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Michigan Residential
No. 2 Fuel Oil and Propane Price Survey
for the 1990/91 Heating Season

Final Report

October 1991

DISCLAIMER

Prepared by
The Michigan Public Service Commission
Office of Planning Policy and Evaluation

Michigan Department of Commerce

INTRODUCTION

This report summarizes the results of a survey of home heating oil and propane prices over the 1990/1991 heating season in Michigan. The survey was conducted under a cooperative agreement between the State of Michigan, Michigan Public Service Commission and the U.S. Department of Energy (DOE), Energy Information Administration (EIA), and was funded by a grant from EIA.

From October 1990 through May 1991, participating dealers/distributors were called and asked for their current residential retail prices of No. 2 home heating oil and propane. This information was then transmitted to the EIA, bi-monthly using an electronic reporting system called Petroleum Electronic Data Reporting Option (PEDRO).

The survey was conducted using a sample provided by EIA of home heating oil and propane retailers which supply Michigan households. These retailers were contacted the first and third Mondays of each month. The sample was designed to account for distributors with different sales volumes, geographic distributions and sources of primary supply. It should be noted that this sample is different from the sample used in prior year surveys.

In addition to assisting the EIA meet its Congressional mandate of providing an accurate and timely energy data, the state has made use of the price information to monitor price changes that occurred during the Gulf War.

The DOE has provided grants to a total of 26 states to cover the costs of regular collection of this price data. Michigan's participation in this survey program began in 1979. Midwest states participating in the 1990/91 survey include Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin.

Any questions on this survey should be directed to Jeffrey R. Pillon, Michigan Public Service Commission P.O. Box 30221, Lansing, MI 48909. Phone: (517) 334-6431.

RETAIL PRICES FOR NO. 2 HEATING OIL AND PROPANE

Retail home heating oil prices began the 1990/91 heating season with the highest prices seen in five years as a result of the sharp increases in crude oil prices following Iraq invasions of Kuwait. In Michigan the average price was $1.25 a gallon on October 1, 1990 excluding the four percent Michigan sales tax. Prices peaked later that month, averaging $1.30 on October 15. Prices then declined through the balance of the heating season with the lowest price reported on March 18, 1991 of $.93 per gallon, (see Figure and Table 1). The price range (i.e., the spread between the highest and lowest reported price) was the greatest in November when the range reached 35.9 cents per gallon.

The retail price of propane averaged $.97 a gallon (excluding sales tax) on October 1, peaking in mid-October at $1.05 and falling through the remainder of the heating season. The price averaged $.89 a gallon on March 18, 1991 (see Figure and Table 2). The price range was the greatest in January when the range reached 59.5 cents per gallon. As retail prices fell, the price range narrowed to 34 cents at the end of the heating season closer to the range in prices seen during October and November.

The range in prices is a result of differences in the rate at which reductions in wholesale price changes are reflected in retail prices, differences in wholesale prices between major oil companies, the degree of mark-up between wholesale and retail and differences in transportation expenses.

A COMPARISON OF MICHIGAN, REGIONAL AND NATIONAL PRICES

Michigan No. 2 fuel oil prices for residential customers have typically been below the national average prices over the 1985 to 1990 period. The average annual price in Michigan was three cents below the national average over this time frame, (see Figure and Table 3).

Figure and Table 3 also show the longer term price movements for home heating oil. The price drop seen in 1986 is a result of the collapse in crude oil prices that occurred that year. The upward price trend seen over the following period reflects crude oil price increases and the general effect of inflation since all prices are shown in nominal dollars. The price spike seen in the winter of 1989/90 resulted from much colder than normal weather that occurred between the end of November and early January and natural gas curtailments in the Northeast that contributed to the distribution problems. The price increases that occurred over the winter of 1990/91 are due to the increases in crude oil prices as a result of the Gulf War.

Looking at a regional level, Michigan's No. 2 fuel oil prices are the highest of seven Midwest states, (see Table 6). On the average, over the 1990/91 heating season, Michigan's price was 4.1 cents per gallons higher than the Midwest average. Part of the higher cost may be due to higher transportation cost for trucking and barge shipments to

the northern part of the state where heating oil use is proportionately greater. Proximity to pipeline terminals generally tends to hold down prices compared to locations further removed.

Propane Prices show a different regional price pattern from heating oil (see Table 7). Ohio has the highest average propane price followed by Michigan.

CRUDE OIL AND WHOLESALE PRICES

The retail price of No. 2 fuel oil is driven by the underlying wholesale price and the price of crude oil from which it is derived. Looking at the difference between retail and wholesale prices shows an average gross margin over the heating season of 35 cents per gallon. This figure (the difference between retail and wholesale prices) reflects the cost of transportation, distribution, taxes, insurance, other overhead business expenses, and profit. Seasonal fluctuation in the carry costs of fuel held in inventory is also reflected in this gross margin. Gross margins (retail/wholesale) varied from a low of 24 cents to a high of 41 cents. Some of this variation also reflects a lag between wholesale and retail price changes due to different reporting dates and turn over of product held in inventory.

The average difference between crude oil and wholesale fuel oil prices was 15 cents a gallon. This difference is based on the West Texas Intermediate (WTI) grade of crude oil as a price bench mark, (see Figure and Table 4). Retail prices follow the general decline in wholesale and crude oil cost over the heating season. Crude oil has different qualities and prices which affect the production cost. The gross difference between crude oil and wholesale prices reflects the average cost of shipping, refining other business expenses, transportation charges for pipeline, rail or barge shipments to terminal locations, and profit. The gross margin (crude oil/wholesale) varies from a high of 21 cents to a low of 8 cents. Some of this variation reflects the lag between wholesale and crude oil prices due to crude oil price contracts for oil in transit and the rate of turn over in refinery inventories.

Propane prices showed a similar pattern to fuel oil prices, (see Figure and Table 5). Retail prices, however, did not decline as much as Midwest wholesale and crude oil prices towards the end of the heating season. The gross margin reached a high of 65 cents a gallon in early February 1991, from the low of 36 cents a gallon on October 1. By the end of the heating season, they declined to 56 cents, still considerably above the differences seen in October and early November.

