Michigan Residential Heating Oil and Propane Price Survey

2013-2014 Heating Season

This report summarizes the results of a survey of residential No. 2 distillate fuel oil (home heating oil) and propane (liquefied petroleum gas) prices over the 2013-2014 heating seasons in Michigan. The Michigan Public Service Commission (MPSC) conducted the survey under a cooperative agreement with the U.S. Department of Energy's (DOE) Energy Information Administration (EIA). This survey was funded, in part, by a grant from the EIA.

Michigan Residential Heating Oil and Propane Price Survey

2013-2014 SHOPP Report

Winter Snapshot

The 2013-2014 winter heating season was an unfortunate confluence of events that resulted in an historic regional propane emergency. Numerous Midwestern states declared energy emergencies and over 30 states sought hours-of-service (HOS) waivers. For Michigan, the acute phase of the crisis began in late December 2013 and continued into early March 2014. The prime factors leading to the emergency included:

Low Pre-Season Inventories – Inventories ended the 2012/2013 season about 3 million barrels or 20 percent below the five year average. This led to propane inventories beginning the 2013 winter season (Oct.), 8 million barrels below the previous year.

Crop Drying Demand – Propane use for crop drying soared almost 500 percent for the agricultural industry last year. This was due to a record corn and soybean crop harvested late in the season, and complicated by above average rainfall during harvest time. As farmers throughout the Midwest began drying their crops, a significant draw down in inventories occurred. As a result, supply shortages for residential customers quickly developed as severe winter weather loomed.

Colder than Normal Weather – A late and significant drawdown of propane inventories was exacerbated by the early arrival of winter weather. The resulting increase in demand shortened the window to restock inventories in preparation for the season. Further complicating matters, the 2013/2014 winter heating season (October – March) turned out to be one of the coldest in years, 14 percent colder than normal, which strained the already low inventories.

Highlights

- Michigan's "Winter Heating Season" (Oct. – March) was 14% colder than normal.
- Low inventories, high prices, and extreme winter weather led to a state of energy emergency for Michigan.
- Over 30 states declared states of energy emergency and implemented hours of service waivers.
- Propane prices averaged 28% higher than the 2012/13 winter season.
- Heating oil prices averaged 2% lower than the 2012/13 winter season.
- U.S. propane stocks ended the season (March 28, 2014) 24% below the 5-year average for that period.

Infrastructure - Two additional factors that impacted the situation were untimely infrastructure interruptions due to repairs and upgrades. First, the Cochin Pipeline, a major source of propane to the Midwest (20 to 25 percent), was out of operation nearly three weeks for repair, from the late November through December 20, 2013. Second, in January, 2014, the major supply terminal (fractionator) for the Upper Peninsula in Rapid River, MI ceased producing and supplying product, when shipments of natural gas liquids (used to make propane) were halted in order to install equipment at an upstream facility in Superior, Wisconsin.

The result of all of the above was that propane supply was so tight in Michigan that dealers had extreme difficulty obtaining adequate propane to fully supply customers. Dealers were forced to limit supplies to customers, and drive long distances (as far as KS, PA, and TX) to obtain supply. Other dealers lost access to contracted volumes when their wholesale supplier(s) ceased shipments citing "force majeure" provisions.

In addition to and largely resulting from the restricted supply issues, retail prices steadily increased as the heating season progressed. This escalated the week of January 20th, as wholesale propane prices spiked to over $4.00 a gallon at Conway, KS, a major Midwest propane storage hub. This wholesale price spike sent retail prices soaring. Dealers were forced to "short fill" customers in an effort to manage both supply and the financial impact of high retail prices. At the very peak of the price spike, the average for a gallon of propane in Michigan was $3.76, based on the sample of dealers participating in the SHOPP survey. Reports of higher prices were common and later confirmed when the MPSC expanded survey calls to almost 20 additional MI suppliers. Prices in the four to five dollar range were seen sporadically for the weeks following the wholesale price spike at Conway. In preparation for the upcoming winter season, the MPSC is working with EIA to expand the SHOPP survey to better represent the geographic scope and range of retail prices seen across Michigan.

