Michigan Public Service Commission

Michigan Energy Appraisal

Summer Outlook 2022

June 17, 2022

Dan Scripps, Chair
Tremaine Phillips, Commissioner
Katherine Peretick, Commissioner

LARA
LICENSING AND REGULATORY AFFAIRS

Preface

The Michigan Energy Appraisal is a semiannual assessment of Michigan's energy baseline. The assessment raises the situational awareness of the state's energy environment including recent events impacting supply and prices, expected conditions, and changes over the next six months. Additionally, it provides the necessary information to enable a reliable assessment of the risk posed by an energy supply disruption.

The Novel Coronavirus (COVID-19) has had, and will continue to have, significant effects on Michigan's energy landscape for the foreseeable future. COVID-19 has changed consumption patterns and levels throughout the state and has posed unique challenges to Michigan's energy systems. After several publications of the Energy Appraisal which focused on the impacts of COVID-19 and the uncertainties for Michigan's energy systems, this summer's edition returns to providing short-term outlooks for energy supply and demand dynamics. Although COVID-19 still poses a risk to Michigan residents, there are signs of economic recovery and the return to more historical consumption patterns for energy products.

This report is prepared by the Energy Security Section of the Michigan Public Service Commission (MPSC) with assistance from the Energy Operations, Energy Resources, and Regulated Energy Divisions of the MPSC, Department of Licensing and Regulatory Affairs (LARA), State of Michigan.

Project Manager	Alex Morese
Motor Gasoline	Ethyan Kramer
Petroleum	Ethyan Kramer
Electric	Ethyan Kramer
Natural Gas	Nora Quilico, Ethyan Kramer
Distillates	Ethyan Kramer
Trending Topics	Ethyan Kramer

The Summer 2022 Energy Appraisal is available on the MPSC website. A major source of data and analysis used in this appraisal is the federal Energy Information Administration (EIA) at http://www.eia.doe.gov. The EIA collects national, state, and international data on energy usage, prices, supply, etc., and provides expert analysis on trends in energy.

Comments or questions on this appraisal are welcomed and may be directed to Alex Morese, Michigan Public Service Commission, at moresea@michigan.gov.

The Department of Licensing and Regulatory Affairs will not discriminate against any individual or group because of race, sex, religion, age, national origin, color, marital status, disability, or political belief. If you need assistance with reading, writing, hearing, etc., under the Americans with Disabilities Act, you may make your needs known to this agency.

Contents

Executive Summary

Energy use in Michigan is closely tied to economic activity within the state. Motorists use gasoline to travel to and from work, companies move goods throughout the state by trucks and trains powered by diesel fuel, the industrial sector uses natural gas as a fuel for their manufacturing processes, and all sectors use electricity to light either their homes, businesses, or factories.

The core analyses in this summer's edition of the Michigan Energy Appraisal were compiled by Staff at the Michigan Public Service Commission and projections sourced from data collected by the federal Energy Information Administration. Of particular note for this Energy Appraisal is the current price volatility within energy markets and the uncertainty surrounding future price projections. The EIA geographically aggregates price projections into Petroleum Administration Defense Districts (PADDs) – which means prices in individual states may eclipse the regional PADD average for a given forecast period.

Some key report findings for Michigan energy sectors:

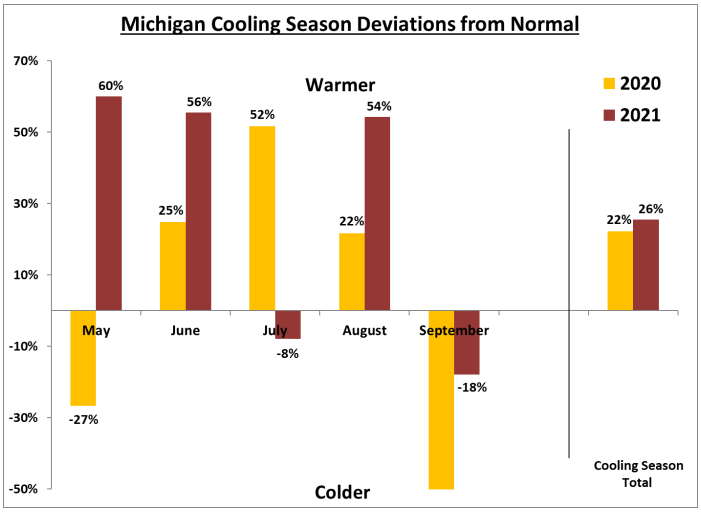
- Demand for **motor gasoline** is expected to increase by 0.1 percent to 4.3 billion gallons in 2022. Midwest gasoline prices are expected to average $3.88/gallon for 2022 and $3.52 in 2023, up from an average of $2.89 in 2021.
- The EIA projects that **petroleum** prices will average $102.47/bbl for 2022 and $93.24/bbl in 2023 for West Texas Intermediate (WTI) crude oil. The Brent (North Sea) crude oil spot price is forecast to average $107.37/bbl and $97.24/bbl, respectively.
- **Electricity** demand is forecast to increase about 1 percent for 2022, primarily from the industrial sector (4.3 percent), with the commercial (-0.2 percent) and residential (-0.5 percent) sectors declining slightly. Residential electric rates edged up slightly, as customers of investor-owned utilities saw a median rate increase of 6.4 percent between May 2021 and May 2022.
- Demand for **distillates** – the majority of which is diesel fuel – is projected to climb, reaching 1.27 billion gallons for 2022. Michigan's industrial production index, an economic indicator used to measure output from the industrial sector, is expected to grow by 5.5 percent for 2022, increasing the demand for the fuel. No. 2 heating oil prices ended the 2021/22 heating season $1.81/gallon higher than last year at an average of $4.45/gallon.
- Consumption of **natural gas** for all sectors is expected to see a 13.8 percent increase for 2022, led by increased demand from the electric power generation sector. Residential demand is expected to increase by 14 percent. The EIA expects Henry Hub natural gas prices to average $7.69/Mcf for 2022 and $4.92/Mcf in 2023, this compares to the $4.06/Mcf that was seen in 2021.

Glossary

Barrel	A unit of volume equal to 42 U.S. gallons.
b/d	The abbreviation for barrel(s) per day, also displayed as bbl/d.
Bcf	The abbreviation for billion cubic feet.
Brent	Brent is a major trading classification of sweet light crude oil that serves as a major benchmark price for purchases of oil worldwide.
CDD	Cooling Degree Days - a measure of how warm a location is over a period of time relative to a base temperature, most commonly specified as 65 degrees Fahrenheit. Cooling degree days are used in energy analysis as an indicator of air conditioning energy requirements or use.
EIA	Energy Information Administration - the statistical and analytical agency within the U.S. Department of Energy.
GWh	One billion watthours.
GCR	Gas Cost Recovery - the actual cost of natural gas that a local distribution company pays to purchase natural gas for your use.
HDD	Heating Degree Days - a measurement designed to quantify the demand for energy needed to heat a building. A measure of how cold a location is over a period of time relative to a base temperature, most commonly specified as 65 degrees Fahrenheit.
LSE	Load serving entity - a cooperative, municipal, investor-owned utility, or an alternative electric supplier (AES) that provides electricity to its customers.
Mcf	One thousand cubic feet.
MISO	Midcontinent Independent System Operator –a regional transmission organization (RTO) that coordinates the movement of wholesale electricity in all or parts of 16 states and one Canadian province.
mmBtu	One million British thermal units.
MW	One million watts of electricity.
OECD	Organization for Economic Cooperation and Development - an intergovernmental economic organization with 35 member countries, founded in 1961 to stimulate economic progress and world trade.
OPEC	Organization of the Petroleum Exporting Countries
PJM	PJM – an RTO that coordinates the movement of wholesale electricity in all or parts of 13 states and the District of Columbia.
STEO	Short-Term Energy Outlook published monthly by EIA.
WTI	West Texas Intermediate (also known as Texas light sweet) – a grade of crude oil used as a benchmark in oil pricing.

