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Propane Price Spikes and Their Impact on the Economy





PROPANE PRICE SPIKES AND THEIR IMPACT ON THE ECONOMY

The Midwest faced a dramatic increase in the price of propane in the winter of 2013-14, harming consumers and the regional economy. Rural households as well as low- and middle-income households were hit hardest.¹ In addition to facing higher propane prices, farmers were also adversely impacted by supply shortages in the region.

This report analyzes the reasons for the price spike last winter, examines factors that affect the price of propane and explores policies that could reduce the frequency of sudden increases in propane prices and mitigate their impact.

Case Study: Midwest Propane Price Spike in Winter 2013-14

The spike in propane prices this past winter raised heating costs for all consumers, but had a particularly large impact on consumers in the Midwest, where households are more likely to heat their homes with propane. Midwest consumers spent over \$560 million more than in previous winters (**Table 1**). In addition to the increase in consumer heating costs, many Midwestern farmers and grain-elevator operators, who use propane-fueled heating, were negatively affected by propane shortages and the resulting spike in prices.²

Households that use propane to heat their homes generally spend more on heat than natural gas users. Even before the price spike, the Energy Information Administration (EIA) projected that the average household using propane would spend \$1,666 during the 2013-14 heating season while the average household using natural gas would pay \$679.³

In the Midwest, the damp weather in the fall and severely cold winter caused propane inventory levels to drop well below their usual range (**Figure 1**). Because of the damp fall, farmers had to use a larger than usual amount of propane for drying corn.⁴

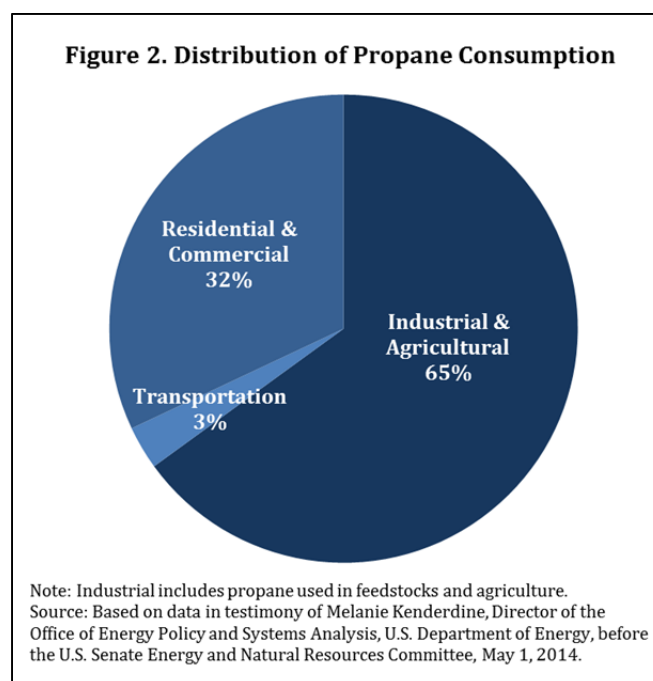
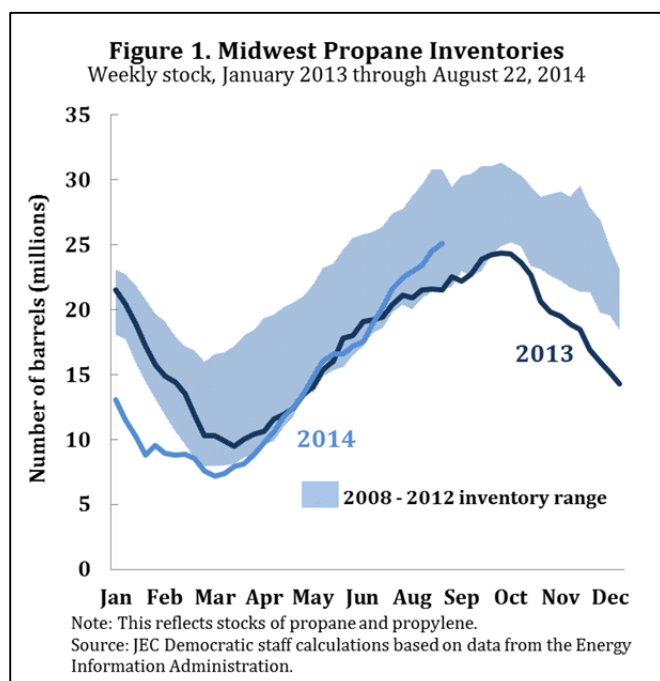
In addition to weather-related issues, transportation network capacity that had been used to move propane from Canada to the Midwest was not available.⁵ Suppliers that previously used this network had to rely on rail and trucks, which led to