By December 20, 2013, Michigan joined a number of other Midwest states that had instituted energy emergencies and hours of service (HOS) waivers for propane dealers. The crisis was not limited to the Midwest, the Northeast region of the US and, eventually, some parts of the South were also affected. At the worst of the crisis, over 30 states had HOS waivers in place, numerous pipelines and terminals in the affected regions had allocations in place, and many propane dealers were scrambling to find supply for their customers.

Heating oil did not see the same supply issues that propane did and remained obtainable all winter. The harsh weather with ice and snow accumulations greater than in recent winters did cause some home delivery issues, but there were no significant supply or price issues in the market. Prices were 2 percent lower on average, than last winter's heating season. Heating oil retains a smaller market share in Michigan, estimated at less than 2 percent.

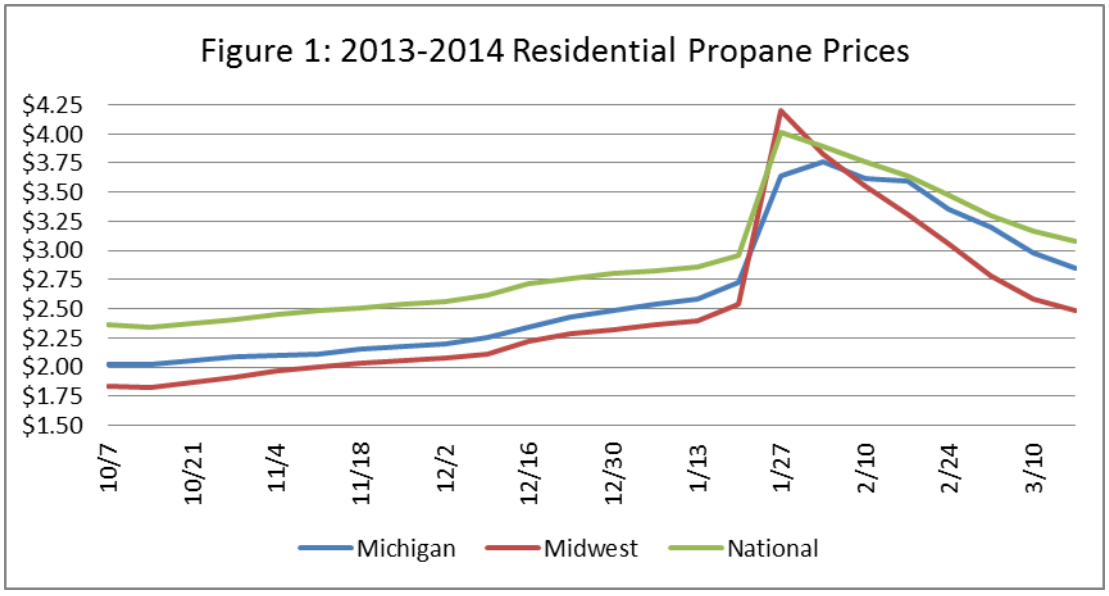
Purpose of Survey

The State Heating Oil and Propane Survey (SHOPP), is designed to collect data on State-level stocks and residential prices of No. 2 heating oil and propane during the heating season. The data are used to monitor the prices of propane and heating oil during the winter season, in an effort to maintain awareness of any price or supply irregularities that may be developing.

Residential Propane Prices

Propane prices have gradually diverged from the volatility of the oil markets as increased natural gas production has resulted in additional propane production. Despite, this separation from oil market volatility, propane prices remain highly sensitive to inventory levels and transportation, which is becoming increasingly reliant on truck and rail. Colder-than-normal weather can also put extra pressure on propane prices since there are few readily available sources of increasing supply except for imports. According to the EIA, about 6 percent of U.S. households heat with propane. In Michigan it is estimated to be closer to 9 percent, more than any other state in the country.