Data and Methodology

The majority of the predictive energy data (consumption, prices[1], and stocks) used in this appraisal's models are from EIA forecasts drawn from their Short-Term Energy Outlook (STEO). Energy supply and demand is often dependent upon weather-related variables. Therefore, variables such as heating and cooling degree days are also heavily used in the forecasts. Heating and cooling degree days are a commonly used metric for calculating building energy consumption. Deviations from "normal" degree day figures are helpful in understanding variations in consumption of energy commodities (see chart below). Future degree day deviations cannot be known at the time the appraisal forecasts are made, so assumptions are needed. For any model using degree day deviations, the assumption is made that future weather conditions will be approximately "normal" and there will be no deviations from the historical average degree day figure calculated by the National Climatic Data Center at that given point in time during the forecast period.



Monthly data is used for all forecasts in this appraisal. However, certain variables used in the appraisal models are only reported, or predicted, on a quarterly basis from their respective source. Quarterly data leaves data gaps in the monthly time series, therefore extrapolation tools are needed. A cubic spline interpolation tool, used for curve fitting, is employed to acquire the approximate monthly data points in between the quarterly figures that were available for use in the models.

The forecast models used for the Appraisal are, for the most part, derived from EIA forecast models used in their preparation of the STEO. More specifically, these forecast models are called ARIMA (Auto Regressive Integrated Moving Average) models. ARIMA models are an econometric tool used by analysts to better understand the relationship between variables, or to predict future points in a time series. The auto regressive and moving average portions of the model mean that past observations and past forecast errors are used in prediction of future observations. The integrated portion of the model means that a transformation was applied to the data for statistical purposes.

Forecast models are frequently evaluated and updated in order to provide as accurate information as possible so that future energy expectations can be built. However, given that the forecasting models used in this appraisal partly use predictions, extrapolated data, and assumptions of normal weather, the potential does exist for the forecasted value at a given point in time to vary from actual observed values for the same point in time.

[1] Price comparisons between time periods are not adjusted for inflation.

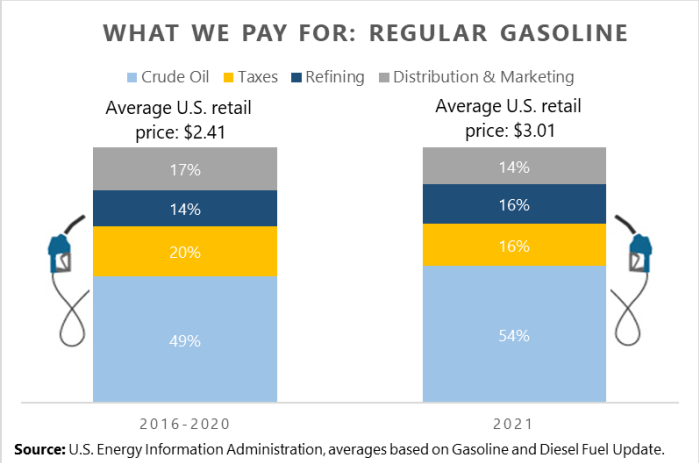
Trending Topics

MISO 2022/2023 Planning Resource Auction (PRA)

The results from MISO's 2022/2023 PRA indicated a generation capacity shortfall for both the North and Central regions of the system operator's territory, which includes a majority of Michigan. This was reflected in the auction by the prices clearing for these regions being set at the Cost of New Entry (CONE). CONE is used to quantify the current annualized capital cost of building an electric power plant and is implemented to incentivize additional capacity resources to enter the market. The 2022/23 MISO Resource Auction clearing prices for both Zone 7 and Zone 2 was $236.66/MW-Day. This compares to $5.00/MW-Day for both zones in last year's auction. The auction results indicate the regions have a slightly elevated risk of needing to implement temporary load shedding measures.

Petroleum Product Prices

The price motorists are paying at the pump entering the summer driving season are noticeably higher than in years past. Michigan regular unleaded gasoline and ultra-low sulfur diesel prices as of June 9, 2022 averaged $5.21 and $5.75 per gallon, respectively. Contributing to the higher fuel prices is the price of crude oil – which has surged in recent months on lower supply levels as well as geopolitical tensions leading many countries to embargo Russian oil. The price of crude oil is responsible for approximately 50 percent of the price of fuels like gasoline and diesel. Following the COVID-19 pandemic, crude oil prices were depressed due to the buildup of stocks from the reduced demand of finished end products. With the reopening of the economy throughout 2021, demand for finished end products quickly rebounded. This has led to a drawdown of crude oil stocks in the U.S. as refinery demand outpaced domestic crude oil production. The current price environment is likely to encourage crude oil producers to bring online additional production to equalize supply with current demand needs.

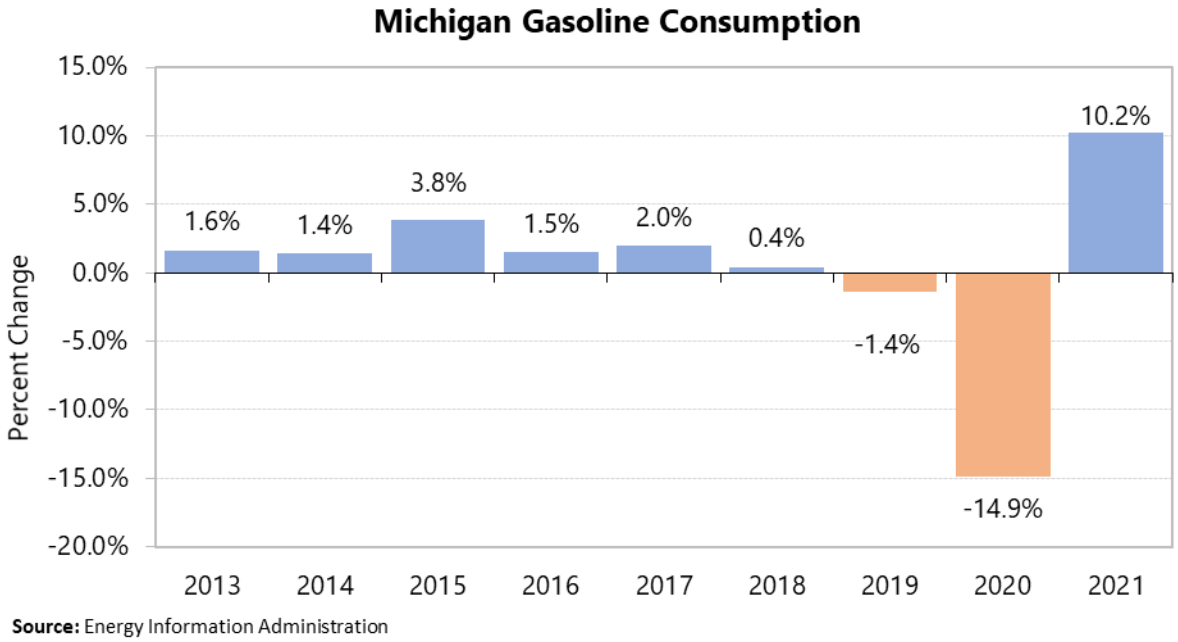


Source: U.S. Energy Information Administration, averages based on Gasoline and Diesel Fuel Update.

