

## Rapidly Rising Gasoline and Home Heating Prices Expected to Cost Exceed the Annual Cost of Christmas Gifts this Winter – Selected Tables

Rapidly rising energy prices are now a leading cause of price inflation in the United States. According to the [Bureau of Labor Statistics](#), while average inflation was 6.2% between October 2020 to October 2021, energy inflation is running at 30%, with fuel oil, and propane and up 48.3%, gasoline up 51.3% and energy services such as electricity and natural gas up 11.2%.

Table 1 estimates the impact of rising gasoline prices on families by income. At current prices the average household will pay an additional \$1,239 at the gas pump compared to last year. Graph 1 also demonstrates the differences in expenditures between different income intervals.

**Table 1. Annual Expenditures on Gasoline by Income and Price**

Income	Price per Gallon		
	\$2.17 (2020 Average)	\$3.02 (2021 Average)	\$3.40 (Current Price)
Less than \$30,000	\$872	\$1,197	\$1,394
\$30,000 to \$49,999	\$1,350	\$1,966	\$2,290
\$50,000 to \$99,999	\$1,765	\$2,561	\$2,983
\$100,000 to \$149,999	\$2,054	\$3,378	\$3,798
\$150,000 and above	\$2,223	\$3,604	\$4,199
Below \$70,000	\$1,225	\$1,736	\$2,022
Above \$70,000	\$2,056	\$3,227	\$3,760
National Average	\$1,630	\$2,463	\$2,870

**Graph 1. Annual Expenditures on Gasoline by Income and Price**

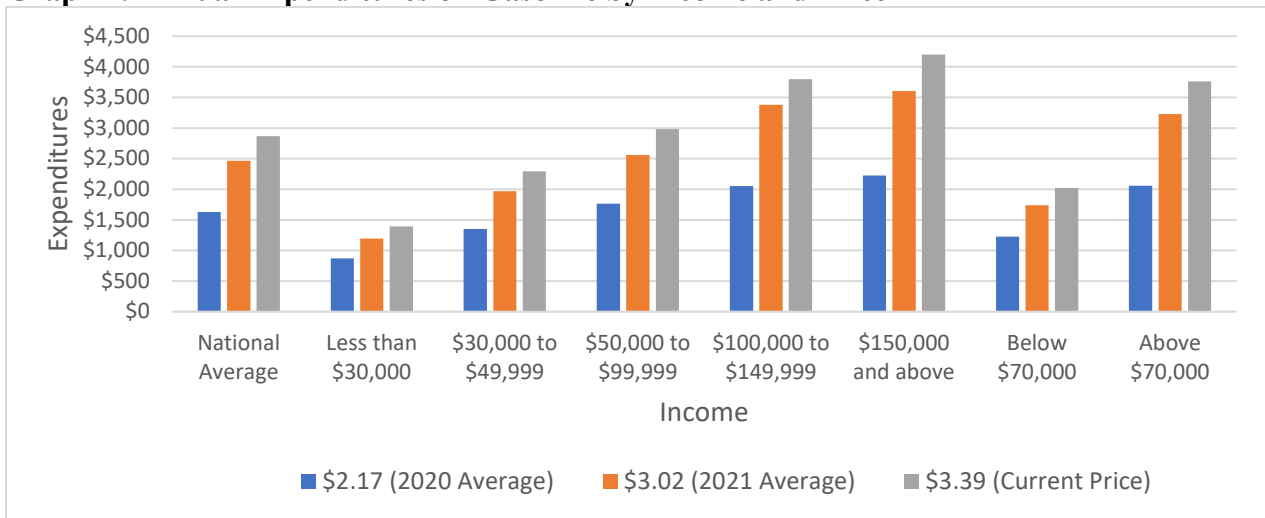


Table 2 illustrates the impact of rising home energy costs. As shown in Table 2, prices are expected to increase from \$573 last year for natural gas to \$746 this year, from \$1,192 to \$1,268 for electricity, from \$1,210 to \$1,734 for heating oil, and from \$1,158 to \$1,789 for propane.

**Table 2. Estimated Home Heating Costs**

Winter Heating Season	Fuel Type				
	Natural Gas	Electricity	Heating Oil	Propane	All Fuels
2020-21	\$573	\$1,192	\$1,210	\$1,158	\$888
2021-22	\$746	\$1,268	\$1,734	\$1,789	\$1,056
<b>Annual Difference</b>	\$173	\$76	\$524	\$631	\$168
<b>Monthly Difference</b>	\$43	\$19	\$131	\$158	\$42

Table 3 illustrates the combined impact by month for the next four months as we enter the winter heating season. As shown in Table 3, the average family will spend a combined extra \$122 to \$261 monthly depending on the fuel type they use to heat their homes. As a percentage of income, the impact is highest on low to middle income families and then declines rapidly as a percent of income as a family’s income increases. This is because energy use does not increase proportionally to income, rather it increases at a slower rate reflecting the lower rate of utilization of energy as income increases.