As seen in Figure 1, Michigan propane prices were consistently below the trend of national prices, but higher than the Midwest on average. The Michigan-Midwest price differential increased starting at the end of January and approached the national price levels in February.



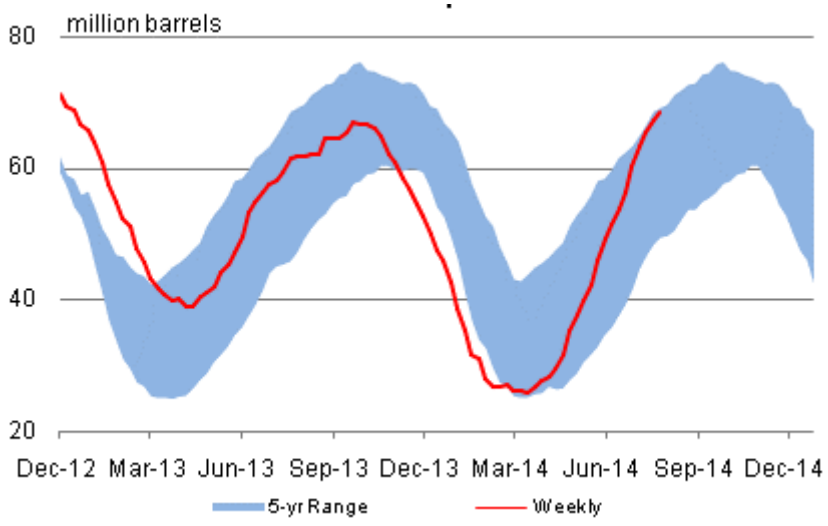
At the start of the 2013-2014 heating season, the weighted average residential price of propane in Michigan was $2.02 per gallon, excluding the 4 percent state sales tax. This was the exact same price from a year ago. As seen in the graph above, prices rose moderately until mid to late December when the increase became more pronounced and in mid-January the price of propane sky rocketed to a high of $3.76 per gallon in early February and then dropped slowly to $2.85 at the end of the heating season on March 17, 2014. It should be remembered that this is an average price and in parts of the state the price was much higher even rising above $4.50 per gallon. The average price of propane over the October to March Survey period was $2.64 per gallon in Michigan, a 29 percent increase from the survey period in 2012-2013.

2013	10/07	10/14	10/21	10/28	11/04	11/11	11/18	11/25	12/02	12/09	12/16	12/23	12/30
Michigan	2.02	2.02	2.06	2.08	2.10	2.11	2.15	2.17	2.20	2.25	2.34	2.43	2.49
Midwest	1.84	1.83	1.87	1.91	1.97	2.00	2.03	2.05	2.08	2.11	2.22	2.29	2.32
National	2.36	2.34	2.38	2.41	2.45	2.48	2.51	2.54	2.57	2.62	2.71	2.76	2.80
2014	**1/06**	**1/13**	**01/20**	**01/27**	**02/03**	**02/10**	**02/17**	**02/24**	**03/03**	**03/10**	**03/17**		
Michigan	2.54	2.58	2.72	3.64	3.76	3.62	3.60	3.35	3.20	2.98	2.85		
Midwest	2.36	2.40	2.54	4.20	3.83	3.56	3.31	3.06	2.78	2.59	2.48		
National	2.83	2.86	2.96	4.01	3.89	3.76	3.64	3.48	3.30	3.17	3.08		

Propane supply

As shown in Figure 2, the heating season began with U.S. propane stocks well below the five-year average range. According to EIA, the Nation's propane inventory was approximately 66 million barrels at the beginning of the heating season in 2013, about 9 million barrels less than propane stocks one year earlier. U.S. propane stocks remained below the 5 year-range throughout the winter. At the close of the heating season on March 28, 2014, propane stocks were 26.6 million barrels, 24 percent below the 5-year average. Stocks began a gradual recovery in April that has continued through the summer.