Motor Gasoline

Demand

Gasoline demand in Michigan is projected to total 4.30 billion gallons for 2022, a slight increase of 0.1 percent compared to 2021. This will be the second straight year of gasoline consumption growth if summer demand patterns continue as expected. Gasoline consumption last declined in 2020 by an astounding 14.9 percent as the effects of COVID-19 were felt around the state. The estimated all-vehicle real-world fuel economy for the 2021 model year was 25.3 miles per gallon, down from the 25.4 miles per gallon average in 2020 but still the second highest fuel economy rating since the 1975 model year.[2]



Source: Energy Information Administration

Supply

For the week ending June 10, 2022, 10.02 million barrels per day of gasoline were produced in the U.S. compared to 9.93 million barrels per day for the same week in 2021. In addition to domestic production, 650 thousand barrels per day were imported by the U.S. for the week ending June 10, 2022. National gasoline inventories are currently below the bottom of the five-year range for this time of year. For the week ending June 10, U.S. total gasoline inventories stood at 218 million barrels (24 days of supply), down 25 million barrels from the same date last year. Midwest inventories were at 45 million barrels, about 3.6 million barrels lower than last year. Lower year-over-year inventory levels at the national level can primarily be attributed to the East Coast, which as of June 10 had 125.8 million barrels less than in 2021.

Based on the most recent available data, the U.S. refinery utilization rate for the week ending June 10, 2022 was 93.7 percent, 1.1 percentage points higher than the comparable week of last year. As refineries begin to finish maintenance and gear up for summer driving demand, this rate is likely to increase.

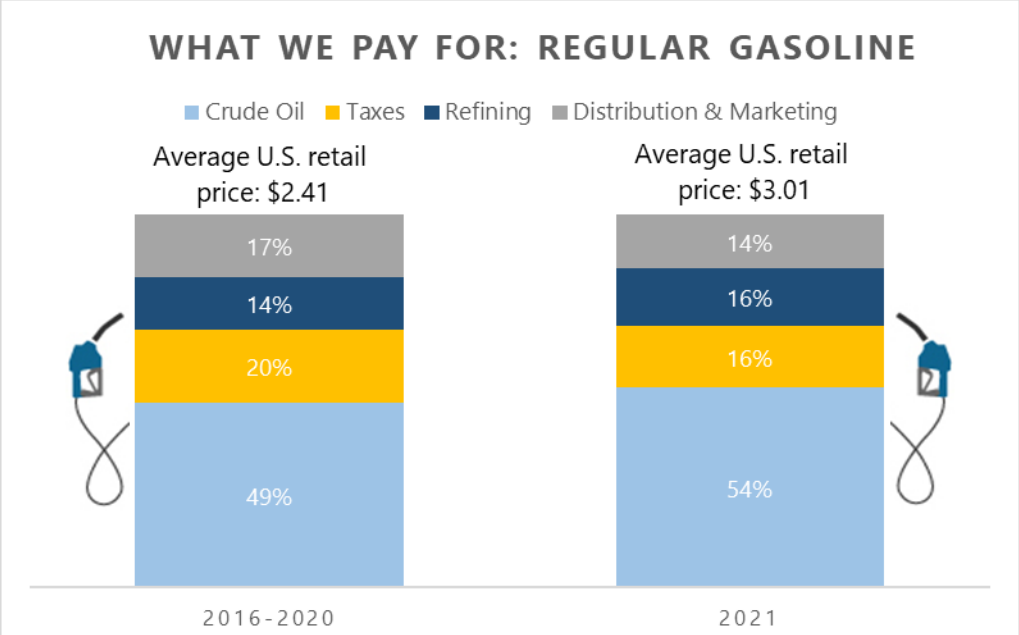
[2] EPA Automotive Trends Report: https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P1013L1O.pdf

Price

According to AAA, the average price for a gallon of regular unleaded gasoline in Michigan on June 16, 2022 was $5.20, compared to $3.16 a year ago. Consumers have had access to relatively low gasoline prices over the past few years stemming from low oil prices and depressed demand. However, with continued geopolitical risks between Russia and Ukraine, crude oil prices are likely to remain elevated, adding to the cost consumers may have to pay at the pump this summer.

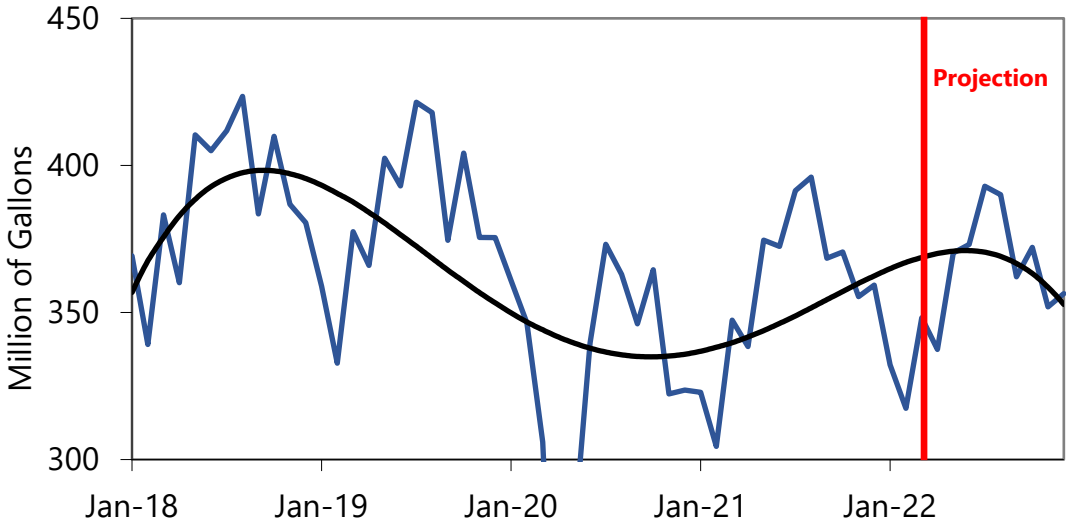
The U.S. price of regular gasoline averaged $3.01/gallon in 2021, 83 cents higher than in 2020 – which was a period of depressed demand due to the COVID-19 pandemic. Prices steadily increased throughout 2021 and have continued to remain elevated in 2022 as geopolitical risks heightened due to the Russian invasion of Ukraine and concerns about future crude oil supply.

The EIA projects Midwest regular-grade gasoline prices to average $4.15/gallon during the summer driving season (April-September), compared to $2.95/gallon last summer. Midwest regular-grade gasoline prices are forecasted to average $3.88/gallon for all of 2022. Unforeseen refinery outages, political unrest, adverse weather conditions, or any other disruptions to supply may also have the potential to increase national product prices in the short term.



Source: U.S. Energy Information Administration, averages based on Gasoline and Diesel Fuel Update.

