



# Michigan Energy Appraisal Summer Outlook 2023

In compliance with MCL 460.6r

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## 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.

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 select energy supply and demand dynamics. Due to data availability issues, Michigan-specific demand outlooks for petroleum energy sources (distillates and gasoline) are unavailable for this edition. However, these energy sources are still discussed in a broader context.

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.

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The Summer 2023 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](mailto:moresea@michigan.gov).

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## 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.

Michigan residents and businesses should expect to have adequate access to energy resources this summer and heading into the fall. Energy markets remain resilient and robust throughout the country, but not entirely immune to short term weather disruptions and other geopolitical risk factors – which consumers should be mindful of. In addition, as the 2021 cyber attack on the Colonial Pipeline demonstrated, attacks on energy infrastructure can also result in material impacts to energy markets. Barring any unforeseen disruptions to energy markets, however, it is expected that pricing conditions should likely be more favorable for consumers this summer – whether that’s filling the family vehicle up with gasoline or using electricity to cool homes during the summer heat.

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.

Some key report findings for Michigan energy sectors:

- Midwest **gasoline** prices are expected to average \$3.19/gallon for 2023 and \$2.96 in 2024. Gasoline prices for this summer driving season (April-Sept.) are projected to average \$3.30/gallon compared to \$4.16/gallon last summer in the Midwest.
- The EIA projects that West Texas Intermediate (WTI) **crude oil** will average \$73.62/bbl for 2023 and \$69.47/bbl in 2024.
- Michigan **Electricity** demand is forecast to decrease about 1.3 percent for 2023, primarily from the residential sector (-1.3 percent) and the commercial (-3.4 percent). Industrial sector demand is expected to increase by 1.6 percent. Residential electric rates edged up slightly, as customers of investor-owned utilities saw a median rate increase of 2.8 percent between May 2022 and May 2023.
- Michigan’s industrial production index, an economic indicator used to measure output from the industrial sector, is expected to grow slightly at 0.11 percent for 2023, potentially increasing the demand for **distillates**. No. 2 heating oil prices ended the 2022/23 heating season \$0.87/gallon lower than last year at an average of \$3.58/gallon.
- Consumption of **natural gas** for all sectors is expected to see a 2.2 percent increase for 2023, led by increased demand from the electric power generation sector. Residential demand is expected to decrease by 5.4 percent. The EIA forecasts that natural gas consumption for the generation of electricity this summer (May-Sept.) will be the second highest on record.

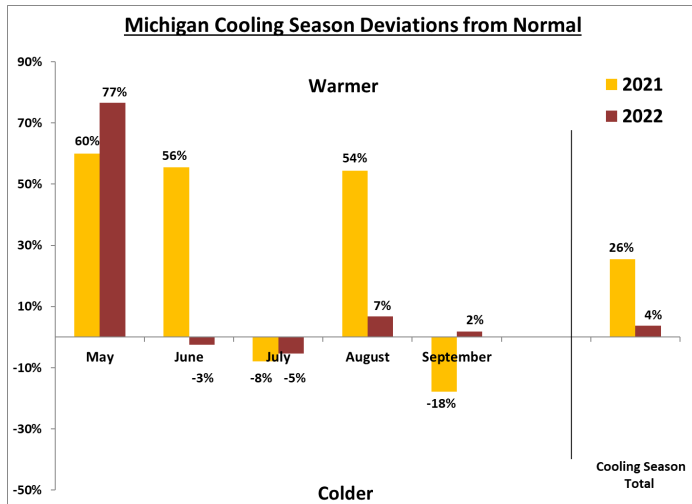


## Glossary

<b>Barrel</b>	A unit of volume equal to 42 U.S. gallons.
<b>b/d</b>	The abbreviation for barrel(s) per day, also displayed as bbl/d.
<b>Bcf</b>	The abbreviation for billion cubic feet.
<b>Brent</b>	Brent is a major trading classification of sweet light crude oil that serves as a major benchmark price for purchases of oil worldwide.
<b>CDD</b>	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.
<b>EIA</b>	Energy Information Administration - the statistical and analytical agency within the U.S. Department of Energy.
<b>GWh</b>	One billion watthours.
<b>GCR</b>	Gas Cost Recovery - the actual cost of natural gas that a local distribution company pays to purchase natural gas for your use.
<b>HDD</b>	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.
<b>LSE</b>	Load serving entity - a cooperative, municipal, investor-owned utility, or an alternative electric supplier (AES) that provides electricity to its customers.
<b>Mcf</b>	One thousand cubic feet.
<b>MISO</b>	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.
<b>mmBtu</b>	One million British thermal units.
<b>MW</b>	One million watts of electricity.
<b>OECD</b>	Organization for Economic Cooperation and Development - an intergovernmental economic organization with 35 member countries, founded in 1961 to stimulate economic progress and world trade.
<b>OPEC</b>	Organization of the Petroleum Exporting Countries
<b>PJM</b>	PJM – an RTO that coordinates the movement of wholesale electricity in all or parts of 13 states and the District of Columbia.
<b>STEO</b>	Short-Term Energy Outlook published monthly by EIA.
<b>WTI</b>	West Texas Intermediate (also known as Texas light sweet) – a grade of crude oil used as a benchmark in oil pricing.