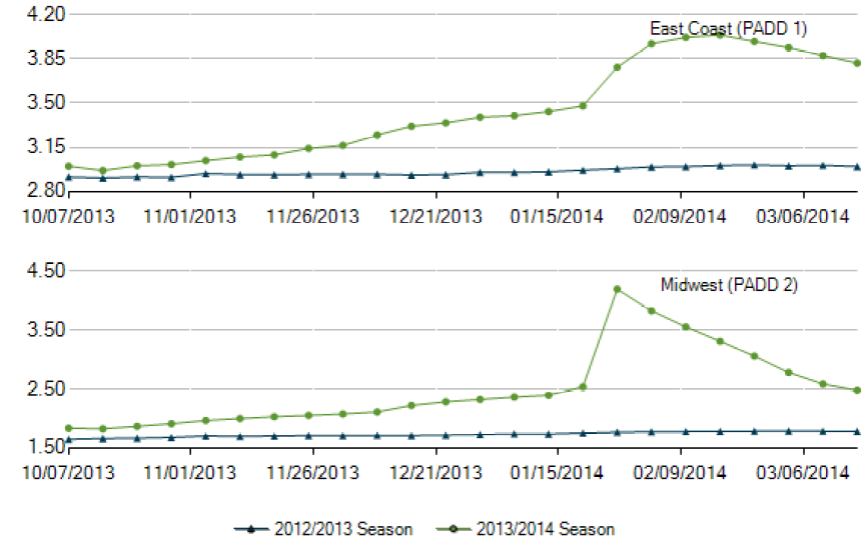
Figure 2: U.S. Propane Stocks



Source: EIA – This Week in Petroleum

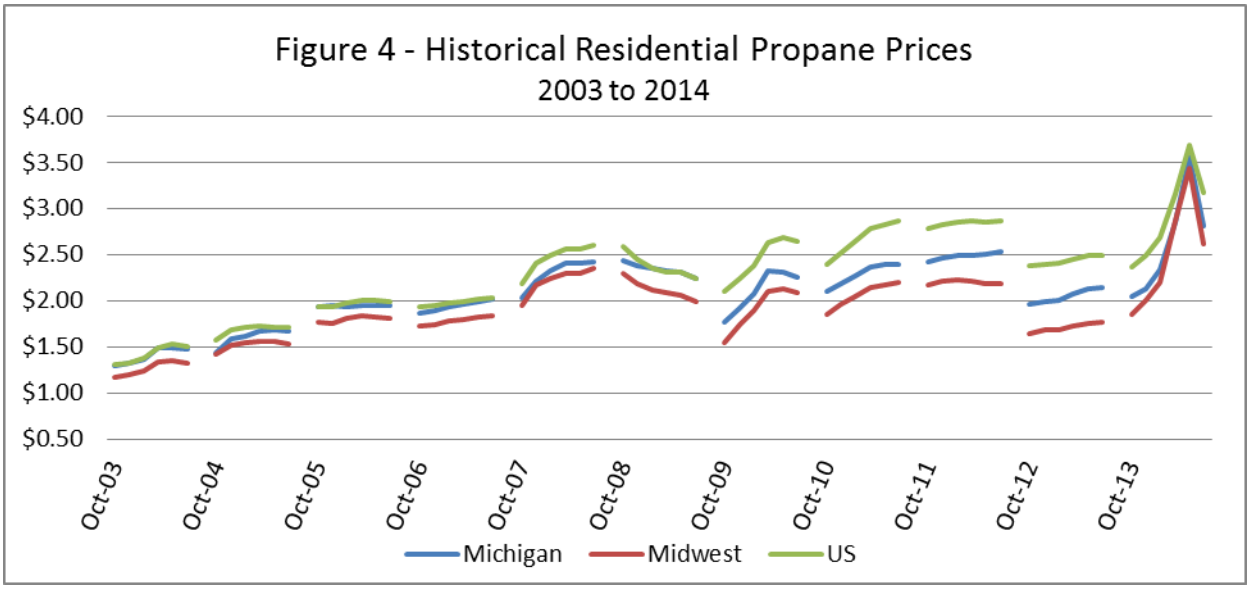
Figure 3 (below) compares the path of residential propane prices over the previous two heating seasons in the Midwest and East Coast. For 2013-2014, Midwest residential prices started slightly higher than the previous season, but by November the average prices began a clear upward trajectory, hitting a weekly peak of $4.20 per gallon the end of January. On average, residential propane prices in the Midwest were approximately 96 cents per gallon lower than prices on the East Coast during the winter heating season 2013-2014.