Michigan Gasoline Sales



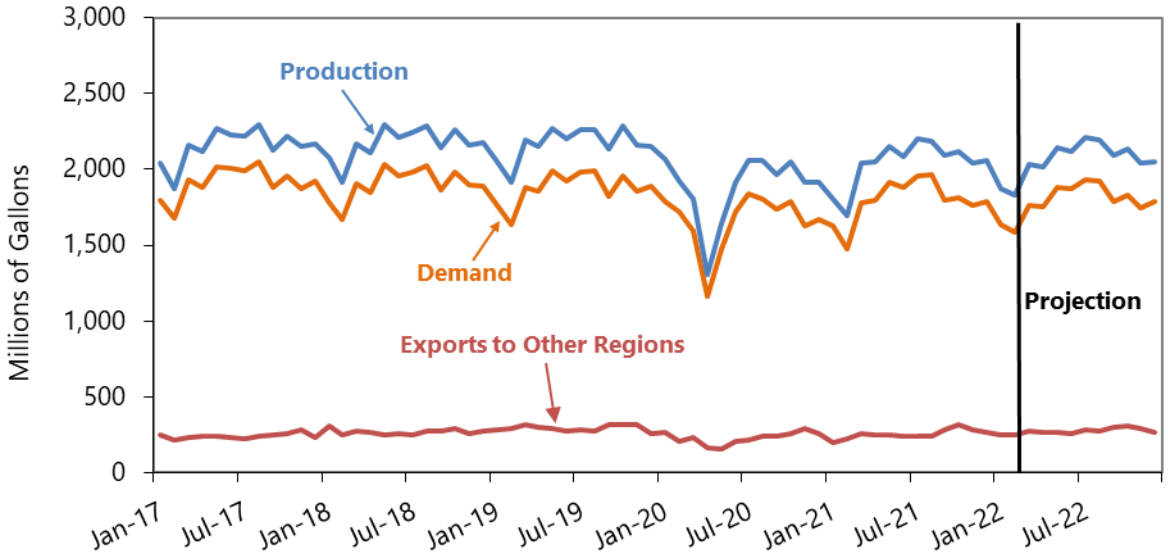
Michigan Gasoline Sales Projections

(Millions of Gallons)

			Total All Grades	Historical (prior year)	% Change
Historical	2019	Total	4,600	4,663	-1.4%
	2020	Total	3,913	4,600	-14.9%
	2021	Total	4,301	3,913	9.9%
	2022	January	332	323	2.9%
		February	317	304	4.2%
Projection		March	348	347	0.2%
		April	337	338	-0.3%
		May	370	375	-1.2%
		June	373	372	0.2%
		July	393	391	0.4%
		August	390	396	-1.5%
		September	362	368	-1.7%
		October	372	371	0.4%
		November	352	355	-1.0%
		December	356	359	-0.8%
	2022	Total	4,304	4,301	0.1%

SOURCE: Historical data - Energy Information Administration, U.S. Department of Energy.
Projections – Energy Security Section, MPSC.

Regional Gasoline Supply and Demand



Regional Gasoline Supply and Demand

(Millions of Gallons)

			Production	Inventories	Demand
Historical	2019	Monthly Average	2,171	80.2	1,879
	2020	Monthly Average	1,887	81.0	1,660
	2021	Monthly Average	2,043	49.3	1,796
	2022	January	1,874	33.9	1,634
Projection		February	1,832	32.7	1,587
		March	2,031	28.8	1,762
		April	2,019	27.1	1,757
		May	2,144	25.9	1,883
		June	2,121	21.9	1,869
		July	2,215	23.1	1,933
		August	2,193	20.4	1,920
		September	2,089	22.4	1,789
		October	2,133	20.6	1,827
		November	2,038	19.4	1,746
		December	2,047	19.7	1,784
	2022	Monthly Average	2,061	24.7	1,791
2021-2022 Change			0.9%	-49.9%	-0.3%

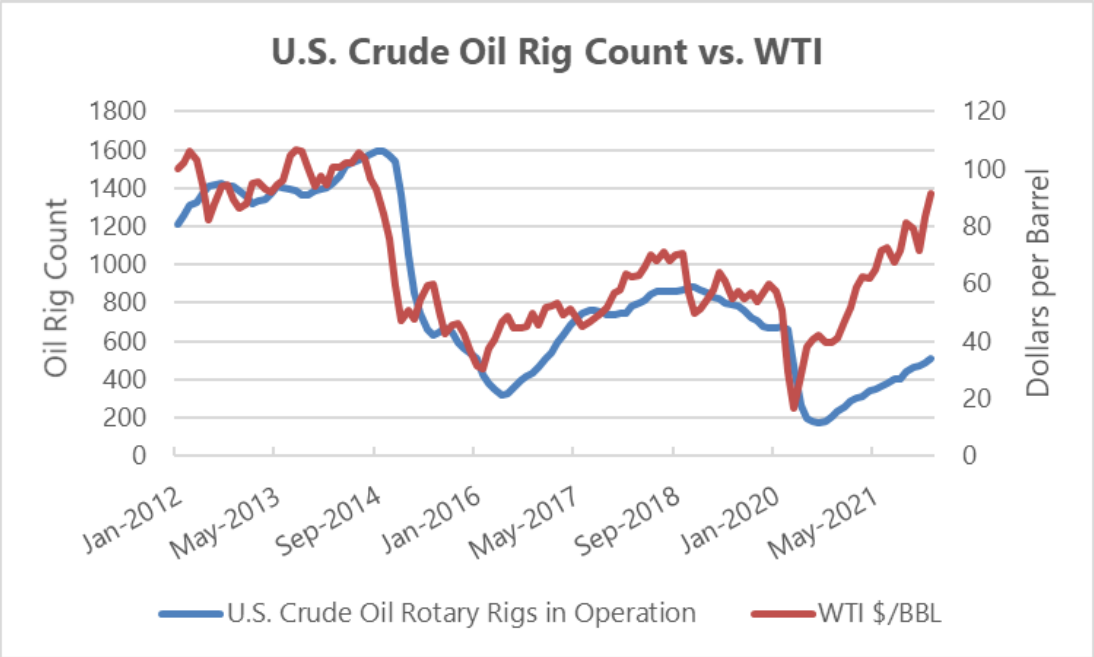
NOTE: Production projections are based on refinery utilizations and recent trends.
SOURCE: Historical data - Energy Information Administration, U.S. Department of Energy.
Projections – Energy Security Section, MPSC.