The difference between wholesale propane and crude oil prices is negative, which means crude oil is valued higher than propane. This is because propane and other Liquefied Petroleum Gases (LPG) only make up four percent of the petroleum products produced from a barrel of crude oil in 1990. With the much larger demand for gasoline and distillate fuel oil, LPG is priced essentially as a by product of refinery production. In Michigan, LPG accounted for 12 percent of total petroleum use in 1989 with the residential sector the largest user, consuming 439 million gallons or 47 percent of total use, followed by the industrial sector which used 402 million gallons or 43 percent of the total.

WEATHER INFORMATION

The demand for residential fuel oil and propane is a function of the average temperatures over the heating season. Weather related demand for heating fuels is typically measured through the use of an indicator called "heating degree days" which is the numeric difference between 65 degrees and the daily mean temperature. Accumulation of these differences gives a relative indication of the heating fuel demand. Figure 6 and Table 8 show the heating degree days based on the Lansing weather station over the 1991 heating season in comparison with the 30 year normal and the 1989-90 heating season. As can be seen in Figure 6, weather during the 1990-91 heating season was generally warmer than normal and considerably warmer than November, December, and January of 1989. The result of the warmer weather would be a reduction in the overall demand for heating fuels which would have a downward pressure on price.

METHODOLOGY

Thirty-six fuel oil distributors and 22 propane dealers (including one dealer who sells both) were surveyed the first and third Mondays of each month over the heating season. The data was summarized and disseminated by the EIA to the States, Congress, and other government agencies. This provided analysts with information necessary to monitor heating fuels price changes that resulted from the Gulf War.

General Reporting

The selected companies were requested to report the average price of residential No. 2 fuel oil and propane sold to customers in the State. Prices were reported to the nearest tenth of a cent; for example, 1.095. The Annual Propane Sales Volumes was reported in thousands of gallons and rounded to the nearest thousand. For example, 6,500 gallons was reported as 7 or 6,400 gallons was reported as 6.

The No. 2 Fuel Oil Residential Price is defined as the price paid for home delivery of No. 2 fuel oil. Prices were reported exclusive of discounts for payment of cash or within a short period of time.

Propane Residential Price is defined as the "bulk keep full" price paid for home delivery of consumer grade propane intended for use in space heating, cooking, or hot water heaters in residences. Prices were reported exclusive of discounts for payment of cash or within a short period of time. If the "bulk keep full" price does not apply to a particular company, the usual price type ("will call" or other) was indicated.

For the purpose of this program, sales to apartment buildings or other multi-family dwellings was excluded.

Each propane supplier also reported, for the first report only, the approximate annual sales of propane to residential customers in Michigan during the period of September 1, 1989 through August 31, 1990. This was used to establish weights used in developing the average volumetric weighted price.

Survey Dates

The survey report dates are the first and third Mondays of each month. The specific survey dates were:

October 1 and 15, 1990
November 5 and 19, 1990
December 3 and 17, 1990
January 7 and 21, 1991
February 4 and 18, 1991
March 4 and 18, 1991
April 1 and 15, 1991
May 6, 1991

The companies selected to participated were contacted prior to the first date (October 1, 1990) to notify the respondents of the data elements that would be collected and to identify a mutually agreeable time of telephone calls to confirm the company's contact person provided by the EIA.

Sampling Methodology and Estimation Procedures

Both the survey sample and method for estimating the average price was developed by EIA and provided to the states. The following was abstracted from the Winter Fuels Report.

To estimate aggregate propane and No. 2 heating oil price data, the sample weight and volume sales data were applied to the reported price, summed and divided by the sum of the weighted volume. This value was reported as the Michigan price in the Winter Fuels Report.

For the No. 2 heating oil price data, a sample design similar to that used for the Form EIA-782B, "Resellers'/Retailers' Monthly Petroleum Product Sales Report" sample design was used. The sampling frame was an extract of approximately 11,000 companies from the Form EIA-863, "Petroleum Product Sales Survey" conducted in 1989 and containing 1988 sales volume information. A one-way stratified sample design using No. 2 residential distillate from sales volumes for Michigan was used. Stratum boundaries were determined by the Dalenius-Hodges procedure.

Since no volume sales information existed to predetermine the volume sales of propane dealers, two strata for propane dealers was used. A certainty stratum of the known, large, multi-State dealers was created. These companies were identified using establishment lists obtained in deriving the frame. All other dealers were in a second stratum and a random

sample from this stratum was selected. Sample weights were calculated as the inverse of the probability (N/n). The name and address list sampling frame was constructed from numerous sources. See the Winter Fuel Report Note 4 for further detail.

Dissemination of Aggregated Data

After the data was received from Michigan, they were edited and aggregated by the EIA and entered into the Electronic Publication (EPUB) system within four (4) working days of receipt of the States' reports. The survey results were also published by EIA in the EIA Winter Fuels Report (DOE/EIA-0538) which is available by contacting EIA's National Energy Information Center, phone (202) 586-8800.

Confidentiality of Reported Data

The EIA is responsible for assuring confidentiality of the companies' data to the extent required by law. The data obtained from the EIA selected companies will be kept confidential and not disclosed to the public to the extent that it satisfies the criteria for exemption under the Freedom of Information Act (FOIA), 5 U.S.C. S552, the DOE regulations, 10 C.F.R. S1004.11, implementing the FOIA, and the Trade Secrets Act, 18 U.S.C. S1905.

Response to this survey was mandatory under the Federal Energy Administration Act of 1974 (Public Law 93-275). Data collected for this survey are considered to be confidential and will not be released to the public in a company identifiable manner. A recent decision by the Office of Legal Counsel of the Department of Justice concluded that the EIA Administrator is required to provide company-specific data collected or maintained by EIA to any requesting Federal Government department or agency official for official use (see Section 12f of the Federal Energy Administration Act of 1974, 15 U.S. C. 771(f)). This ruling revokes any promises of interagency confidentiality expressed in the past.