Figure 3: Residential Propane Prices by PADD



Source: Based on data collected by State Energy Offices.

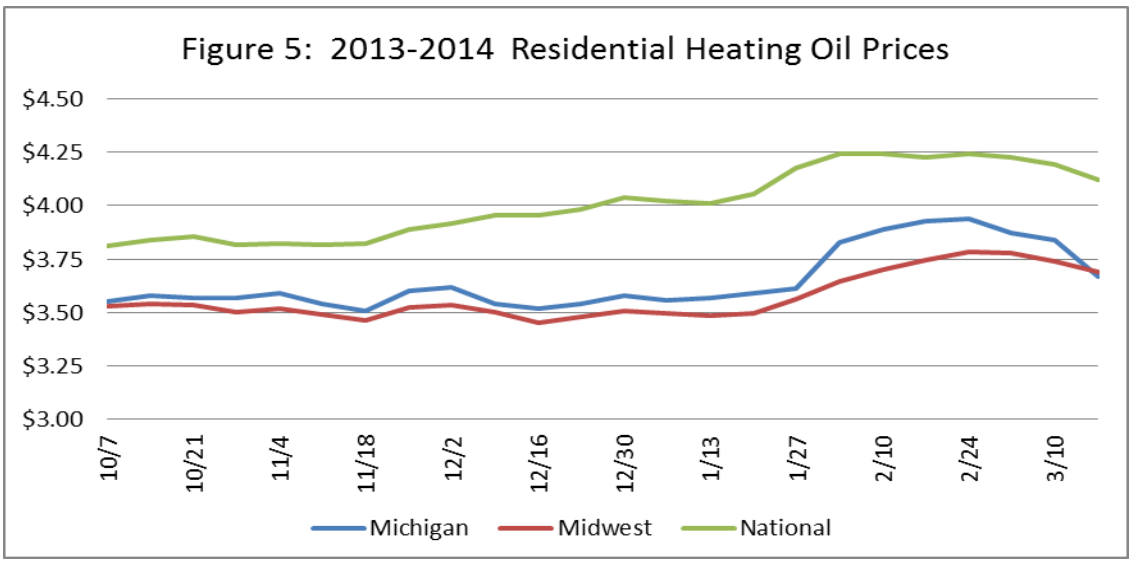
Figure 4 shows the pattern of monthly average propane prices over the previous eleven heating seasons. Prices in Michigan and the Midwest region have gradually diverged from the U.S. average due to the availability of less expensive crude oil, sourced from Canada and the Bakken formation in North Dakota. In addition, increased natural gas production has also put downward pressure on overall U.S. prices. It is estimated that over half of propane supply is now sourced from natural gas processing facilities. In the past, supply was at least 50 percent from crude oil refining operations which resulted in increased volatility and higher prices. With the recent reversal of the Cochin pipeline, however, the market will have to adjust to transport this increased NGL production to end-users going forward. Rail and truck distribution is expected to eventually fill the gap.