Table 1. Estimated Impact of the 2013-14 Propane Price Spike on Consumer Heating Expenditures

States in Midwest	Estimated excess consumer spending on propane during price spike (compared to prices in previous five winters)
Illinois*	\$51,776,788
Indiana	\$39,215,804
Iowa	\$63,921,447
Kansas*	\$53,491,089
Michigan	\$72,079,069
Minnesota	\$70,905,941
Missouri	\$51,062,117
Nebraska	\$13,009,659
North Dakota	\$31,632,805
South Dakota	\$16,995,903
Ohio	\$52,097,250
Wisconsin	\$44,481,564
Total, Midwest region	\$560,669,438

*" denotes states for which state-specific price data are not available.
Notes: The estimates are for the period November 2013 through March 2014. Household propane use is assumed to be the same proportion of prime supplier sales as they were in 2009, the last available residential energy consumption survey data. Prime supplier sales are sales of the product to local distributors, local retailers, or end users. Prices used are up-to-date propane residential prices from EIA.

Source: JEC Democratic staff calculations based on data from the Energy Information Administration.



delays in propane shipments.⁶ As a result of all of these factors, the price of propane doubled to more than \$4 per gallon in the region, and it remained high for several weeks.⁷

Several actions were taken to increase the supply of propane and to provide relief to those facing higher costs. Propane shipments to the Midwest were prioritized and legislation was passed to make it easier to transport propane to states hurt by the shortage.⁸ To help address future shortages, that legislation also requires EIA to provide early warnings to governors if the inventory of residential heating fuel, including propane, falls below the most recent five-year average for more than three consecutive weeks.⁹ In addition, the U.S. Army Corps of Engineers recently approved a storage facility in west-central Minnesota.¹⁰

Factors that Affect the Price of Propane

Propane is one of several liquefied petroleum gases that are produced from natural gas or crude oil. Propane is separated out of natural gas in natural gas processing plants and from crude oil in refineries. In the United States, about half of propane comes from natural gas.¹¹

The price of propane is mainly determined by the price of crude oil or natural gas. Propane is produced year round, but residential demand for propane is concentrated during the winter. Unexpectedly cold weather or low inventory levels can affect prices.¹² Because most of residential propane demand is for heating, EIA only collects data on propane prices from October to March.

Economic Impact of Energy Price Spikes

Consumers are vulnerable to sudden increases in the price of fuels used for residential heating such as propane. In addition to residential use (in heating, barbecue grills and gas fireplaces), propane has agricultural uses (drying corn, heating barns, fuel for farm equipment and fuel for irrigation pumps) and industrial uses (petrochemicals, powering fork lifts and other equipment) (**Figure 2**).

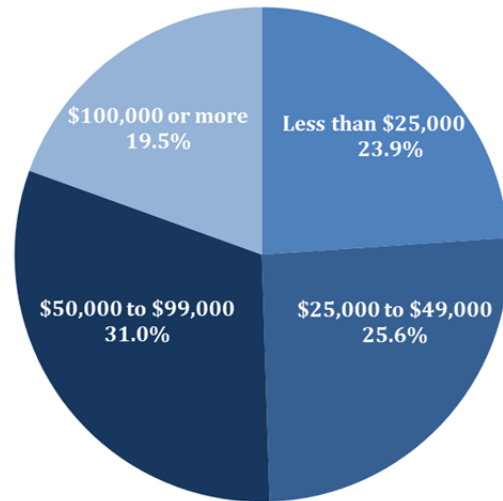
In the short term, consumers are unable to switch to cheaper home heating fuels or to substantially reduce their consumption of energy when the price of fuel, such as propane, spikes during the winter. It also takes regional suppliers several weeks to obtain additional propane via transportation networks.

Increases in propane prices reduce consumers' income available for other purchases, and the impact is often concentrated in one particular region of the country (**Figure 3**). Nationwide, less than five percent of households use propane for heating, but that share is larger in the Midwest. For example, propane use for heating is more prevalent in the central Midwest (West North Central Census Division), which includes Minnesota, Iowa, Missouri, Nebraska, North Dakota, South Dakota and Kansas, where more than one in ten households (10.2 percent) use it for heating, compared to 4.8 percent of all U.S. households.¹³ Over two million households in the Midwest heat their home primarily with propane.¹⁴ The largest share is in South Dakota, where 17.8 percent of homes use propane for heating.¹⁵

