of living.

But what do consumers themselves believe they can afford? That depends on their personal views of how their own energy expenses affect their everyday lives. Although they relate to household budgets, such beliefs are psychological rather than purely economic.

To probe this issue, the University of Michigan Energy Survey uses a cognitive framework to measure how consumers view energy costs in the context of their own needs. The result is an index of *relative affordability* that takes into account consumer perceptions of what is affordable to them as individuals, rather measuring affordability based on abstract economic relationships.

Through a series of quarterly surveys over the past two years, we asked nearly 3,400 Americans about their current home energy bills and how high the bill would have to be before it became unaffordable (in the sense of their having to make significant changes in the way they lived). We asked a similar question about the price

of gasoline and then compared the responses to actual gasoline prices when each sample was taken.

The resulting responses are shown in Figure 1 on the next page for (a) home energy costs and (b) gasoline prices based on averages for each quarterly survey. The affordability index is defined as the percent increase computed using the energy cost that consumers said they would find unaffordable relative to the energy cost experienced at the time of the survey.

Averaging across the past eight quarters of cross-sectional data (October 2013 through July 2015), the average home energy affordability index was 125. As seen in Figure 1(a), the distance between the average monthly bill that consumers say they would find unaffordable and their then-current home energy bill is fairly stable, and so the overall average home energy affordability index varied little over the two years.

As would be expected, perceived affordability differs across income terciles. As seen in Figure 2, consumers in the lowest bracket (average annual income: \$23,200) had an average affordability index of 104. Middle income (average: \$61,200) consumers had a somewhat greater affordability index of 124. For consumers in the highest income tercile (average: \$166,000), the average

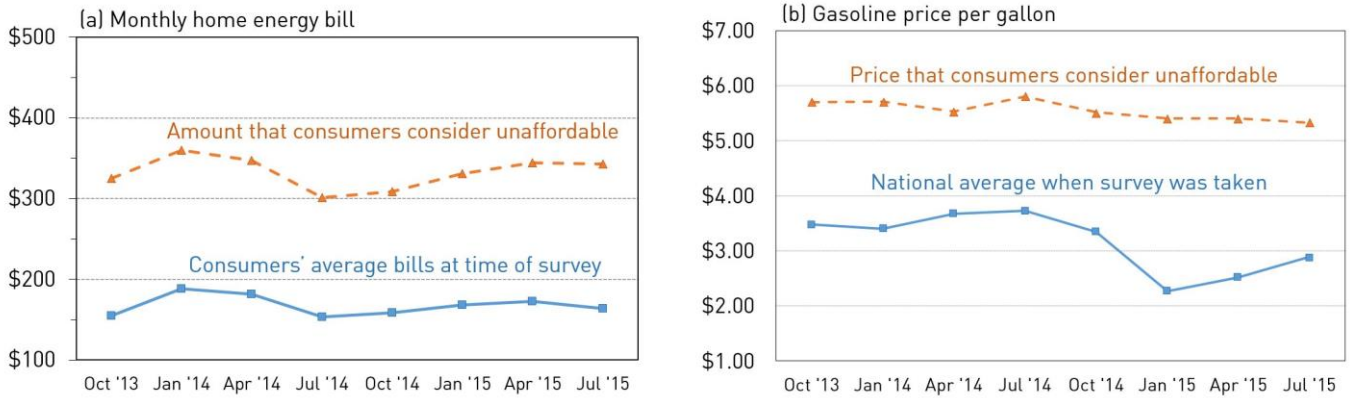


Figure 1. (a) Consumers’ then-current self-reported home energy bills and level they say is unaffordable. (b) National average gasoline price and price per gallon that consumers say is unaffordable.

affordability index was 152, implying that their monthly bills would have to go up by a factor of roughly 2.5 before they would view home energy as costly enough to induce them to make changes in their lives.

Based on federal data, U.S. retail gasoline prices averaged \$3.16 per gallon over the past two years. Over the corresponding eight quarters of our survey, consumers on average said that they felt that gasoline would be unaffordable if reached \$5.50 per gallon. The resulting average gasoline affordability index was 80, indicating that in the perception of consumers, gasoline was considered less affordable than home energy over the past two years.

As seen Figure 1(b), the average gasoline price considered unaffordable slowly declined over the past year. It appears to lag changes in the pump price; for example, the average price considered unaffordable did not respond either significantly or quickly to the large drop in gasoline prices seen in January 2015.

However, when assessed relative to actual gasoline prices, as done with our affordability index, consumer beliefs about affordability are quite sensitive to the price of gasoline. The effect is clear in Figure 3, which plots the gasoline affordability index by income tercile. Averaged across income classes, the affordability index for gasoline jumps from a mean level of 61 over the first five quarters of our survey to a mean of 138 in January 2015. The index then drops as gasoline prices increased over the following two quarters.

As for home energy, the perceived affordability of gasoline rises with income. Consumers in top income tercile again stand out, with their average gasoline affordability index of 99 being significantly higher than the indices of 75 and 67 for consumers in the middle and lower income brackets, respectively.

These indices are sensitive indicators of consumers’ own views of how affordable they believe energy to be, and our survey will reveal how they evolve over time.

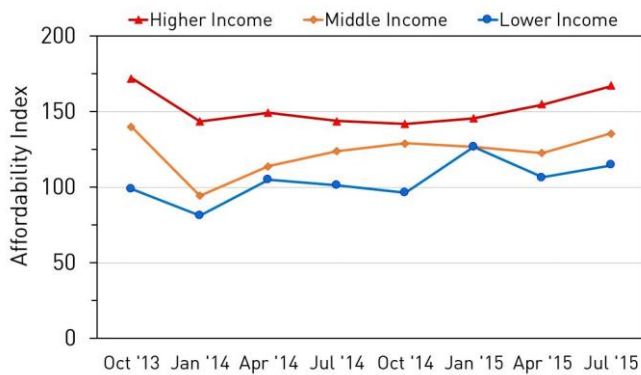


Figure 2. Home energy affordability index by tercile of self-reported household income.

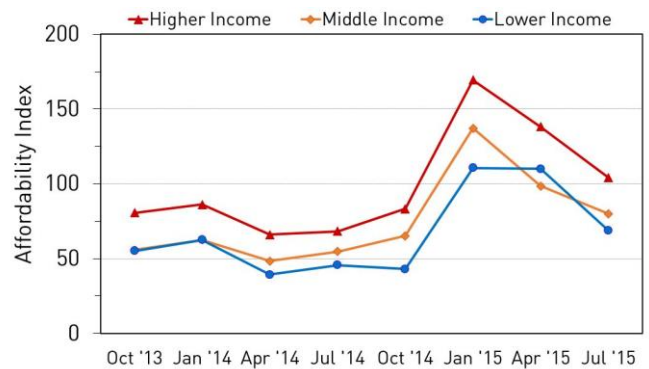


Figure 3. Gasoline affordability index by tercile of self-reported household income.