## Data and Methodology

A vast majority of the predictive energy data (consumption, prices, 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.

## Trending Topics

### Electric Power Grid Resilience and Reliability (Case No. U-21388)

In April, the Michigan Public Service Commission launched an effort to address resilience and reliability issues, beginning with two half-day technical conferences. The goal of the conferences was to gather information on how best to improve the resilience of critical facilities, increase electric service reliability for those who experience the most frequent and longest duration outages, and provide additional support to customers who face disproportionate health and financial impacts and often have fewer means to recover from prolonged outages. The focus of the conferences was on the engineering, technical, regulatory, and cost barriers as well as potential solutions.

### Distribution System Reliability Data

The Michigan Public Service Commission has launched a new [Distribution System Reliability webpage](#) that provides detailed, up-to-date reliability and outage information for customers. Three metrics commonly used to assess distribution system reliability include System Average Interruption Duration Index (SAIDI), System Average Interruption Frequency Index (SAIFI), and Customer Average Interruption Duration Index (CAIDI). Individual investor-owned utility charts for these three metrics can be downloaded from the link above.

### Energy Storage Technical Conference (Case No. U-21399)

The Commission has directed MPSC Staff to convene a one-day collaborative technical conference July 25, 2023, on residential energy storage to help identify best practices and opportunities. Information on how to participate in the conference will be filed in this case docket by July 11, 2023. The Commission directed the conference to be in two parts. The first focusing on identifying remaining gaps and outstanding issues for residential storage pilots, with discussion of national best practices in storage design and benefit/cost analysis. The second part is for solutions, along with presentations from stakeholders and discussions of issues related to low-income customers, ownership and contracting issues including the role of the utility versus third-party aggregators and other business models.

### State of Michigan Community EV Toolkit

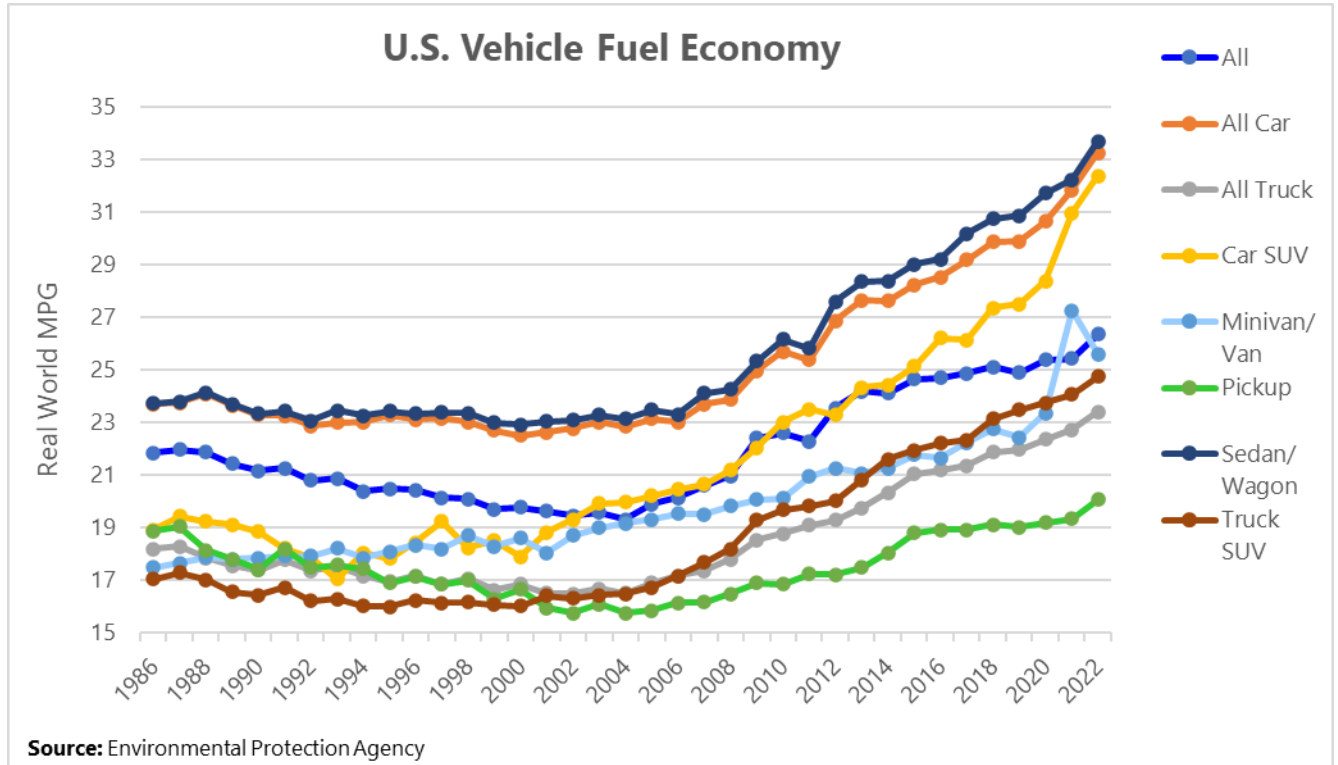
In April, Governor Gretchen Whitmer announced a partnership to create the [State of Michigan Community EV Toolkit](#) – an online resource hub for local governments across the state of Michigan as they prepare for electrification and e-mobility by providing a standardized guide for how municipalities can best adapt and implement policies and administrative functions for EV supply equipment (EVSE) and EV charging infrastructure. The toolkit includes model local laws and best practices, and provide information about potential partnerships, funding opportunities, as well as general information about EVs and EVSE.