The vast majority (91.7 percent) of houses heated with propane in the Midwest are in rural areas that are unlikely to have access to natural gas distribution systems.¹⁶ Both nationally and in the Midwest, nearly half of households using propane to

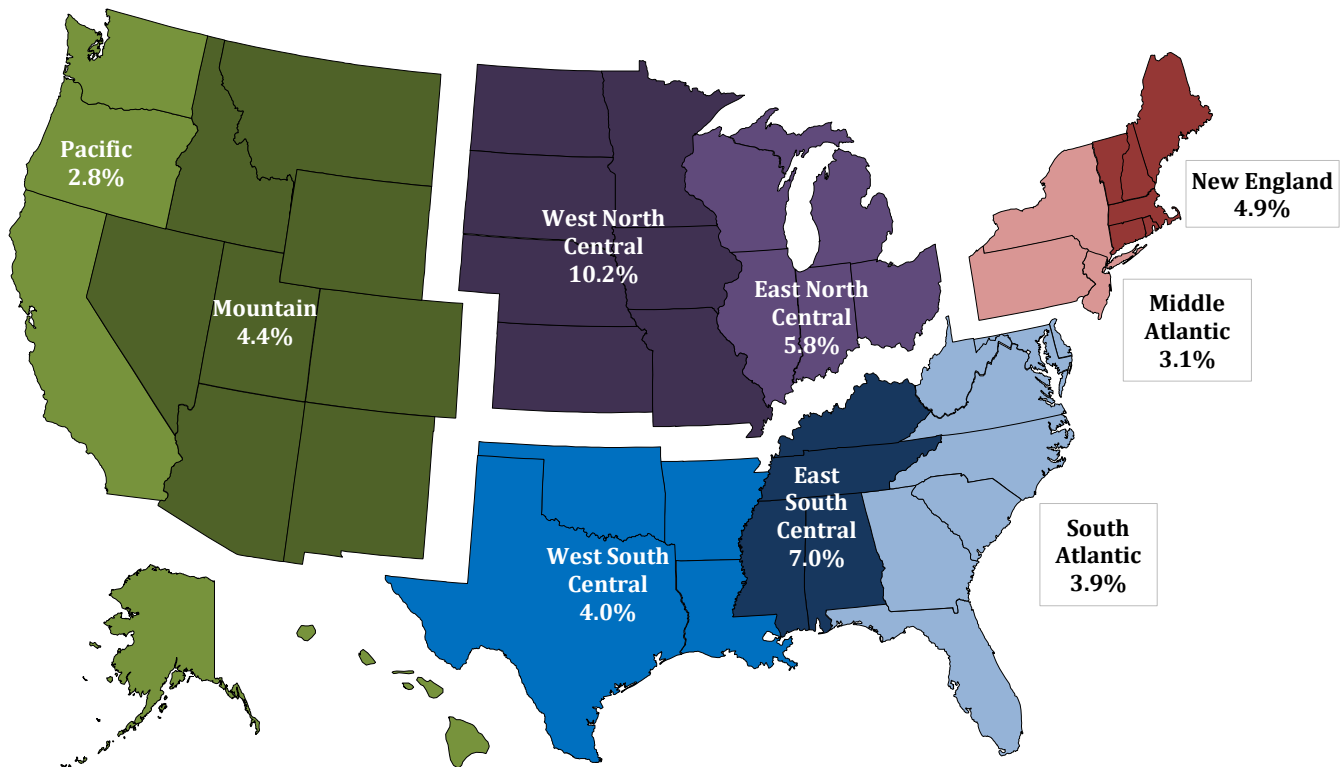
heat their homes earned less than \$50,000 in 2012.¹⁷ As a result of these factors, it is more difficult for these households to absorb the impact of a propane price spike (**Figure 4**).

Figure 4. Distribution of Households That Heat Their Homes with Propane, by Income



Source: JEC Democratic staff calculations based on data from the U.S. Census Bureau, American Community Survey, 2012.

Figure 3. Percent of Homes with Propane Heating by Census Region



Source: JEC Democratic staff calculations based on data from the U.S. Census Bureau, American Community Survey, 2012. States are divided into Census regions.

Policy Proposals to Reduce the Impact of Propane Price Spikes

Policymakers should focus on decreasing the frequency of energy price spikes and minimizing the impact they have on consumers and businesses. These policies can be divided into four categories.

Improving regional information collection

Collecting additional information regarding supply and demand conditions could help reduce the risk of price spikes. This additional information should include inventory levels for both refined petroleum products (gasoline, diesel and heating oil) as well as propane.