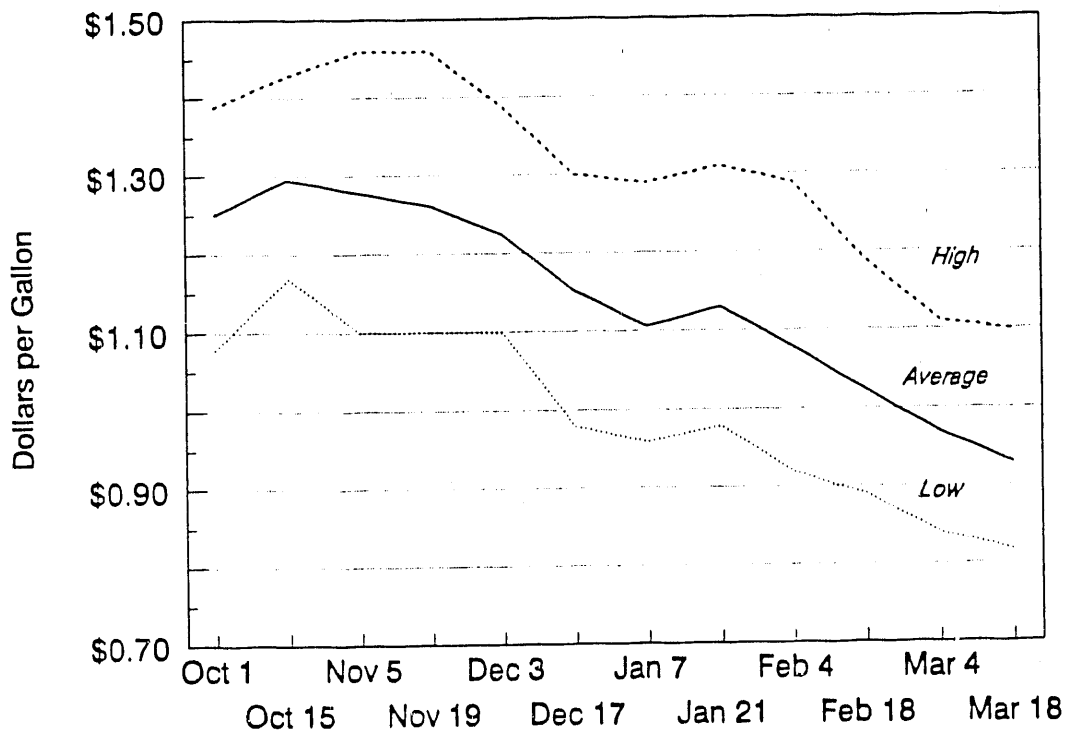
LIST OF TABLES AND FIGURES

Figure 1 and Table 1

Michigan No. 2 Fuel Oil Prices

(Residential Price Excluding Taxes)

1990/91 Heating Season



Date	Low	Average	High
October 1	107.9	125.1	138.9
October 15	116.9	129.6	142.9
November 5	110.0	127.8	145.9
November 19	110.0	126.1	145.9
December 3	109.9	122.4	138.9
December 17	98.0	115.2	130.0
January 7	95.9	110.6	128.9
January 21	97.9	113.0	131.0
February 4	92.0	107.9	128.9
February 18	89.0	102.3	118.9
March 4	84.0	97.0	111.0
March 18	81.9	93.0	109.9

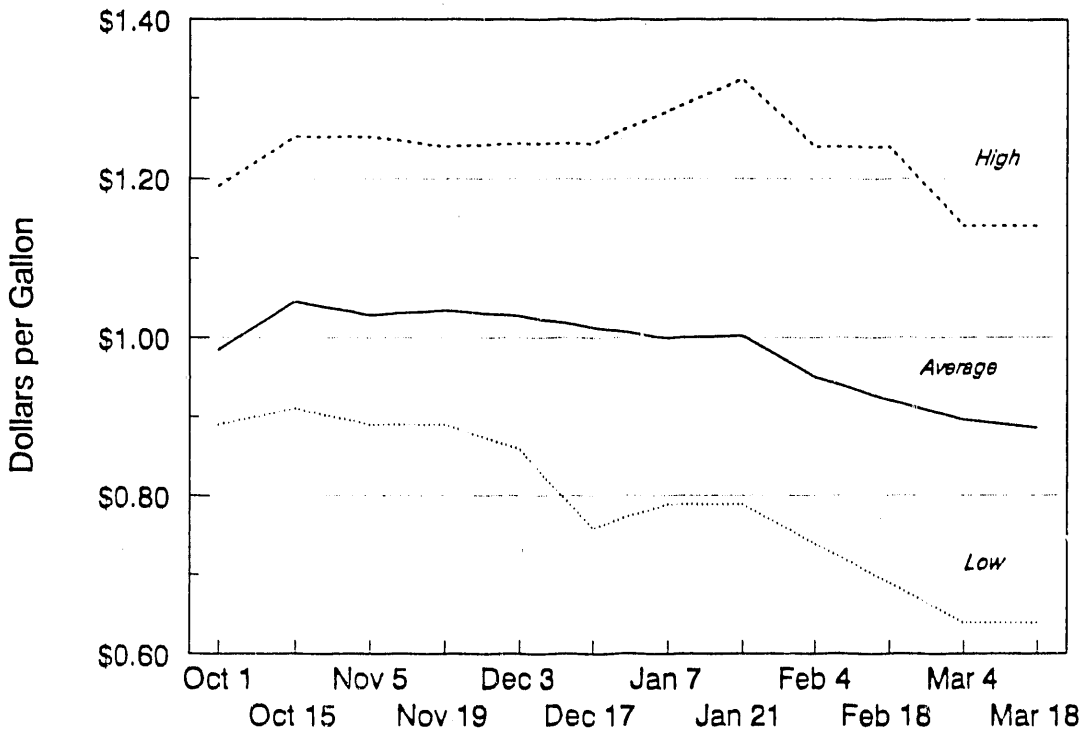
Source: Michigan Public Service Commission, State Heating Oil and Propane Price (SHOPP) Survey, October 1991.