# Motor Gasoline

## Demand

The estimated all vehicle real-world fuel economy for the 2022 model year was 26.4 miles per gallon, up from the 25.4 miles per gallon average in 2021 and the highest fuel economy rating since tracking began in the 1975 model year – when the average fuel economy was 13.1 miles per gallon.<sup>1</sup>



## Supply

For the week ending May 26, 2023, 9.971 million barrels per day of gasoline were produced in the U.S. compared to 9.968 million barrels per day for the same week in 2022. In addition to domestic production, 833 thousand barrels per day were imported by the U.S. for the week ending May 26, 2023. National gasoline inventories are currently near the bottom of the five-year range for this time of year. For the week ending May 26, U.S. total gasoline inventories stood at 216 million barrels (24 days of supply), down 2.9 million barrels from the same date last year. Midwest inventories were at 44.2 million barrels, about 800 thousand barrels lower than last year.

Based on the most recent available data, the U.S. refinery utilization rate for the week ending May 26, 2023, was 93 percent, half a percentage point 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.

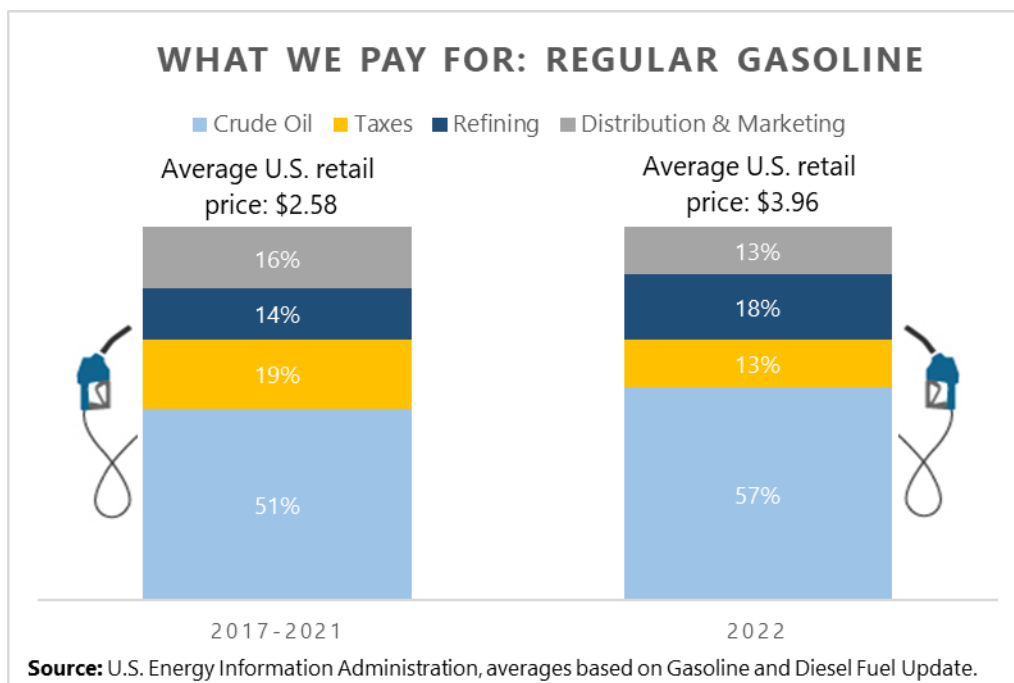
<sup>1</sup> EPA Automotive Trends Report: <https://www.epa.gov/system/files/documents/2022-12/420r22029.pdf>

## Price

Consumers have endured relatively high gasoline prices over the past year stemming from elevated oil prices and lower inventory levels. According to AAA, the average price for a gallon of regular unleaded gasoline in Michigan on June 5, 2023, was \$3.53, compared to \$5.04 a year ago. However, with continued geopolitical risks between Russia and Ukraine, crude oil prices remain at risk for volatility and could rise again, adding to the cost consumers may have to pay at the pump this summer.