**Table 3. Estimated Monthly Increase in Energy Costs by Fuel Type at Current Gasoline Prices**

Income	Fuel Type				
	Natural Gas	Electricity	Heating Oil	Propane	All Fuels
<b>Less than \$30,000</b>	\$87	\$63	\$175	\$202	\$86
<b>\$30,000 to \$49,999</b>	\$121	\$97	\$209	\$236	\$120
<b>\$50,000 to \$99,999</b>	\$145	\$121	\$233	\$260	\$144
<b>\$100,000 to \$149,999</b>	\$188	\$164	\$276	\$303	\$187
<b>\$150,000 and above</b>	\$208	\$184	\$296	\$323	\$207
<b>Below \$70,000</b>	\$109	\$85	\$197	\$224	\$108
<b>Above \$70,000</b>	\$185	\$161	\$273	\$300	\$184
<b>National Average</b>	\$146	\$122	\$234	\$261	\$145

Table 4 demonstrates the increase in expenditures on gasoline between 2020 and two price levels measured this year. The first comparison is between observed 2020 expenditures and the estimated expenditures at the average price of gasoline in 2021. The second comparison is between observed 2020 expenditures and the estimated expenditures at the current price of gasoline as of November 15, 2021. If prices stay at the current level, the average family can expect to spend \$1,239 more on gasoline this year.

**Table 4. Increase in Gasoline Expenditures Over 2020**

Income	Annual Comparisons	
	Difference between 2021 Average Price (\$3.02) and 2020 Average Price (\$2.17)	Difference between 2021 Current Price (\$3.40) and 2020 Average Price (\$2.17)
Less than	\$325	\$522
\$30,000 to	\$616	\$940
\$50,000 to	\$796	\$1,218
\$100,000 to	\$1,324	\$1,744
\$150,000 and	\$1,381	\$1,976
Below \$70,000	\$511	\$798
Above \$70,000	\$1,171	\$1,703
National Avg.	\$833	\$1,239

Table 5 examines the impact of different price levels on gasoline consumption by income. Households at all income levels will probably reduce consumption. The average household is expected to reduce consumption from 752 gallons in 2020 to 664 gallons annually at the current price level. For many, however, gasoline is essential to commuting to their place of employment. This means that demand for gasoline may be less flexible than our estimates predict and that consumption will not drop off as much in response to increased prices. Less flexible demand at these higher prices will result in even higher expenditures than we have estimated.

**Table 5. Annual Consumption of Gasoline (Gallons) by Income and Price**

Income	Price per Gallon		
	\$2.17 (2020 Average)	\$3.02 (2021 Average)	\$3.40 (Current Price)
Less than \$30,000	402	350	323
\$30,000 to \$49,999	623	575	530
\$50,000 to \$99,999	814	749	691
\$100,000 to \$149,999	947	989	955
\$150,000 and above	1026	1055	972
Below \$70,000	565	508	468
Above \$70,000	949	945	871
National Average	752	721	664

Table 6 shows the average gasoline burdens faced by different income intervals. This measure was calculated by dividing average annual expenditures on gasoline by household income to find what percent of a household’s budget they spend on gasoline. The national average gasoline burden in 2020 was 2.7%, while the average gasoline burden at the current price level is 4.6%. For families with incomes below the median of around \$70,000, their gasoline burdens will increase from 3.8% in 2020 to 6.2% at current prices, while for families above the median, their gasoline burdens will only increase from 1.6% to 3.0%.

**Table 6. Gasoline Burden by Income and Price**

Income	Price per Gallon		
	\$2.17 (2020 Average)	\$3.02 (2021 Average)	\$3.40 (Current Price)
Less than \$30,000	4.6%	6.3%	7.4%
\$30,000 to \$49,999	3.4%	5.0%	5.8%
\$50,000 to \$99,999	2.5%	3.6%	4.1%
\$100,000 to \$149,999	1.6%	2.7%	3.0%
\$150,000 and above	1.2%	1.9%	2.2%
Below \$70,000	3.8%	5.3%	6.2%
Above \$70,000	1.6%	2.5%	3.0%
National Average	2.7%	3.9%	4.6%

**Graph 2. Gasoline Burden by Income and Price**



While families with disposable income or households that have transitioned to remote positions during the COVID-19 pandemic will easily adapt to these higher prices, low- to moderate-income (LMI) families are in a different situation. They have often been on the frontlines of the

pandemic, employed through in-person work, and as such they cannot stay at home and avoid the rise in gasoline prices.