Figure 2 and Table 2

Michigan Propane Prices

(Residential Price Excluding Taxes)

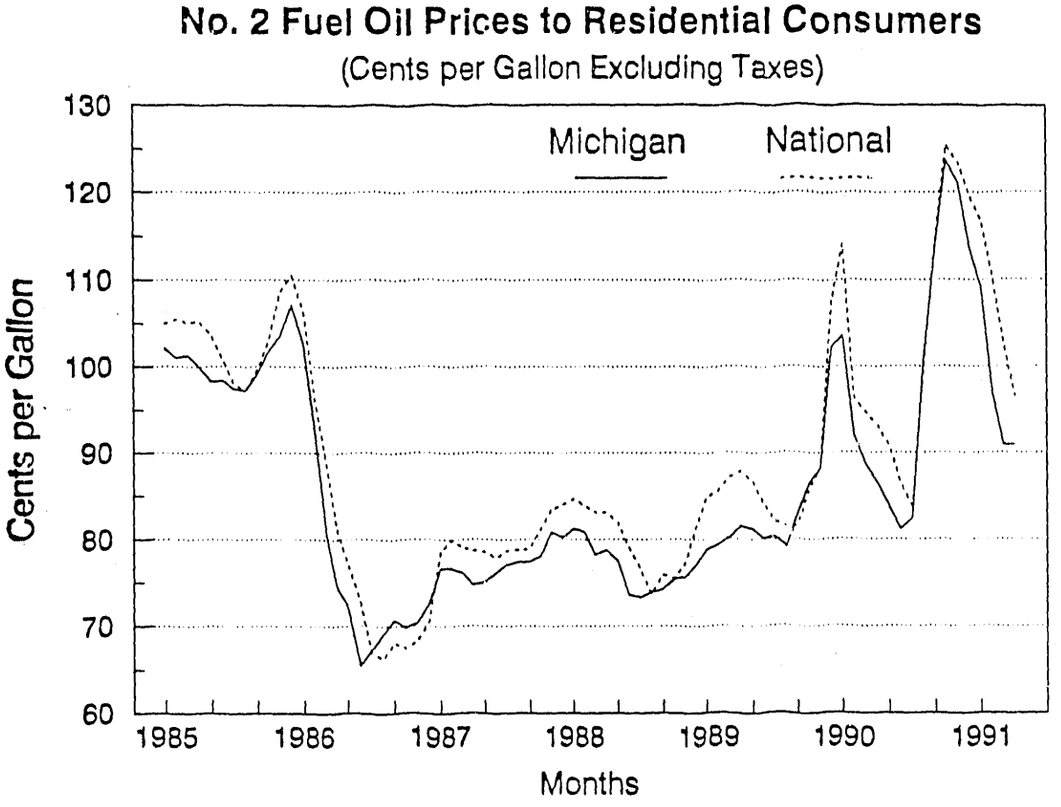
1990/91 Heating Season



Date	Low	Average	High
October 1	89.0	98.5	119.0
October 15	91.0	104.6	125.2
November 5	89.0	102.9	125.2
November 19	89.0	103.5	124.0
December 3	85.9	102.8	124.4
December 17	75.9	101.4	124.4
January 7	78.9	100.0	128.4
January 21	78.9	100.3	132.4
February 4	73.9	95.1	124.0
February 18	68.9	92.2	124.0
March 4	63.9	89.7	114.0
March 18	63.9	88.6	114.0

Source: Michigan Public Service Commission, State Heating Oil and Propane Price (SHOPP) Survey, October 1991.

Figure 3 & Table 3



Year	Michigan	National
1985	100.6	103.5
1986	75.6	77.5
1987	77.2	79.8
1988	76.6	79.7
1989	83.4	86.9
1990	99.1	103.3
1991*	97.0	106.6

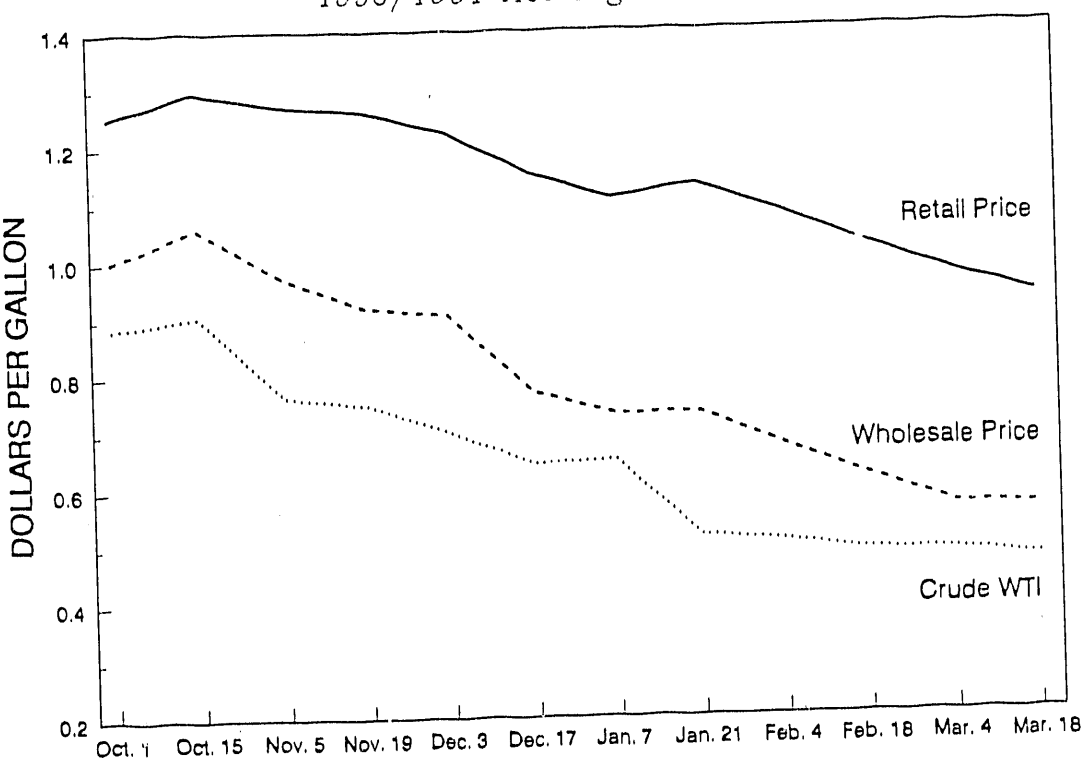
* Based on a four month average

Source: U.S. Department of Energy, Energy Information Administration Petroleum Marketing Monthly Table 37