The U.S. price of regular gasoline averaged \$3.97/gallon in 2022, 95 cents higher than in 2021 – which was still a period of depressed demand due to the COVID-19 pandemic. Prices steadily increased through the first half of 2022, peaking at \$4.92/gallon as the world attempted to rebalance crude oil supply and delivery following sanctions against Russia for the invasion of Ukraine.

The EIA projects Midwest regular-grade gasoline prices to average \$3.30/gallon during the summer driving season (April-September), compared to \$4.16/gallon last summer. Midwest regular-grade gasoline prices are forecasted to average \$3.19/gallon for all of 2023. Unforeseen refinery outages, political unrest, adverse weather conditions, or any other disruptions to supply may have the potential to increase national product prices in the short term.



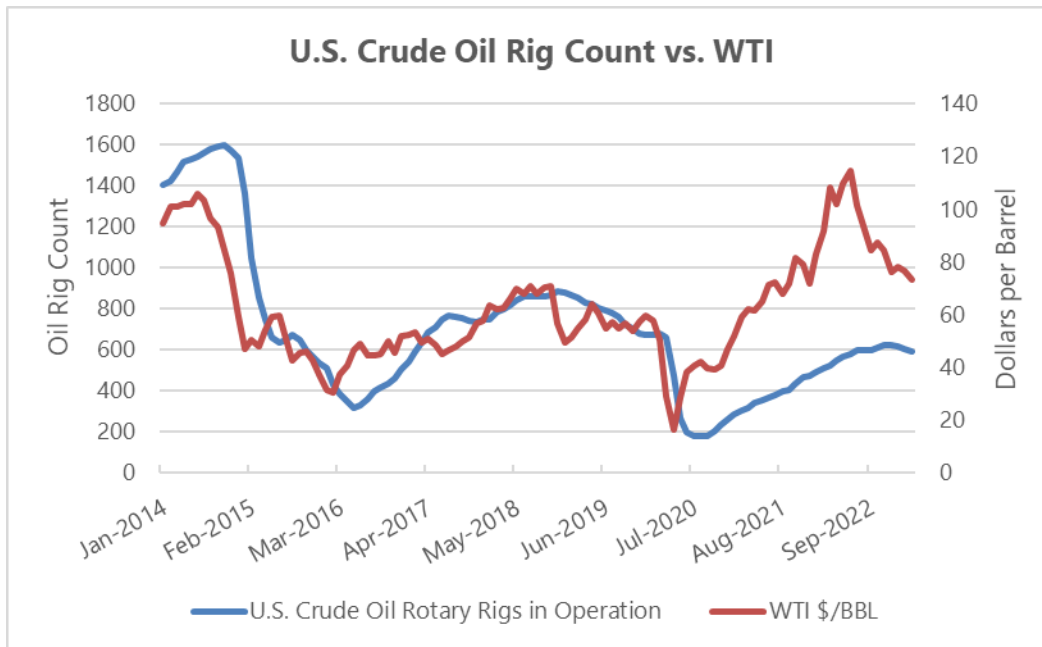
## Petroleum

### U.S. Outlook

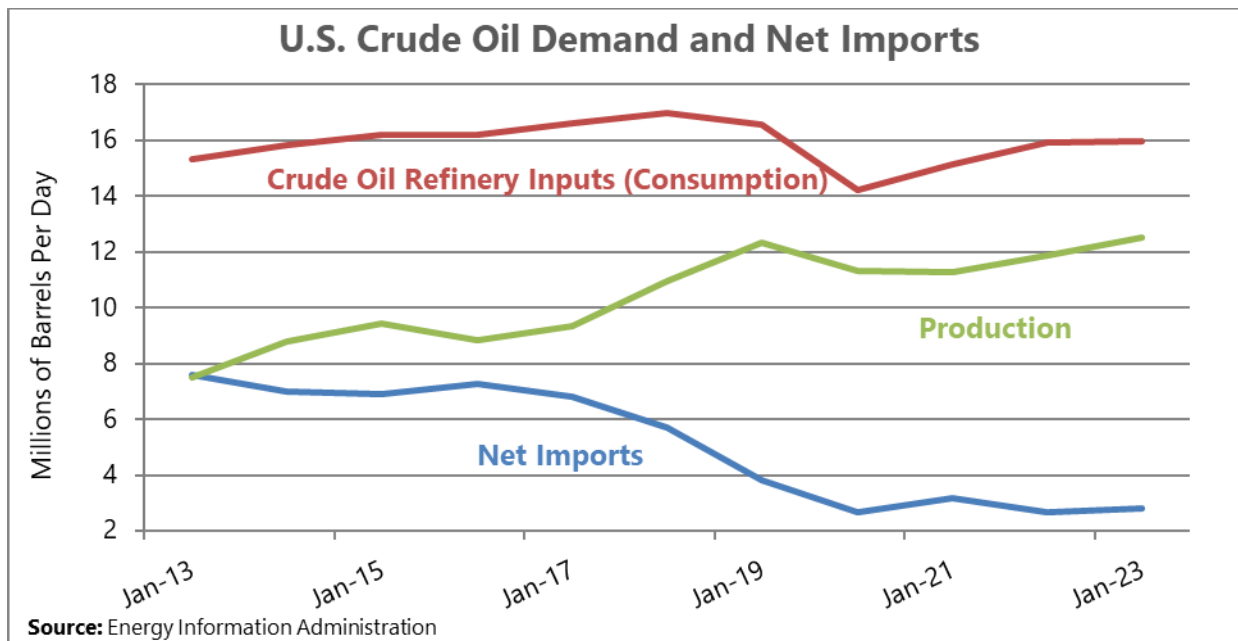
The EIA's May Short Term Energy Outlook (STEO) revised U.S. crude oil production figures downward slightly from just a month ago. U.S. crude oil production averaged 11.89 million b/d in 2022 and is expected to increase to 12.53 million b/d for 2023 and up to 12.69 million b/d in 2024. The price for WTI began to steeply increase in 2022, rising from \$83/barrel in January to a high of \$114/barrel in June. 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 May 26, 2023, the futures market for light sweet crude oil at Cushing, OK was still slightly in backwardation, with the prompt month at \$72.75/barrel and \$72.23/barrel for September 2023. Current WTI spot prices reside at \$71/barrel for WTI and \$75/barrel for Brent.