Petroleum

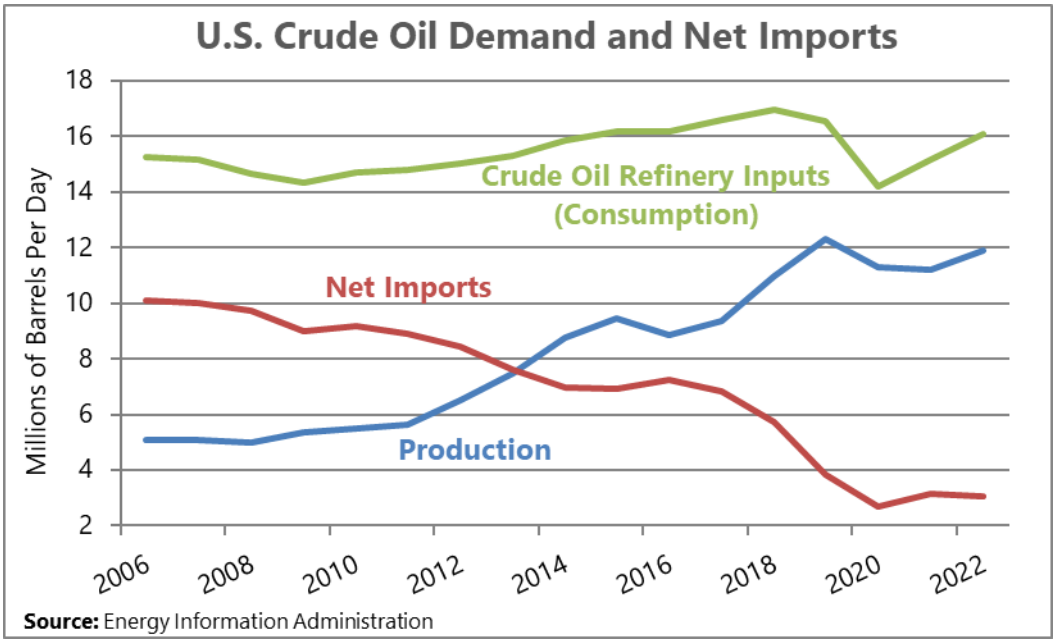
U.S. Outlook

The EIA's June Short Term Energy Outlook (STEO) revised U.S. crude oil production figures upward from just a month ago. U.S. crude oil production averaged 11.19 million b/d in 2021 and is expected to increase to 11.92 million b/d for 2022 and up to 12.97 million b/d in 2023. The price for WTI began to steeply increase in 2021, rising from $52/barrel in January to a high of $79/barrel in November. A major contributing factor to the rising prices in 2021 and into 2022 was the backwardation of crude oil markets. Backwardation in a market occurs when nearer futures contracts command a higher price than longer dated contracts. This behavior typically arises when the market is undersupplied in the near term, which then acts to drive up prices. As of the week ending June 3, 2022, the futures market for light sweet crude oil at Cushing, OK was still in backwardation, with the prompt month at $116/barrel and $108/barrel for October.

U.S. crude oil stocks currently reside 48 million barrels lower than a year ago as demand has outpaced supply additions. As of June 10, 2022, the U.S. had 419 million barrels in inventory (10% decline relative to 2021) which is below the five-year range for this time of year. U.S. crude oil exports have increased recently, with the four-week average ending June 10, 2022, standing at 3.57 million barrels per day – up from 3.2 million b/d a year ago.



Source: Energy Information Administration



World Outlook

The EIA June STEO reports that global petroleum consumption will increase by 2.28 million b/d in 2022 and again rise by 1.69 million b/d in 2023. The increase for 2022 is attributed to both non-Organization for Economic Cooperation and Development (OECD) nations, as well as more developed regions.

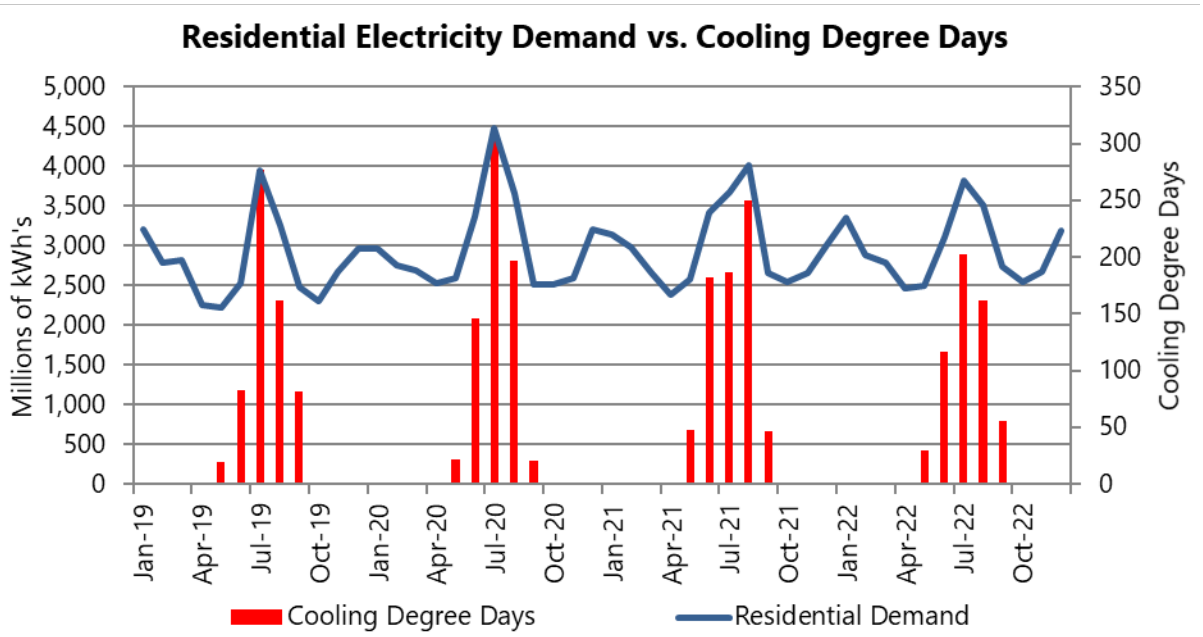
Global petroleum production and supply is expected to rise by 4.51 million b/d in 2022 and further grow 2.02 million b/d in 2023. The 2022 consumption and production projections demonstrate the impact of elevated oil prices and the expected market response to increase supply to meet demand. When global production growth outpaces consumption, the result will be an increase in global crude oil inventories and subsequent weakening in prices, which aligns with EIA's expectations for lowering prices in 2023. In February of 2022, Russian forces invaded Ukrainian territory, which caused some unrest in crude oil markets. In response, on March 8, 2022, the U.S. banned the import of Russian crude oil which led to an immediate increase in crude oil prices. The European Union, which is much more reliant on Russian crude oil than the U.S., has recently discussed the potential for a gradual Russian crude oil ban that would allow some nations until the end of 2023 to end purchases.

EIA projects that West Texas Intermediate (WTI) crude oil will average $102.47/bbl for 2022 and $93.24/bbl in 2023. The Brent (North Sea) crude oil spot price is forecast to average $107.37/bbl and $97.24/bbl, respectively. WTI and Brent are light sweet crudes used as international benchmarks in spot market pricing.

Electricity

Demand

Assuming normal weather, Michigan's total electric sales for 2022 are projected to increase 0.9 percent to 100.27 terrawatt-hours (TWh) compared to 99.4 TWh in 2021. The increase in sales is expected to come primarily from the industrial sector (4.3%) while slight declines are expected for the residential (-0.5%) and commercial (-0.2%) sectors. Two of the primary drivers of electricity consumption in the residential market is for cooling during hot weather and home heating during the winter. Summer 2021 had 26 percent more cooling degree days than historical averages – indicating an overall warmer than normal summer. Industrial sector usage of electricity, which is less dependent on weather fluctuations and more highly correlated to economic activity, declined by 14.2% in 2020 due to the economic impact of COVID-19, but rebounded by 4.3 percent in 2021.



Sources: Energy Information Administration & NCDC

Supply

To serve Michigan's electrical needs, load serving entities in Michigan rely in part on power purchased from wholesale markets operated by the MISO and PJM Interconnection (PJM). Compared to 2021/2022, the amount of generation capacity required to serve Michigan's Lower Peninsula (Zone 7) decreased by 60.5 MW in 2022/2023, and the amount of generation capacity needed to serve Michigan's Upper Peninsula and the eastern half of Wisconsin (Zone 2) lowered by 192.3 MW. Both zones saw a decrease in planning reserve margin requirements from 2021-2022 required by MISO. In comparison to 2021/2022, imports into Zone 7 this year increased from zero to 397.4 MW, while exports from Zone 2 decreased from 331.6 MW to 149.4 MW.