Figure & Table 4

NO.2 HEATING OIL
RESIDENTIAL, WHOLESALE & CRUDE OIL COST COMPARISON

1990/1991 Heating Season



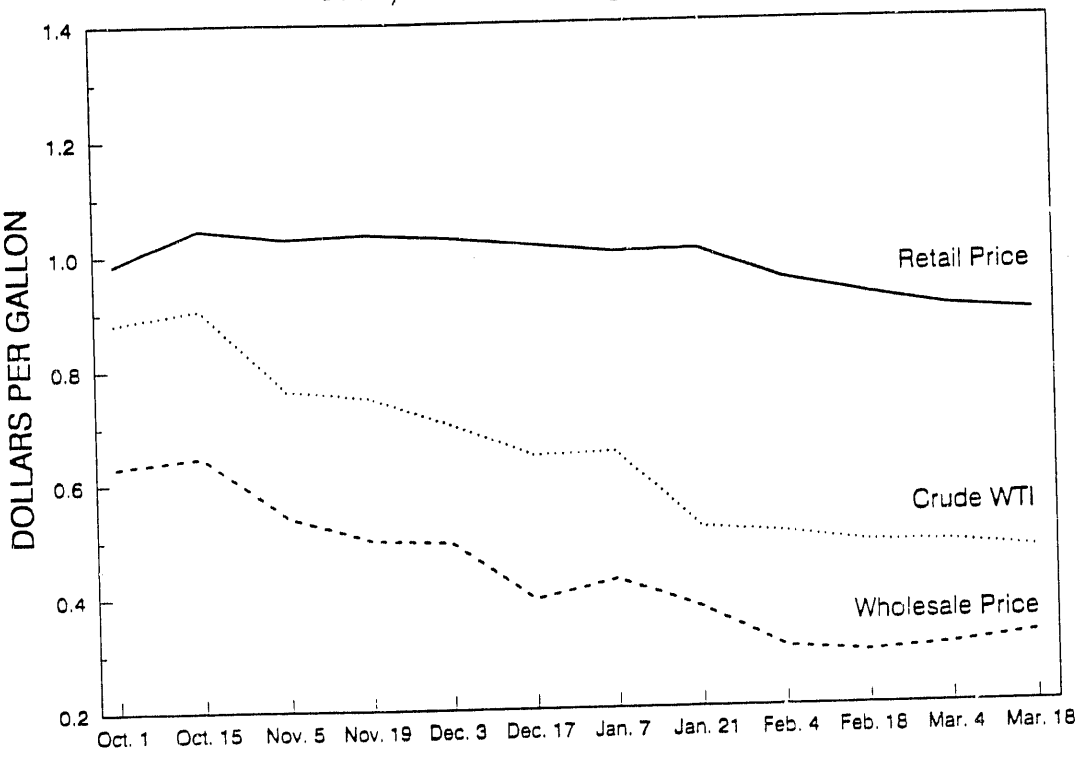
Date	Michigan Retail Price	Michigan Wholesale Price	Retail/ Wholesale Diff.	Crude WTI	Wholesale/ WTI Crude Diff.	$/barrel	
10/01	$1.251	$1.001	$.250	$.883	$.118	37.08	
10/15	1.296	1.058	.238	.905	.153	38.00	
11/05	1.270	.971	.299	.763	.208	32.05	
11/19	1.261	.919	.342	.749	.170	31.45	
12/03	1.224	.906	.318	.700	.206	29.40	
12/17	1.152	.770	.382	.645	.125	27.10	
1/07	1.106	.730	.376	.649	.081	27.25	
1/21	1.130	.731	.399	.515	.216	21.63	
2/04	1.079	.672	.407	.505	.167	21.23	
2/18	1.023	.617	.406	.486	.131	20.41	Est.
3/04	.970	.564	.406	.484	.080	20.33	
3/18	.930	.561	.369	.471	.090	19.78	
Avg.	1.141	.792	.349	.646	.145	27.14	

Source: EIA Winter Fuel Report, Table 6 for residential heating oil price Table 8 for wholesale heating oil price and Table 10 for the West Texas Intermediate (WTI) Crude Oil Price. DOE/EIA-0538, Washington D.C.

Figure & Table 5

PROPANE
RESIDENTIAL, WHOLESALE & CRUDE OIL COST COMPARISON

1990/1991 Heating Season



Date	Michigan Retail Price	Midwest Wholesale Price	Retail/ Wholesale Diff.	Crude WTI	Wholesale/ WTI Crude Diff.	$/barrel	
10/01	$.985	$.630	$.355	$.883	($.253)	37.08	
10/15	1.046	.646	.400	.905	-.259	38.00	
11/05	1.029	.541	.488	.763	-.222	32.05	
11/19	1.035	.500	.535	.749	-.249	31.45	
12/03	1.028	.494	.534	.700	-.206	29.40	
12/17	1.014	.393	.621	.645	-.252	27.10	
1/07	1.000	.427	.573	.649	-.222	27.25	
1/21	1.003	.375	.628	.515	-.140	21.63	
2/04	.951	.304	.647	.505	-.201	21.23	
2/18	.922	.293	.629	.486	-.193	20.41	Est.
3/04	.897	.303	.594	.484	-.181	20.33	
3/18	.886	.322	.564	.471	-.149	19.78	
Avg.	.983	.436	.547	.646	-.211	27.14	

Source: EIA Winter Fuel Report, Table 7 for residential propane price Table 9 for wholesale propane price and Table 10 for the West Texas Intermediate (WTI) Crude Oil Price. DOE/EIA-0538, Washington D.C.

Table 6

Residential Heating Oil Prices by Region and State
(Cents per Gallon)