U.S. crude oil stocks currently reside 45 million barrels higher than a year ago as supply additions have outpaced demand. As can be seen in the chart below, the number of crude oil drilling rigs in operation strongly correlates to the price of crude oil. As of May 26, 2023, the U.S. had 460 million barrels in inventory (11% increase relative to 2022) which is nearly the middle of the five-year range for this time of year. U.S. crude oil exports have increased recently, with the four-week average ending May 26, 2023, standing at 4.16 million barrels per day – up from 3.68 million b/d a year ago.



Source: Energy Information Administration



## World Outlook

The EIA May STEO reports that global petroleum consumption will increase by 1.56 million b/d in 2023 and again rise by 1.72 million b/d in 2024. The increase for 2023 is attributed to both non-Organization for Economic Cooperation and Development (OECD) nations, as well as more developed regions.

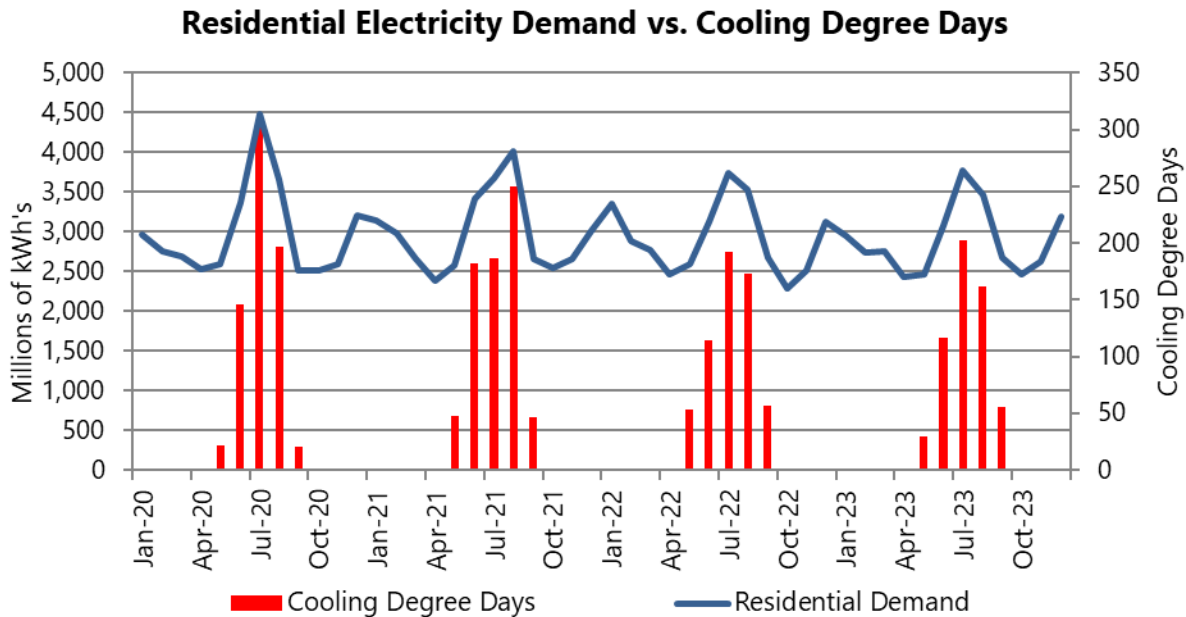
Global petroleum production and supply is expected to rise by 1.48 million b/d in 2023 and further grow 1.68 million b/d in 2024. The 2023 and 2024 production projections demonstrate the impact of elevated oil prices and the expected market response to increase supply to meet demand. However, in April 2023, the Organization of Petroleum Exporting Countries (OPEC) and non-member Russia announced they had agreed to decrease output by 1.16 million b/d starting in May – which could put upward pressure on prices. This announcement comes after October 2022 when OPEC agreed upon 2 million b/d of production cuts. OPEC supply represents approximately a third of world petroleum liquids supply and decisions made by the organization can greatly influence the direction of petroleum markets.