NEADA has put together this paper to highlight the immense burden faced by LMI families paying for the increasing cost of gasoline. The paper uses data from the Census Bureau, the Bureau of Labor Statistics (BLS) Consumer Expenditure Survey (CE), and EIA.

Based on the historical data and NEADA's estimates:

- If the current price of \$3.39 per gallon (as of November 15, 2021) continues, the average family will increase their annual expenditures to \$2,870, while consuming only 664 gallons. This represents an increase of more than \$1,200 annually over 2020, or more than \$100 per month in gasoline expenditures.
- For comparison, the average family spent \$2,235 annually on gasoline between 2018-2019, and consumed 840 gallons annually.
- The average household with an income between \$30,000 to \$50,000 spent \$1,350 annually on gasoline in 2020, representing a gasoline burden (percent of income spent on gasoline) of 3.4%. At 2021's average price of \$3.02 per gallon, households at this income level will spend \$1,966 this year on gasoline and face a gasoline burden of 5.0%. This means that moderate income households will spend 1 out of every 20 dollars on gasoline. The \$30,000 to \$50,000 income interval represents 20.4 million households.
- For households around the median income of [\\$67,521](#), the income interval used was \$50,000 to \$100,000. These households spent an average of \$1,765 annually on gasoline in 2020 and had a gasoline burden of 2.5%, but with the average price of gasoline in 2021 at \$3.02, they will pay \$2,561 this year and face a gasoline burden of 3.6%. The \$50,000 to \$100,000 interval includes 37.2 million households.

## Data and Methodology

The data on household expenditures by income came from the [Bureau of Labor Statistics \(BLS\) Consumer Expenditure Survey \(CE\)](#). Data are available through 2020, and the years 2018 and 2019 were used as well as 2020 because of the anomalous market for gasoline in 2020 due to the COVID-19 pandemic. The two most contemporary years prior to the pandemic allow us to estimate how much people spent on gasoline previous to the recession.

The income intervals provided by the BLS CE Survey are as follows: Less than \$15,000; \$15,000 to \$29,999; \$30,000 to \$39,999; \$40,000 to \$49,999; \$50,000 to \$69,999; \$70,000 to \$99,999; \$100,000 to \$149,999; \$150,000 to \$199,999; \$200,000 and more. To assist with ease of interpretation, the income intervals were combined into five new sets: Less than \$30,000; \$30,000 to \$49,999; \$50,000 to \$99,999; \$100,000 to \$149,999; \$150,000 and more. To calculate the variables of interest when combining these income intervals, population weights were used with data from the [Census Bureau's Current Population Survey](#).

Various price levels per gallon of regular formulated gasoline were selected from [Energy Information Administration data](#) when estimating this paper's set of variables: \$2.66 - the average price of gasoline between 2018 and 2019; \$2.17 - the average price of gasoline in 2020,

\$3.02 - the average price of gasoline in 2021<sup>1</sup>; \$3.39 - the current price of gasoline as of November 15, 2021.

To estimate the average consumption of gasoline for households within each income interval at a certain price, the 2018-2019 average expenditure data from the BLS CE Survey was divided by that particular year's average price of gasoline, according to EIA data. 2018-2019 were the years used in this calculation as they better represent the current economy as the country comes out of the recession caused by COVID-19. To calculate the average annual expenditures for households within each income interval at a certain price, the 2018-2019 averages of gasoline consumption for each income interval were multiplied by the price of gasoline per gallon.

The energy burdens of each income interval at certain prices were also estimated. This measure was calculated by dividing average annual expenditures on gasoline by household income to find what percent of a household's budget they spend on gasoline. For each of the income intervals, assumptions were made. For the interval of households with less than \$15,000 in income, a budget value of \$15,000 was used. For households with \$200,000 and more in income, a value of \$200,000 was used. All other intervals used the midpoint of household income (ex. An interval of \$40,000 to \$49,999 equals a midpoint of \$45,000).

To determine the average family's annual expenditures on gasoline between 2018-2019, 2020, and at various price levels, the annual expenditures were averaged across each income interval. Those averages were weighted by household population within each income interval to estimate the national average.

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<sup>1</sup> The average price per gallon in 2021 was calculated by averaging the sum of weekly prices through 11/15/2021 and the price of gasoline on 11/15/2021 multiplied by the remainder of the year, assuming that prices stay constant. Typically, gasoline consumption trends downward as the seasons change from summer to fall. [In 2018 and 2019, this trend was a 5% reduction in demand, while in 2020 there was a 2% reduction.](#) Given that the economy is still rebuilding from the COVID-19 pandemic, a 3.5% reduction in demand (the average of 2% and 5%) was built into the expenditures and consumption models for the 2021 average price level.