Region/State	1990/91 Heating Season											
	10/01	10/15	11/05	11/19	12/03	12/17	01/07	01/21	02/04	02/18	03/04	03/18[P]
Average	127.9	133.2	130.4	128.9	128.5	123.9	120.5	122.6	118.0	114.5	109.7	105.4
East Coast (PADD I)	129.6	134.8	131.9	130.3	130.3	126.6	123.2	125.4	121.2	118.1	113.5	108.8
New England (PADD IX)	130.6	134.6	128.3	125.7	126.8	121.4	118.2	121.1	117.3	114.9	109.2	105.0
Connecticut	128.5	134.7	135.5	132.7	133.1	128.0	125.4	126.6	124.0	121.6	115.5	110.5
Maine	127.7	131.4	118.6	112.6	116.1	106.9	108.6	111.9	105.6	104.3	97.5	93.0
Massachusetts	133.4	136.2	126.4	124.3	125.4	121.2	116.0	120.8	116.6	113.7	108.9	104.7
New Hampshire	129.2	132.4	127.4	124.6	126.0	116.6	114.8	117.6	112.4	110.0	101.7	97.6
Rhode Island	131.3	134.0	130.1	129.5	130.6	124.9	123.2	123.6	121.2	120.8	114.8	111.3
Vermont	125.5	132.7	131.1	130.5	128.6	126.0	122.4	121.0	119.8	116.8	112.5	109.7
Central Atlantic (PADD IY)	129.5	135.1	133.9	132.9	132.4	129.7	126.2	128.2	123.9	120.6	116.6	111.7
Delaware	123.0	130.3	126.4	124.2	124.6	118.7	116.9	118.6	114.9	112.8	107.5	102.0
District of Columbia	123.1	135.0	135.6	135.1	136.1	132.4	128.8	128.2	125.4	122.0	118.2	115.4
Maryland	126.9	131.9	130.9	129.4	130.0	125.7	123.2	124.4	118.8	116.4	112.0	107.2
New Jersey	131.7	137.7	136.0	134.1	134.6	128.8	127.2	129.6	125.0	122.9	117.6	112.2
New York	134.2	140.0	139.2	138.5	136.6	136.6	132.0	133.9	129.4	126.5	123.7	118.6
Pennsylvania	121.4	126.6	125.1	124.1	125.2	120.3	117.4	119.6	115.9	111.1	106.0	101.6
Lower Atlantic (PADD IZ)	126.5	132.5	129.6	127.3	126.6	121.4	118.3	118.1	113.1	109.3	103.9	99.7
North Carolina	125.7	130.7	127.9	126.0	124.3	120.1	117.8	118.4	112.2	109.4	104.2	100.5
Virginia	127.5	134.6	131.6	128.7	129.1	122.7	118.9	117.8	114.1	109.2	103.5	98.9
Midwest (PADD II)	119.8	125.9	123.2	121.9	119.7	111.3	107.3	109.6	103.0	97.6	92.0	89.3
Illinois	120.5	126.5	120.8	118.9	116.9	107.7	103.3	105.3	99.0	92.5	88.0	85.2
Indiana	123.0	129.5	123.0	123.0	120.2	110.2	107.2	111.2	102.6	98.1	91.6	89.5
Iowa	116.3	119.2	118.6	117.2	113.2	107.0	96.8	100.1	93.4	87.6	82.0	78.9
Michigan	125.1	129.6	127.8	126.1	122.4	115.2	110.6	113.0	107.9	102.3	97.0	93.0
Minnesota	116.9	124.3	124.5	124.2	122.5	112.8	108.9	111.8	103.6	98.0	90.9	89.1
Ohio	122.3	129.0	124.8	120.7	120.2	113.2	107.6	108.4	102.2	97.0	91.8	89.6
Wisconsin	115.7	122.0	120.1	119.8	117.7	109.5	107.6	109.3	103.5	98.5	93.4	90.8

P=Preliminary data.
NA=Not available.
Source: Based on data collected by State Energy Offices.

Table 7

Residential Propane Prices by Region and State
(Cents per Gallon)

Region/State	1990/91 Heating Season											
	10/01	10/15	11/05	11/19	12/03	12/17	01/07	01/21	02/04	02/18	03/04	03/18[P]
Average	104.2	108.3	106.0	104.6	103.8	100.1	100.1	100.3	95.7	92.0	88.7	88.1
East Coast (PADD I)	126.3	129.6	129.2	128.3	128.3	127.3	127.5	127.2	124.6	121.2	118.3	117.6
New England (PADD IX)	122.9	127.2	130.5	127.5	129.1	129.0	130.7	129.3	126.7	123.8	119.3	116.5
Connecticut	129.2	129.9	134.8	130.8	130.2	128.1	127.5	125.9	122.8	119.3	117.9	117.6
Maine	119.9	121.6	127.4	123.7	128.2	128.1	138.3	133.6	131.5	130.6	121.6	121.4
Massachusetts	124.8	130.4	132.8	133.2	133.3	131.7	130.6	129.6	127.5	125.1	122.5	119.7
New Hampshire	123.5	128.1	132.5	123.3	124.6	128.3	126.8	126.4	123.3	119.3	117.7	113.7
Rhode Island	132.0	134.8	139.9	141.0	138.5	147.7	141.5	145.3	136.8	137.5	131.6	128.5
Vermont	117.2	126.3	125.0	126.5	128.7	128.0	128.4	129.7	126.7	122.4	115.3	119.2
Central Atlantic (PADD IY)	134.2	137.7	136.7	136.1	136.0	136.4	135.6	135.9	133.5	130.9	128.8	128.4
Delaware	123.4	132.0	129.8	129.7	129.1	127.2	127.3	127.0	126.5	122.1	116.7	116.5
Maryland	128.0	135.2	135.5	135.6	133.4	136.1	135.7	135.8	135.0	133.1	125.9	125.3
New Jersey	135.6	137.7	137.7	137.8	137.8	135.4	134.9	136.9	133.2	129.1	125.8	125.1
New York	144.3	144.8	143.3	142.5	143.3	143.7	142.3	143.1	140.1	139.6	139.1	139.1
Pennsylvania	119.9	125.9	124.8	123.4	123.5	124.0	123.4	122.0	120.1	113.2	113.9	112.9
Lower Atlantic (PADD IZ)	122.6	124.7	121.2	122.2	120.6	117.2	116.9	117.3	114.4	109.7	107.7	107.0
North Carolina	122.7	125.8	120.4	120.4	118.6	114.8	115.7	115.8	112.1	107.4	105.0	102.1
Virginia	122.4	122.0	122.9	126.5	125.0	122.6	119.5	120.7	119.6	115.0	114.0	118.2
Midwest (PADD II)	92.5	97.1	93.8	92.1	90.8	85.7	85.6	86.0	80.5	76.6	73.1	72.5
Illinois	93.8	96.7	92.4	91.6	88.3	82.2	83.5	83.8	77.2	75.1	72.8	72.4
Indiana	92.8	99.5	99.4	99.5	99.2	95.8	96.7	95.8	93.2	90.6	89.2	87.8
Iowa	78.5	83.8	77.3	76.6	72.8	68.1	64.6	67.0	58.3	56.9	52.7	52.8
Kansas	80.1	85.7	80.9	79.5	75.3	67.0	67.6	67.9	61.6	53.5	52.5	53.5
Michigan	98.5	104.6	102.9	103.5	102.8	101.4	100.0	100.3	95.1	92.2	89.7	88.6
Minnesota	99.2	101.9	96.8	93.6	94.4	87.1	86.5	86.9	82.2	79.5	75.3	75.7
Missouri	90.1	95.8	92.4	88.8	87.5	83.5	82.4	81.4	76.5	72.2	69.0	68.1
Nebraska	75.1	80.8	75.7	74.9	72.0	66.6	66.9	66.1	60.3	54.4	51.0	51.6
North Dakota	77.2	82.2	79.5	78.9	78.5	72.8	75.8	77.0	71.4	63.7	57.4	54.8
Ohio	113.5	119.4	118.4	118.3	116.1	113.6	116.6	118.9	115.6	111.7	104.1	101.8
South Dakota	74.3	77.5	76.8	75.9	75.2	71.7	71.5	70.6	64.7	58.4	56.8	56.0
Wisconsin	97.7	101.6	100.4	97.2	98.3	91.1	91.9	90.8	86.2	81.1	77.7	77.1