The Propane Supply and Security Act of 2014 (S. 2762) would require EIA to publish weekly propane inventory levels at the state and market hub levels. Shortly after this legislation was introduced, EIA announced that it will begin publishing more regional information on stocks of propane.¹⁸ In addition, EIA reopened the State Heating Oil and Propane Program to allow more states to participate in weekly price reporting.

Increasing inventory levels and improving reliable transportation of fuel

The Reliable Home Heating Act (P.L. 113-125) requires the EIA Administrator to notify the governors of each state if the inventory of residential heating fuels (including propane) has been below the most recent five-year average for more than three consecutive weeks. EIA recently announced that it would implement this requirement before the next heating season starts.¹⁹

In addition, the Propane Supply and Security Act of 2014 (S. 2762) would require the Secretary of Energy to determine the effectiveness and feasibility of establishing one or more propane storage facilities.

Providing incentives to increase inventories may help prevent shortages that lead to price spikes. In

addition to increasing storage, improving reliable transportation of fuel would help reduce or shorten price spikes. Regional differences in transportation infrastructure may require different storage levels. Storage levels should be scaled based on how quickly product can be transported into a region in the event of a supply disruption.

Spurring energy efficiency

The Energy Saving and Industrial Competitiveness Act of 2014 (S. 2262) would create a national energy efficiency strategy to help businesses and consumers reduce their energy use and cut energy costs. It directs the Secretary of Energy to support development and updating of national model building codes for residential and commercial buildings and it encourages states and local governments to adopt building energy codes that meet or exceed the national standards. The legislation also promotes job training by providing funding to train workers in the construction and installation of energy efficient building technologies. It also creates within the Department of Energy a Supply Star program to recognize companies that use efficient supply chains that conserve energy.

Increasing aid to families when price spikes occur

The Low Income Home Energy Assistance Program (LIHEAP) provides home energy assistance to low-income households. States may use these funds to help residents with heating and cooling costs, for energy crisis assistance (to address weather-related and fuel supply shortages and other energy-related emergencies) and for low-cost residential weatherization. While the program plays a critical role helping low-income households cover their energy costs, particularly for heat, the benefits are modest – around \$400 per household during fiscal year (FY) 2009. Approximately one-fifth of eligible households receive LIHEAP benefits.²⁰

Last winter, after urging from several Midwest lawmakers, the Administration released more than \$450 million in emergency LIHEAP funds,

including \$15.8 million for Minnesota and \$14.2 million for Wisconsin.²¹ LIHEAP funding has fluctuated significantly during the past decade. For example, states received \$5.1 billion in FY 2009 and in FY 2010, up from \$2.6 billion in FY 2008. Funding levels were \$3.3 billion in FY 2013 and \$3.4 billion in FY 2014. Although the program is supposed to respond to need based on heating and cooling costs, there is no systematic indexing to energy prices.²² An additional idea would be to allow consumers to use LIHEAP funds to purchase propane in the summer months when prices are lower to prepare for winter.

Conclusion

Spikes in regional energy prices can have significant economic impacts on consumers in the affected regions. Consumers have less money to spend on other goods and services and businesses often pass along energy costs to consumers. Policymakers should help decrease the frequency of energy price spikes or mitigate the negative effects they have on consumers and businesses.

Sources

¹ JEC Democratic staff calculations based on data from the U.S. Census Bureau, American Community Survey, 2012.

² Peter Gray, "Spike in Propane Price Worries Midwest Farmers," *Harvest Public Media* (February 9, 2014), <http://harvestpublicmedia.org/article/spike-propane-price-worries-midwest-farmers>.

³ U.S. Energy Information Administration, "Heating Costs for Most Households Are Forecast to Rise from Last Winter's Level" (October 8, 2013), <http://www.eia.gov/todayinenergy/detail.cfm?id=13311>.

⁴ Testimony of Melanie Kenderdine, Director, Office of Energy Policy and Systems Analysis U.S. Department of Energy, before the Senate Committee on Energy and Natural Resources, *Short on Gas: A Look into the Propane Shortages this Winter* (May 1, 2014), http://energy.gov/sites/prod/files/2014/05/f15/5-1-14_Melanie_Kenderdine%20FT%20SENR.pdf.

⁵ *Ibid.* The Cochin pipeline was down for maintenance during part of the 2013-2014 heating season. However, its flow has

now been reversed to transport fuel from the Midwest to Canada.