The 2022/23 MISO Resource Auction clearing prices for both Zone 7 and Zone 2 was $236.66/MW-Day, as were all other Zones in MISO North and MISO Central Regions due to insufficient levels of resources to meet the resource adequacy requirements in those Regions. This compares to $5.00/MW-Day for both zones in last year's auction. MISO-wide, the

predominant fuel types to clear the 2022/23 auction were natural gas (41%) and coal (30%). Nuclear (8%), wind (3%), and solar (2%) were also represented in the auction. Although wind and solar represent a small portion of the overall capacity in the MISO region, 2.1 GW of solar and 3.8 GW of wind capacity cleared the 2022/23 auction, compared to 1.4 GW and 3.8 GW in the previous year, respectively.

As reported by NERC, "[a]cross MISO, peak demand projections have increased by 1.7% since last summer due in part to a return to normal demand patterns that have been altered in prior years by the pandemic. However, more impactful is the drop in capacity in the most recent [Planning Resource Auction]: MISO will have 3,200 MW (2.3%) less generation capacity than in the summer of 2021. System operators in MISO are more likely to need operating mitigations, such as load modifying resources or non-firm imports, to meet reserve requirements under normal peak summer conditions. More extreme temperatures, higher generation outages, or low wind conditions expose the MISO North and Central areas to higher risk of temporary operator-initiated load shedding to maintain system reliability."[3]

Price

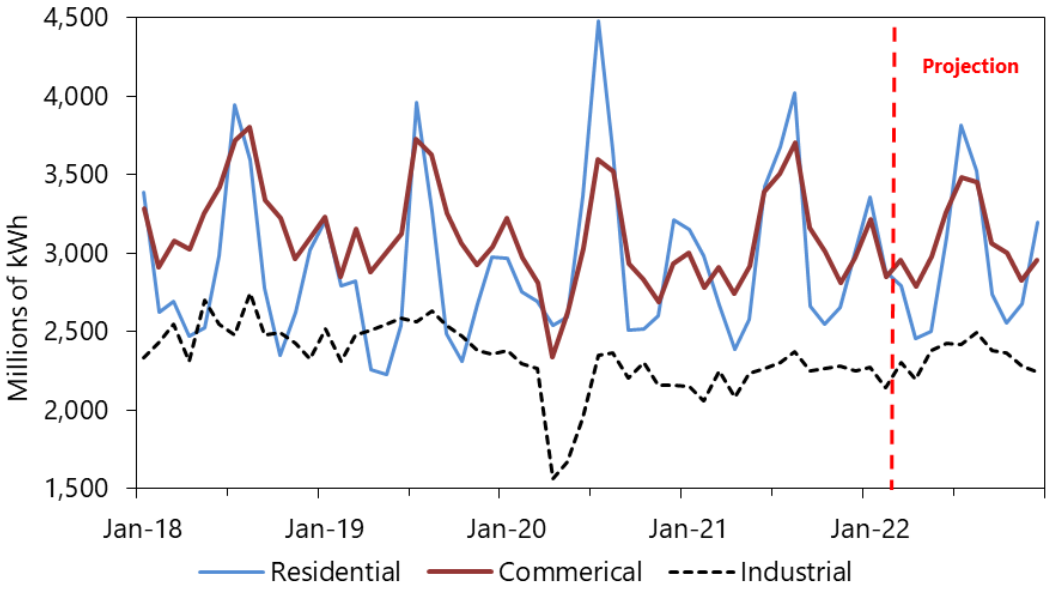
Year-over-year changes in residential electrical bills can vary substantially from utility to utility, with some residents seeing their bills decrease while other bills increase. Residential bills in areas of the Central and Western Upper Peninsula, where population densities tend to be lower and the local power grid is challenged by various constraints imposed on and by the surrounding electrical generation and transmission systems, continue to be some of the highest in the state.

Michigan Electric Bill Comparison

	2021		2022		Percent
	Monthly Bill	¢/kWh	Monthly Bill	¢/kWh	Change
INVESTOR OWNED					
AEP (I&M) Combined	$86.05	17.21	$85.72	17.14	-0.4%
Alpena Power	$68.80	13.76	$74.74	14.95	8.6%
Consumers Energy	$93.20	18.64	$91.71	18.34	-1.6%
DTE Electric	$89.40	17.88	$92.03	18.41	2.9%
Northern States Power	$67.80	13.56	$79.03	15.81	16.6%
UMERC - (FORMERLY WEPCO)	$74.10	14.82	$82.45	16.49	11.3%
UMERC - (FORMERLY WPS)	$71.45	14.29	$79.36	15.87	11.1%
Upper Peninsula Power	$110.00	22.00	$114.49	22.90	4.1%
COOPERATIVE					
Alger Delta	$102.42	20.48	$102.38	20.48	0.0%
Cherryland	$77.55	15.51	$79.55	15.91	2.6%
Cloverland	$70.48	14.10	$67.48	13.50	-4.3%
Great Lakes	$87.37	17.47	$93.96	18.79	7.5%
Homeworks Tri-County	$90.44	18.09	$98.71	19.74	9.1%
Midwest	$93.31	18.66	$101.12	20.22	8.4%
Ontonagon County REA	$123.33	24.67	$123.33	24.67	0.0%
Presque Isle	$76.20	15.24	$83.36	16.67	9.4%
Thumb	$78.01	15.60	$81.97	16.39	5.1%

[3] NERC's 2022 Summer Reliability Assessment, May, 2022, p. 4.

Michigan Electricity Sales



Source: Energy Information Administration

Michigan Electricity Sales Projection

(Millions of kWh)

			Residential	Commercial	Industrial	Total
Historical	2019	Total	33,496	37,862	29,886	101,244
	2020	Total	35,865	35,491	25,653	97,009
	2021	Total	35,765	36,890	26,745	99,400
	2022	January	3,354	3,216	2,275	8,845
		February	2,880	2,845	2,139	7,864
Projection		March	2,793	2,952	2,305	8,050
		April	2,457	2,784	2,194	7,435
		May	2,503	2,979	2,375	7,857
		June	3,103	3,259	2,426	8,787
		July	3,816	3,482	2,418	9,716
		August	3,521	3,450	2,489	9,460
		September	2,733	3,058	2,375	8,167
		October	2,553	3,001	2,367	7,921
		November	2,673	2,828	2,281	7,782
		December	3,193	2,955	2,240	8,387
	2022	Total	35,578	36,809	27,885	100,272
2021-2022 Change			-0.5%	-0.2%	4.3%	0.9%

NOTE: Projected electricity sales are based on historical trends.