P=Preliminary data.
Source: Based on data collected by State Energy Offices.

Figure 6

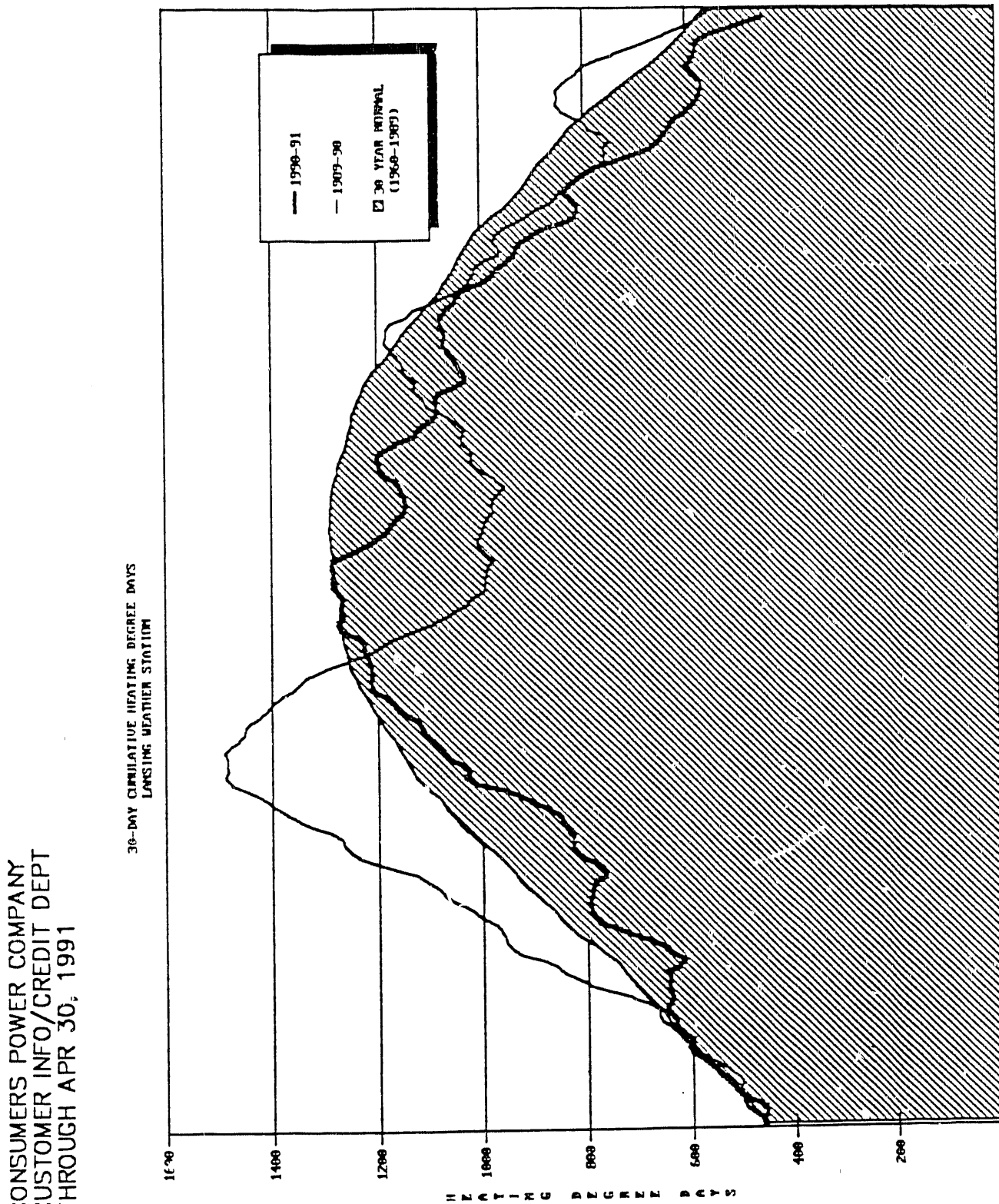

CONSUMERS POWER COMPANY
CUSTOMER INFO/CREDIT DEPT
THROUGH APR 30, 1991
30-DAY CUMULATIVE HEATING DEGREE DAYS
LANSING WEATHER STATION
1990-91
1989-90
30 YEAR NORMAL
(1960-1989)
HEATING DEGREE DAYS
1600
1400
1200
1000
800
600
400
200
0
NOV 1 DEC 1 JAN 1 FEB 1 MAR 1 APR