Residential No. 2 Heating Oil Prices

Heating oil did not see the same supply issues that propane did and remained obtainable all winter. The harsh weather with ice and snow accumulations greater than in recent winters did cause some home delivery issues, but there were no real issues in obtaining or delivering heating oil. In Michigan, heating oil usage has gradually been supplanted by natural gas and propane, and now represents less than 2 percent of the heating fuels market in Michigan. While heating oil and diesel fuel are closely related products, No. 2 heating oil is not subject to the same environmental requirements or motor fuel taxes placed on diesel fuel. Historically, heating oil prices have fluctuated a bit, often tracking the path of crude oil and are generally higher during the winter months when demand is higher.

As shown in Figure 5, heating oil prices in Michigan were slightly higher than those found throughout the Midwest, while national prices were significantly higher than both Michigan and the Midwest.



The price for heating oil for the 2013-2014 Michigan winter heating season started at $3.55 per gallon, excluding the 4 percent sales tax. This price was lower than at the same time last year. Prices in all regions followed a similar trend, peaking in February as inventories dropped and cold weather intensified. By the end of the heating season on March 24 2014, Michigan's average price was $3.67 per gallon. The average price of heating oil in Michigan over the course of the season was $3.65 per gallon, 2 percent below last season.

2013	10/07	10/14	10/21	10/28	11/04	11/11	11/18	11/25	12/02	12/09	12/16	12/23	12/30
Michigan	3.55	3.58	3.57	3.57	3.59	3.54	3.51	3.60	3.62	3.54	3.52	3.54	3.58
Midwest	3.53	3.54	3.53	3.50	3.52	3.49	3.47	3.52	3.53	3.50	3.45	3.48	3.51
National	3.81	3.84	3.86	3.82	3.82	3.82	3.82	3.89	3.92	3.96	3.95	3.98	4.04
2014	**1/06**	**1/13**	**01/20**	**01/27**	**02/03**	**02/10**	**02/17**	**02/24**	**03/03**	**03/10**	**03/17**	**03-24**	
Michigan	3.56	3.57	3.59	3.61	3.83	3.89	3.93	3.94	3.87	3.84	3.67	3.67	
Midwest	3.49	3.48	3.50	3.57	3.65	3.70	3.74	3.79	3.78	3.74	3.69	n/a	
National	4. 02	4.01	4.06	4.18	4.24	4.25	4.23	4.24	4.23	4.20	4.12	n/a	

Figure 6 shows distillate inventory levels throughout the heating season. Total distillate stocks remained well below the 5-year range throughout the 2013-2014 heating season, experiencing a low of 111 million barrels in late November. This inventory level is consistent with what might typically be seen in such severe heating season, and can also be understood by recognizing the growing demand for distillate production from increased industrial activity and a fast developing distillate export market. As distillate fuels command higher prices in international markets, there is less incentive to store them for the heating season.