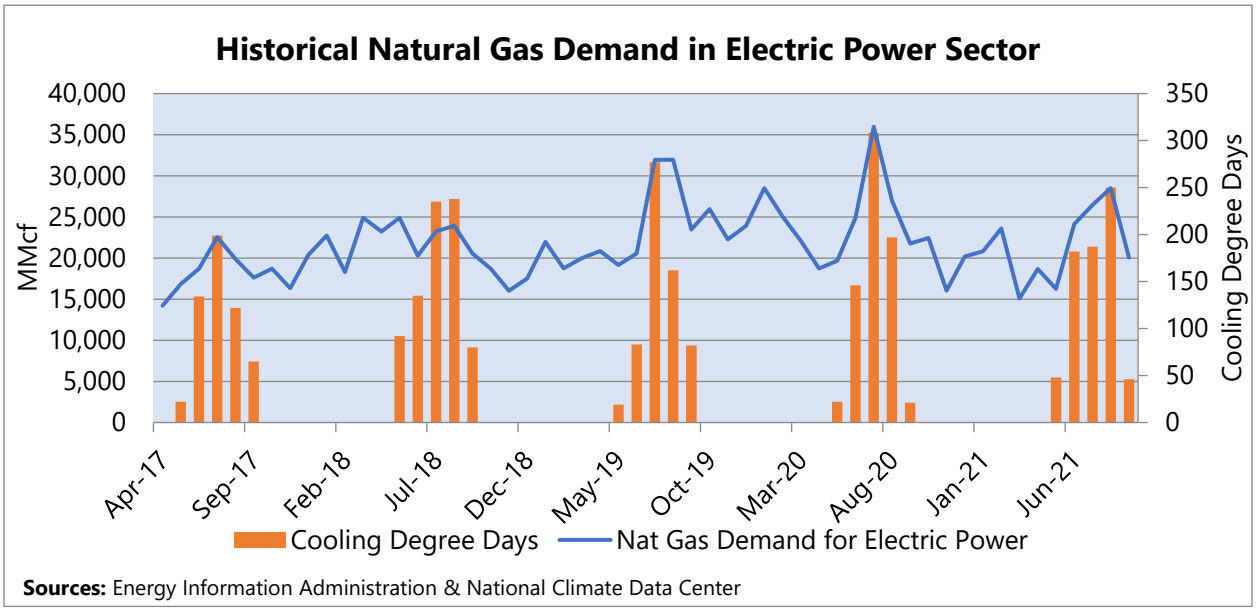
SOURCES: Historical Data – Energy Information Administration (EIA), U.S Department of Energy.

Projection: Energy Security Section, MPSC, using primarily EIA data (see methodology section for additional detail).

Natural Gas

Demand

Natural gas demand in Michigan is expected to rise by 13.8 percent in 2022 due to overall upward trending demand from all sectors including residential (13.8%), commercial (6.3%), industrial (10.5%), and electric power (20.7%). Weather variation greatly affects natural gas usage in the electric power sector. Current projections from NOAA's Climate Prediction Center (CPC) indicate that the 2022 summer cooling season (May-September) may be about 3.2 percent warmer than the 1981-2010 normal. Deviations from these weather projections could lead to very different consumption patterns as homes and businesses increase their electricity use to combat the heat. In addition to weather influenced demand, consumption for electricity generation is likely to be influenced by the price of natural gas. Total sales for 2022 are projected to be 1,010.8 Bcf, compared to 888.4 Bcf in 2021.



Sources: Energy Information Administration & National Climate Data Center

Supply

Storage levels in Michigan are projected to be 577 Bcf to end 2022, which would be 16 percent higher than the previous year's end. Michigan has over 10 percent of the nation's available underground storage capacity for natural gas, the largest of any state. U.S. storage inventory levels as of June 10, 2022, were 2,095 Bcf. This is approximately 14 percent below storage levels one year ago, and 14 percent below the five-year average. Natural gas storage levels are normally at their lowest levels by the end of the heating season in March and are built up during the summer months. Storage injection typically begins after the end of the heating season and is sensitive to both current market prices as well as price expectations for the upcoming heating season. About 10% of Michigan's natural gas needs are supplied via its own natural gas production wells. However, this production continues to slowly decline as the wells age, becoming uneconomical and shut in.

Price

During May 2022, the Henry Hub futures price for June contracts averaged $8.16/Mcf, which is more than double the average price at the same time in 2021. The Energy Information

Administration's (EIA) June STEO projects Henry Hub natural gas spot prices to average $7.69/Mcf through 2022, with prices dropping significantly to an average of $4.92 for 2023. The EIA's projected prices reflect several factors helping to drive up prices including storage levels below the five-year average, high levels of LNG exports, a cooler than normal spring, and lower than expected increases in natural gas production. The EIA expects that by as early as 2023 natural gas supply will outpace steady natural gas demand as producers respond to the current high price environment in crude oil and natural gas markets. This is reflected in EIA's lower natural gas price outlook for 2023.

Michigan Natural Gas Demand

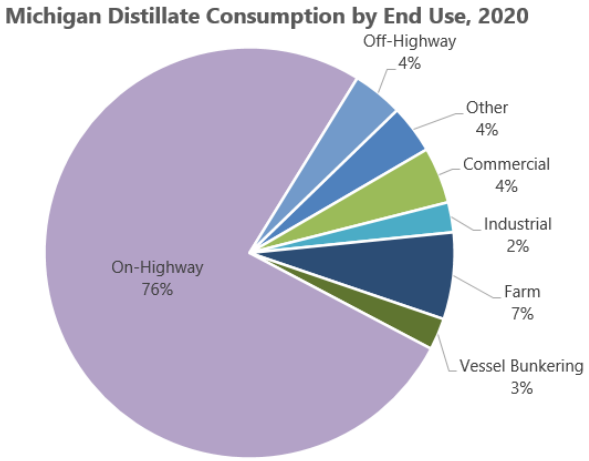
(Billion Cubic Feet--BCF)

			Total Demand	Residential Demand	Commercial Demand	Industrial Demand	Electric Power Demand
Historical	2019	Total	968.4	332.3	181.8	173.6	280.8
	2020	Total	901.1	304.2	160.5	154.1	282.3
	2021	Total	888.4	305.5	166.9	160.9	255.1
	2022	January	146.8	68.3	32.0	19.0	27.5
Projection		February	131.7	61.3	27.9	18.2	24.4
		March	103.9	41.0	21.8	17.1	24.0
		April	77.0	26.5	13.4	14.4	22.7
		May	58.6	15.5	8.4	12.0	22.7
		June	49.6	6.9	5.3	11.3	26.1
		July	54.2	6.0	4.9	11.4	32.0
		August	54.2	6.0	5.5	11.7	31.1
		September	49.8	7.1	5.7	12.3	24.7
		October	67.2	17.8	10.0	14.4	25.0
		November	95.5	39.1	17.1	16.6	22.7
		December	122.4	52.1	25.5	19.4	25.4
	2022	Total	1,010.8	347.7	177.5	177.7	308.0
2021-2022 change			13.8%	13.8%	6.3%	10.5%	20.7%