EIA projects that West Texas Intermediate (WTI) crude oil will average \$73.62/bbl for 2023 and \$69.47/bbl in 2024. The Brent (North Sea) crude oil spot price is forecast to average \$78.65/bbl and \$74.47/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 2023 are projected to decrease 1.3 percent to 99.1 thousand GWh compared to 100.37 thousand GWh in 2022. The decrease in sales is expected to come primarily from the residential (-1.3%) and commercial (-3.4%) sectors, while an increase of 1.6 percent is expected for the industrial sector. 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 2022 had 4 percent more cooling degree days than historical averages – indicating a slightly warmer than normal summer. Industrial sector usage of electricity, which is less dependent on weather fluctuations and more highly correlated to economic activity, increased by 5.3 percent in 2022.

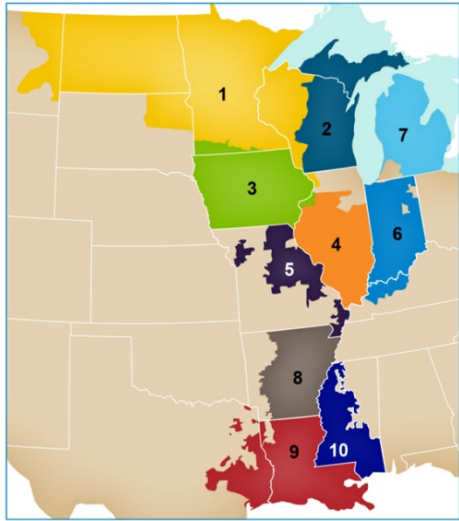


Sources: Energy Information Administration & NCDC

Michigan’s combined coincident peak electrical demand, for both the Consumers Energy and DTE Electric service areas last summer was 17,711 megawatts (MW). Consumers Energy’s bundled peak electric demand last summer was 7,529 MW and occurred on June 21, 2022. DTE Electric’s bundled peak demand was 10,182 MW and was also on June 21, 2022.

## Supply

To serve Michigan's electrical needs, load serving entities in Michigan participate in the wholesale electricity day ahead and real time markets operated by their respective Regional Transmission Operators. Michigan load serving entities also participate in their respective Regional



Transmission Operators resource adequacy constructs and capacity markets. Michigan is part of two separate Regional Transmission Organizations. Most of Michigan is within the Midcontinent Independent System Operator (MISO) and the remaining southwest section of the lower peninsula is in PJM. Michigan territory within MISO consists of three different MISO Local Resource Zones (Zones). The bulk of Michigan's Upper Peninsula is in MISO Zone 2, along with eastern Wisconsin. A very small section of the Michigan's Upper Peninsula is in MISO Zone 1 with western Wisconsin, most of Minnesota and parts of North Dakota, South Dakota, and Montana. MISO Zone 7 covers the majority of Michigan's Lower Peninsula with the southwest portion of the Lower Peninsula being within PJM.

In MISO, this year's auction for planning year 2023/2024 is the first auction using the seasonal resource adequacy construct. The amount of capacity required to serve MISO Zone 7 for summer 2023/2024 was 21,232.8 MW and the amount of MISO Zone 7 capacity offered into the market was 21,730.0 MW with 21,380.6 MW of capacity clearing the auction with an auction clearing price of \$10/MW-day. The amount of capacity required to serve MISO Zone 2 for summer 2023/2024 was 13,371.2 MW and the amount of MISO Zone 2 capacity offered into the market was 14,191.9 MW with 14,112.6 MW of capacity clearing the auction with an auction clearing price of \$10/MW-day. The amount of capacity required to serve MISO Zone 1 for summer 2023/2024 was 18,234.4 MW and the amount of MISO Zone 1 capacity offered into the market was 21,293.8 MW with 19,514.7 MW of capacity clearing the auction with an auction clearing price of \$10/MW-day. MISO is also projected to have adequate capacity to meet resource adequacy requirements at the regional, sub-regional, and zonal levels for the fall, winter, and spring seasons.<sup>2</sup> PJM also cleared sufficient resources within its base residual auction for planning year 2023/2024 which was held in June of 2022 to meet resource adequacy standards.<sup>3</sup>

MISO-wide, the predominant fuel types to clear the Summer 2023/2024 auction were natural gas (42%) and coal (28%). Nuclear (8.5%), wind (3.7%), and solar (2.3%) were also represented in the auction. Although wind and solar represent a small portion of the overall capacity in the MISO region, 3 GW of solar and 5 GW of wind capacity cleared the 2023/24 auction, compared to 2.1 GW and 3.8 GW in the previous year, respectively.