Figure 6: U.S. Distillate Fuel Oil Stocks

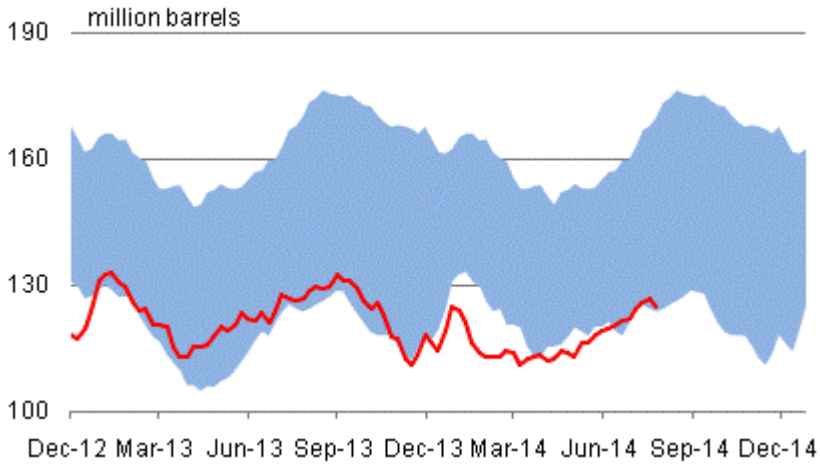


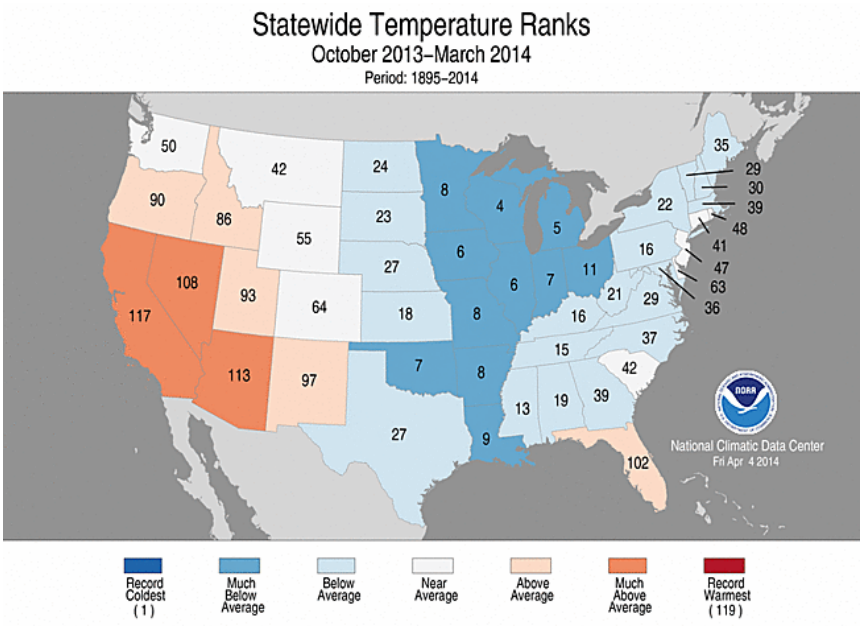
Figure 7 provides a comparison of residential heating oil prices over the 2012-2013 and 2013-2014 heating seasons for the East Coast and Midwest regions. Residential heating oil prices during the 2013-2014 season started off higher than last year and fluctuated within a range of only 8 cents. In contrast, the East Coast started the season lower than last year and gradually rose to a peak of $4.25 per gallon, 47 cents higher than the Midwest peak.

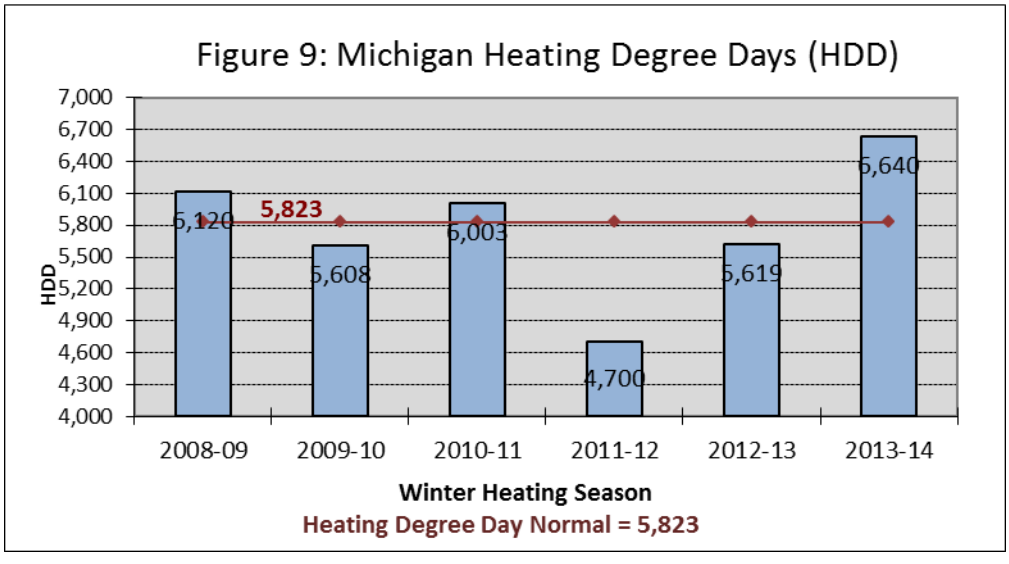
Figure 7: Residential Heating Oil Prices by PADD