⁶ Forty percent of Minnesota's propane had been brought into the state through the Cochin pipeline. Kristen Faurie, "Propane Shortage Persists, Prices Spike," *Kanabec County Times* (January 15, 2014), http://www.presspubs.com/kanabec/article_02a4548a-7980-11e3-b116-0019bb2963f4.html; Kevin Yanik, "Cochin Reversal Project Creates Pipeline Pressures," *LP Gas Magazine* (October 30, 2013), <http://www.lpgasmagazine.com/cochin-reversal-project-creates-pipeline-pressures>.

⁷ U.S. Energy Information Administration, "Weekly Heating Oil and Propane Prices (October – March)" (March 19, 2014), http://www.eia.gov/dnav/pet/pet_pri_wfr_a_epllpa_prs_dpgal_w.htm.

⁸ U.S. Senator Amy Klobuchar, "Klobuchar, Franken, Hoeven, Baldwin Legislation Making it Easier to Transport Propane to Communities Impacted by Propane Shortage Passes Senate, Heads to President's Desk" (press release, March 17, 2014), <http://www.klobuchar.senate.gov/public/2014/3/klobuchar-franken-hoeven-baldwin-legislation-making-it-easier-to-transport-propane-to-communities-impacted-by-propane-shortage-passes-senate-heads-to-president-s-desk>.

⁹ U.S. Senator Amy Klobuchar, "Klobuchar, Thune Bipartisan Legislation to Address Propane Shortages Signed into Law" (press release, July 1, 2014), <http://www.klobuchar.senate.gov/public/2014/7/klobuchar-thune-bipartisan-legislation-to-address-propane-shortages-signed-into-law>.

¹⁰ Don Davis, "Federal Government OKs New Minn. Propane Facility," *Ag Week* (August 6, 2014), <http://www.agweek.com/event/article/id/23811/>.

¹¹ U.S. Energy Information Administration, "Propane Explained" (July 2, 2012), http://www.eia.gov/energyexplained/index.cfm?page=propane_home.

¹² U.S. Energy Information Administration, "Propane Explained; Factors Affecting Propane Prices" (January 10, 2014), http://www.eia.gov/energyexplained/index.cfm?page=propane_factors_affecting_prices.

¹³ JEC Democratic staff calculations based on data from the U.S. Census Bureau, American Community Survey, 2012. The central Midwest, or West North Central Census Division, is composed of Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota and South Dakota.

¹⁴ JEC Democratic staff Calculations based on data from the 2012 American Community Survey.

¹⁵ Ibid.

¹⁶ U.S. Energy Information Administration, Residential Energy Consumption Survey, Final Energy Consumption and Expenditure Tables, “Table CE2.3: Household Site Fuel Consumption in the Midwest Region,” 2009, <http://www.eia.gov/consumption/residential/data/2009/c&e/fuel-totals/xls/CE2.3%20Midwest%20Site%20Fuel%20Consumption.xlsx>.

¹⁷ JEC Democratic staff calculations based on data from the U.S. Census Bureau, American Community Survey, 2012. Nationally, 49.5 percent of households that used propane to heat their home in 2012 earned less than \$50,000 during that year. In the Midwest, that share was 46.7 percent.

¹⁸ U.S. Energy Information Administration, letter from Shirley Neff, Senior Advisor, U.S. Energy Information Administration detailing the ways that EIA has been preparing for the upcoming heating season (August 14, 2014).

¹⁹ Ibid.

²⁰ A small percentage of eligible households receive LIHEAP benefits. From 2000-08, the percentage of federally eligible households receiving LIHEAP assistance fluctuated between 13-16 percent. With increased funding in FY2009 (last year of available data), the share of eligible households receiving benefits jumped to 21 percent. Libby Perl, *LIHEAP: Program and Funding*, Report for Congress RL31865, (Congressional Research Service, July 18, 2013).

²¹ U.S. Senator Amy Klobuchar, “Amy Klobuchar, Al Franken, and Tammy Baldwin, U.S. Senate, letter to the Honorable Kathleen Sebelius, Secretary, U.S. Department of Health and Human Services, (January 30, 2014), <http://www.klobuchar.senate.gov/public/2014/1/after-push-from-klobuchar-franken-and-baldwin-administration-will-release-emergency-liheap-funds-to-help-families-during-ongoing-propane-shortage>.

²² Libby Perl, *LIHEAP: Program and Funding*, Report for Congress RL31865 (Congressional Research Service, July 18, 2013); U.S. Department of Health and Human Services, *LIHEAP Dear Colleague Letter Second FY2014 Funding Release* (attachment to a letter from Jeannie L. Chaffin, Director of the Office of Community Services, January 30, 2014), <http://www.acf.hhs.gov/programs/ocs/resource/liheap-dear-colleague-letter-final-fy-2014-funding-release>.