## Price

Year-over-year changes in residential electrical bills can vary substantially from utility to utility,

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<sup>2</sup> [https://cdn.misoenergy.org/2023%20Planning%20Resource%20Auction%20\(PRA\)%20Results628925.pdf](https://cdn.misoenergy.org/2023%20Planning%20Resource%20Auction%20(PRA)%20Results628925.pdf)

<sup>3</sup> <https://www.pjm.com/-/media/markets-ops/rpm/rpm-auction-info/2023-2024/2023-2024-base-residual-auction-report.ashx>

with some residents seeing their bills decrease while other bills increase. Electricity bills are comprised of several components which typically include a monthly service charge and per kWh energy and distribution charges, as well as a power supply cost recovery (PSCR) factor. PSCR factors will often vary from month to month as the cost for the utility to produce electricity changes. Investor-owned utilities must request Michigan Public Service Commission approval to increase their rates through an established rate case process.

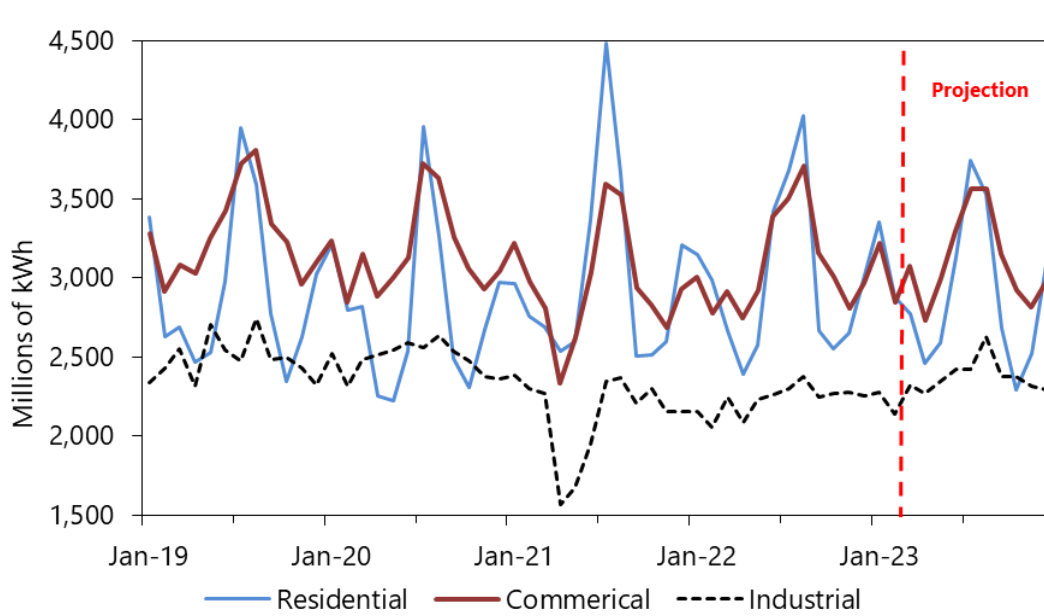
Residential bills in areas of the Central and Western Upper Peninsula, where population densities tend to be lower and the local power grid is challenged by various constraints imposed on and by the surrounding electrical generation and transmission systems, continue to be some of the highest in the state.

### Michigan Electric Rate Comparison

	2022		2023		Percent Change
	Monthly Bill	¢/kWh	Monthly Bill	¢/kWh	
<b>INVESTOR OWNED</b>					
AEP (I&M) Combined	\$85.70	17.14	\$75.40	15.08	-12.0%
Alpena Power	\$74.75	14.95	\$75.40	15.08	0.9%
Consumers Energy	\$91.71	18.34	\$91.43	18.29	-0.3%
DTE Electric	\$92.06	18.41	\$100.35	20.07	9.0%
Northern States Power	\$79.05	15.81	\$82.62	16.52	4.5%
UMERC - (FORMERLY WEPCO)	\$82.45	16.49	\$83.83	16.77	1.7%
UMERC - (FORMERLY WPSC)	\$79.35	15.87	\$82.51	16.50	4.0%
Upper Peninsula Power	\$114.50	22.90	\$121.09	24.22	5.8%
<b>COOPERATIVE</b>					
Alger Delta	\$102.38	20.48	\$102.40	20.48	0.0%
Cherryland	\$79.55	15.91	\$86.50	17.30	8.7%
Cloverland	\$67.48	13.50	\$74.00	14.80	9.7%
Great Lakes	\$93.96	18.79	\$101.24	20.25	7.7%
Homeworks Tri-County	\$98.71	19.74	\$100.39	20.08	1.7%
Midwest	\$101.12	20.22	\$109.19	21.84	8.0%
Presque Isle	\$83.36	16.67	\$89.71	17.94	7.6%
Thumb	\$81.97	16.39	\$88.83	17.77	8.4%