Weather Summary

Figure 8 depicts the statewide temperature rankings for the United States from October 2013 – March 2014. Figure 9 shows the population weighted heating degree days for Michigan over the last six heating seasons. Temperatures in the U.S. for the 2013-2014 heating season were below the 30-year average (1971-2000) for much of the nation except for the western states. The Midwest in particular experienced unusually cold temperatures. In Michigan, this past winter heating season (Oct - March) was approximately 14 percent colder than normal.

Figure 8: U.S. Temperature Ranks





Note: To provide a more accurate picture of winter heating demand, this chart has been revised to reflect only HDDs occurring during the Michigan winter heating season (October-March), as opposed to HDD totals for the entire year.

Methodology

The EIA provided the MPSC with a list of survey participants. The sampling frame for heating oil distributors was an established list of approximately 11,000 fuel oil dealers and distributors from Form EIA-863, "Petroleum Product Sales Survey" (1989). EIA officials used a one-way stratified sample design for Michigan based on No. 2 residential distillate sales volumes. Due to limited propane supplier information, EIA statisticians developed two strata for propane dealers – large, multi-state dealers comprised the first, and a random sampling comprised the second (many sources were used to collect the names and addresses for the random sampling). EIA officials selected 21 fuel oil distributors and 27 propane dealers to participate in the 2013-2014 survey for Michigan. Appendix Six contains detailed information on the sample design.

Survey Dates -- The MPSC conducted the survey weekly on each Monday or Tuesday beginning October 7, 2013 and ending March 17th, 2014.

General Reporting -- The MPSC asked participants for the retail credit price charged to residential customers and verified changes from the reported price from the preceding survey. The No. 2 fuel oil residential price and the propane residential price are the credit prices paid for home delivery of 500 gallons. Reported prices excluded discounts and taxes. Participants reported prices to the nearest tenth of a cent (i.e., 0.895). The survey excluded sales to multi-family dwellings.

Electronic Filing -- EIA provided the MPSC with an electronic filing web form known as the EIA Survey Data Collection System. After collecting the data, MPSC staff uploaded it directly to EIA via a network connection to the Internet. Participants are listed alphabetically, identified by a seven-digit number, and prices are reported in dollars per gallon (i.e., $1.795).

Distribution of Aggregated Data -- After collecting the data, EIA officials edited and aggregated the information with surveys from the other states. The EIA published the survey results on their Web site at http://eia.doe.gov/. For more information, visit this page or contact National Energy Information Center at (202) 586-8800.

Confidentiality of Reported Data -- Survey participation by fuel distributors is mandatory under the Federal Energy Administration Act of 1974 (Public Law 93-275). The EIA is responsible for assuring confidentiality of the data. Data on this form will be kept confidential and not disclosed to the public to the extent it satisfies the criteria for exemption under the Freedom of Information Act (FOIA), 5 U.S.C. Section 552, and other regulations. It may be released to the Department of Justice or to any other federal agency for official use, which may include enforcement of federal law. The information contained on this form may also be made available to any committee of Congress, the General Accounting Office, or other Congressional agencies authorized by law. A court of competent jurisdiction may obtain this information in response to an order.

Sources:

1) Residential Heating Oil Prices by Region and State, DOE/EIA-0208 (2008-15), *Weekly Petroleum Status Report*,

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2) Wholesale Heating Oil Prices by Region and State, DOE/EIA-0208 (2008-15), *Weekly Petroleum Status Report,*

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3) Residential Propane by Region and State, DOE/EIA-0208 (2008-15), *Weekly Petroleum Status Report,*

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