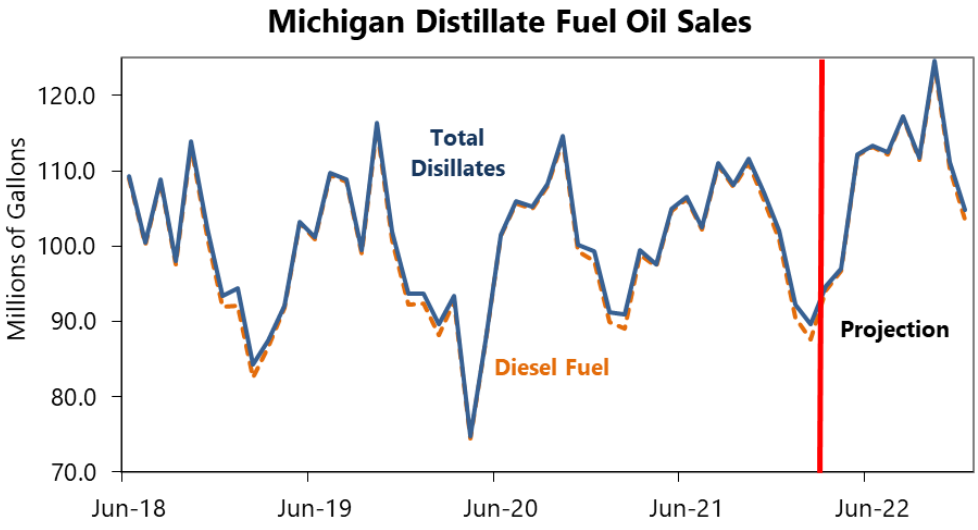
Distillate Fuels

Demand

Total distillate sales in Michigan are projected to increase by 3.9 percent for 2022, to 1.27 billion gallons as economic activity continues to rebound following COVID-19 restrictions. Ultra-low sulfur diesel fuel accounts for approximately 99% of total distillate demand, a majority being used for transportation by highway trucks, with the remainder consisting of heating oil, kerosene, and No. 1 distillate. Other users of distillates, although less prominent, include the agriculture, commercial, and industrial sectors, as well as vessel fueling. As evidenced by the graph below, distillate use in Michigan is typically seasonal in nature with individual peaks occurring in the Spring, late Summer, and early Fall. These peaks can likely be attributed to farm activity in the Spring and Fall and increased vessel activity in the Spring as the Great Lakes become free of ice. Industrial production in Michigan is expected to increase throughout the year, contributing to the boost in distillate demand. The forecasting model used for distillate demand assumes normal weather conditions and uses projections for industrial production, therefore any significant departures from these projections has the potential to change distillate demand figures.



Source: Energy Information Administration

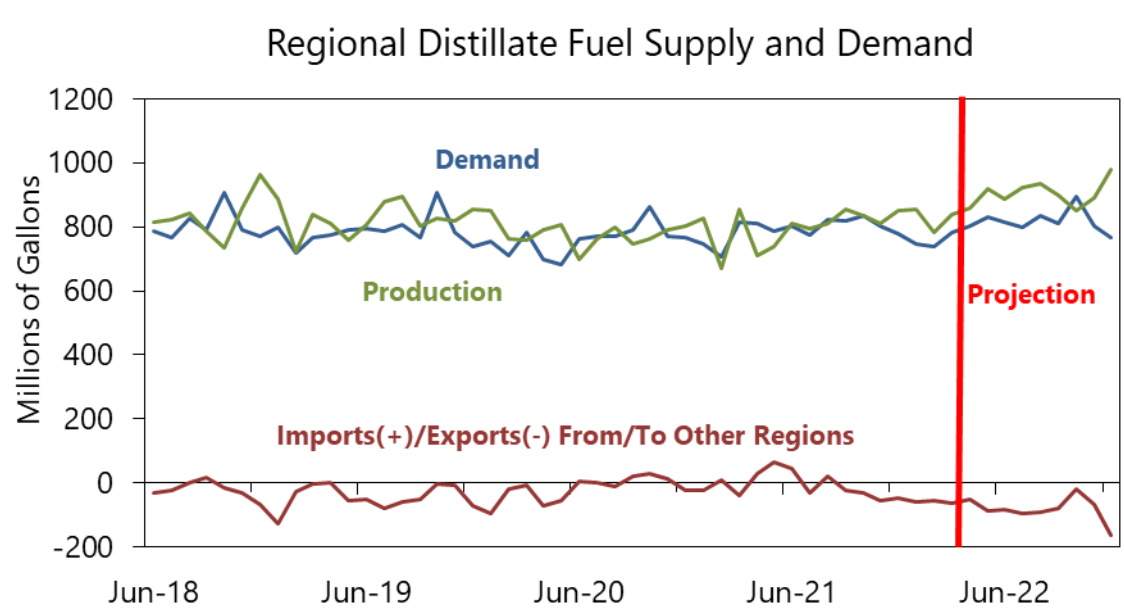


Source: Historical data - Energy Information Administration

Supply

Regional refineries are expected to produce an average of 885 million gallons of distillate fuel oil per month in 2022, an increase of 11 percent from 2021 averages. For the week ending June 10, national inventories of distillate oil were 110 million barrels, about 26 million barrels below this

same time last year. Midwest inventories for the same week totaled 26 million barrels, 4.1 million barrels lower than a year ago. Lower year over year inventories at the national level are likely a result of increased demand following a period of relatively low refinery utilization due to the onset of COVID-19. It is expected that with elevated petroleum prices and increased economic activity, refinery utilization this summer will return to normal.



Source: Historical data - Energy Information Administration

Price

Nationally, the EIA expects retail prices for on-highway diesel fuel will average $4.69 per gallon for 2022, an increase of $1.41 from 2021. However, it is expected that distillate prices will pull back slightly for 2023, with prices estimated to average $4.13 per gallon. According to AAA Michigan, the average price of diesel in Michigan was $5.89 per gallon on June 16, $2.62 per gallon higher than the price seen at this time last year.

The average cost of No. 2 heating oil in Michigan was $4.45 to end the 2021-2022 heating season, $1.81 per gallon higher than the end of the previous heating season. The principal price driver for heating oil is the U.S. refiner acquisition cost of crude oil, which averaged about 40 dollars more per barrel compared to the end of the 2020/21 heating season. Other factors affecting the price of heating oil include the seasonality of demand from weather conditions, competition in local markets, and regional operating costs.

Michigan Distillate Fuel Oil Sales Projection

(Millions of Gallons)

			Diesel Fuel	Total Distillate	Prior Year	% Change
Historical	2019	Total	1,182.8	1,192.8	1,196.7	-0.3%
	2020	Total	1,166.5	1,174.0	1,192.8	-1.6%
	2021	Total	1,224.9	1,232.9	1,174.0	5.0%
	2022	January	90.5	92.3	91.3	
		February	87.6	89.6	91.0	
Projection		March	94.1	94.7	99.5	
		April	96.7	97.0	97.5	
		May	112.0	112.2	104.9	
		June	113.2	113.4	106.5	
		July	112.2	112.4	102.4	
		August	117.0	117.3	111.0	
		September	111.5	111.7	108.1	
		October	124.0	124.6	111.6	
		November	110.2	111.2	107.1	
		December	103.6	104.9	102.1	
	2022	Total	1,272.5	1,281.3	1,232.9	
2021-2022 Change			**3.9%**	**3.9%**		

NOTES: These projections assume normal heating degree day accumulations for the remainder of the year.
SOURCES: Historical data -- Energy Information Administration, DOE. Projections – Energy Security Section, MPSC.

Regional Distillate Fuel Oil Supply and Demand

(Millions of Gallons)

			Production	Inventories	Demand
Historical	2019	Monthly Average	825.7	502.9	786.3
	2020	Monthly Average	777.6	503.2	760.3
	2021	Monthly Average	797.1	486.2	791.7
	2022	January	853.8	506.5	746.4
Projection		February	782.4	494.1	738.7
		March	838.5	486.7	782.3
		April	859.9	493.5	801.7
		May	917.9	494.5	829.0
		June	888.6	485.8	813.7
		July	922.2	512.6	800.3
		August	934.3	521.9	833.5
		September	900.1	531.4	809.4
		October	851.3	467.2	896.6
		November	891.2	486.5	803.4
		December	979.9	534.2	768.5
	2022	Monthly Average	885.0	501.2	802.0

NOTES: Production projections based on expected refinery capacity utilization, recent trends, and normal weather.
SOURCES: Historical data -- Energy Information Administration, DOE; Projection – Energy Security Section, MPSC.

Conclusion

As the summer driving season and cooling season begins, residents should expect energy supplies to be readily available to meet their needs, though prices will remain higher than in previous years for most energy products. Michigan's energy systems remain robust and are well positioned to meet the evolving needs of consumers in the state. MPSC Staff will continue their work to ensure this robustness and remain watchful for the ever-present risks to the state's energy systems.