Table 8

30 DAY CUMULATIVE DEGREE DAYS
1990–91

30 DAYS ENDING WITH DAY–	NOVEMBER			% CHANGE THIS YR TO		DECEMBER			% CHANGE THIS YR TO		JANUARY			% CHANGE THIS YR TO		FEBRUARY			% CHANGE THIS YR TO		MARCH			% CHANGE THIS YR TO		APRIL			% CHANGE THIS YR TO	
	LAST YEAR	THIS YEAR	NORM	LAST	NORM	LAST YEAR	THIS YEAR	NORM	LAST	NORM	LAST YEAR	THIS YEAR	NORM	LAST	NORM	LAST YEAR	THIS YEAR	NORM	LAST	NORM	LAST YEAR	THIS YEAR	NORM	LAST	NORM	LAST YEAR	THIS YEAR	NORM	LAST	NORM
1	455	462	463	2	(0	956	673	801	(30	(16	1488	1069	1155	(28	(7	976	1286	1285	32	0	1127	1049	1227	(7	(15	840	835	922	(1	(9
2	464	462	470	(0	(2	958	706	818	(26	(14	1478	1080	1167	(27	(7	990	1261	1288	27	(2	1123	1027	1220	(9	(16	822	823	912	0	(10
3	481	455	478	(5	(5	966	738	833	(24	(11	1462	1093	1168	(25	(6	1002	1234	1290	23	(4	1141	1028	1212	(10	(15	803	809	905	1	(11
4	496	455	489	(8	(7	978	776	846	(21	(8	1451	1106	1178	(24	(6	1007	1210	1290	20	(6	1148	1038	1200	(10	(14	785	791	897	1	(12
5	502	483	499	(4	(3	999	783	856	(22	(9	1449	1113	1168	(23	(6	1002	1195	1293	19	(8	1152	1046	1189	(9	(12	769	772	889	0	(13
6	501	505	509	1	(1	1014	790	866	(22	(9	1437	1120	1195	(22	(6	996	1179	1294	18	(9	1159	1053	1179	(9	(11	758	733	878	(3	(17
7	505	516	520	2	(1	1033	794	878	(23	(10	1421	1138	1202	(20	(5	995	1169	1293	17	(10	1174	1066	1169	(9	(9	758	696	866	(8	(20
8	502	528	529	3	(0	1058	792	892	(25	(11	1406	1158	1210	(18	(4	987	1160	1293	18	(10	1184	1070	1161	(10	(8	759	666	856	(12	(22
9	510	540	540	6	0	1075	788	905	(27	(13	1397	1166	1217	(17	(4	977	1146	1293	17	(11	1181	1066	1152	(10	(7	750	651	847	(13	(23
10	527	550	551	4	(0	1085	788	919	(27	(14	1382	1183	1223	(14	(3	980	1142	1291	17	(12	1181	1070	1142	(9	(6	759	643	838	(15	(23
11	545	564	564	3	0	1104	780	930	(29	(16	1362	1205	1232	(12	(2	978	1146	1290	17	(11	1174	1076	1131	(8	(5	791	633	828	(20	(24
12	570	579	577	2	0	1123	766	939	(32	(18	1350	1210	1238	(10	(2	965	1149	1289	19	(11	1140	1077	1120	(6	(4	797	626	813	(21	(23
13	585	600	592	3	1	1162	769	950	(34	(19	1339	1211	1243	(10	(3	956	1154	1287	21	(10	1128	1066	1110	(5	(4	821	614	799	(25	(23
14	598	606	607	1	(0	1202	787	961	(35	(18	1315	1210	1249	(8	(3	972	1165	1283	20	(9	1098	1051	1099	(4	(4	843	600	785	(29	(24
15	614	596	620	(3	(4	1237	813	972	(34	(16	1288	1211	1255	(6	(4	990	1185	1278	20	(7	1074	1046	1088	(3	(4	853	583	771	(32	(24
16	626	613	630	(2	(3	1254	826	985	(33	(16	1256	1215	1258	(3	(3	1009	1196	1277	19	(6	1042	1033	1079	(1	(4	849	576	755	(32	(24
17	640	627	638	(2	(2	1265	825	1002	(35	(18	1219	1223	1260	0	(3	1019	1195	1274	17	(6	1024	1006	1073	(2	(6	852	571	740	(33	(23
18	658	631	646	(4	(2	1269	825	1016	(35	(19	1199	1226	1263	2	(3	1017	1199	1268	18	(5	1019	984	1063	(3	(7	842	569	726	(32	(22
19	664	637	655	(4	(3	1289	834	1028	(35	(19	1179	1224	1266	4	(3	1021	1184	1262	16	(6	1011	971	1054	(4	(8	828	570	710	(31	(20
20	664	649	666	(2	(3	1322	839	1040	(37	(19	1149	1245	1268	8	(2	1033	1160	1259	12	(8	1008	961	1048	(5	(8	811	589	691	(27	(15
21	685	642	680	(6	(6	1350	846	1051	(37	(20	1121	1260	1269	13	0	1035	1126	1257	9	(10	992	945	1043	(5	(9	800	599	673	(25	(11
22	716	637	691	(11	(8	1372	858	1062	(37	(19	1091	1275	1272	17	0	1030	1120	1253	9	(11	962	931	1036	(3	(10	774	599	659	(23	(9
23	759	643	702	(15	(8	1388	881	1070	(37	(18	1065	1263	1274	19	(1	1039	1109	1250	7	(11	964	927	1027	(4	(10	742	590	644	(20	(8
24	797	643	714	(19	(10	1405	907	1079	(35	(16	1049	1269	1274	25	(0	1058	1089	1249	3	(13	975	917	1020	(6	(10	709	581	631	(18	(8
25	819	641	724	(22	(11	1424	929	1090	(35	(15	1025	1267	1272	24	(0	1080	1083	1247	0	(13	970	895	1013	(8	(12	674	580	619	(14	(6
26	843	647	732	(23	(12	1449	964	1106	(33	(13	1014	1264	1272	25	(1	1105	1083	1241	(2	(13	956	875	1002	(8	(13	641	579	606	(10	(4
27	858	622	743	(28	(16	1476	1013	1119	(31	(9	995	1274	1276	28	(0	1110	1087	1236	(2	(12	930	836	989	(10	(15	614	555	594	(10	(7
28	882	612	753	(31	(19	1486	1030	1128	(31	(9	993	1285	1279	29	0	1122	1080	1232	(4	(12	907	816	975	(10	(16	590	518	586	(12	(12
29	923	635	769	(31	(17	1482	1023	1135	(31	(10	993	1285	1281	29	0						890	811	959	(9	(15	567	481	576	(15	(16
30	943	651	784	(31	(17	1484	1037	1142	(30	(9	990	1283	1284	30	(0						864	812	945	(6	(14	549	449	563	(18	(20
31						1484	1061	1148	(29	(8	987	1287	1285	30	0						852	827	933	(3	(11					

Degree Days based on Lansing information only.

CUSTOMER INFO/CREDIT DEPARTMENT – 80147

END

DATE
FILMED
4/01/92