Note: Monthly Bill calculations are based on usage of 500 kWh/month and exclude state sales tax.

## Michigan Electricity Sales



Source: Energy Information Administration

		<b>Michigan Electricity Sales Projection</b>			
		(Millions of kWh)			
		Residential	Commercial	Industrial	Total
<b>Historical</b>	2020 Total	35,865	35,491	25,653	97,009
	2021 Total	35,765	36,890	26,745	99,400
	2022 Total	35,066	37,129	28,171	100,366
<b>Projection</b>	2023 January	2,956	3,067	2,322	8,344
	February	2,741	2,769	2,274	7,783
	March	2,749	2,894	2,406	8,049
	April	2,425	2,715	2,265	7,405
	May	2,470	2,910	2,416	7,795
	June	3,081	3,181	2,472	8,734
	July	3,777	3,410	2,461	9,648
	August	3,469	3,378	2,536	9,383
	September	2,671	2,994	2,420	8,085
	October	2,457	2,923	2,412	7,792
	November	2,628	2,756	2,340	7,724
	December	3,190	2,885	2,285	8,359
	2023 Total	34,614	35,880	28,609	99,102
2022-2023 Change		-1.3%	-3.4%	1.6%	-1.3%

NOTE: Projected electricity sales are based on historical trends.

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

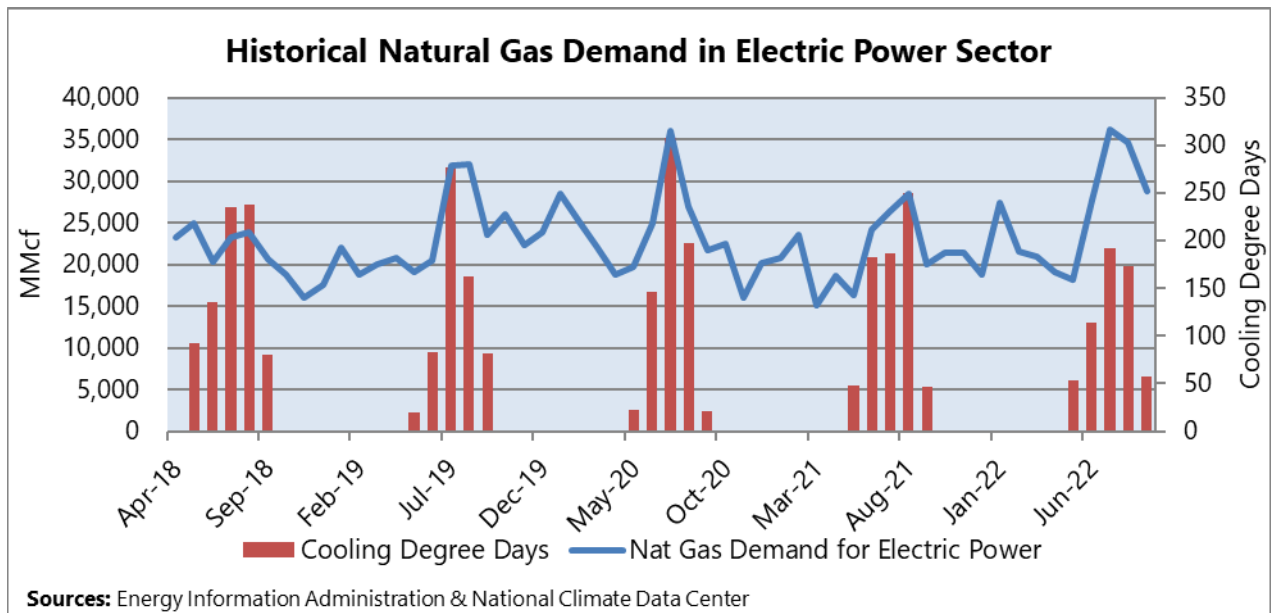
Projection: Energy Security Section, MPSC, using primarily EIA data (see methodology section for additional detail).



# Natural Gas

## Demand

Natural gas demand in Michigan is expected to rise by 2.2 percent in 2023 due to overall upward trending demand from the electric power sector outweighing declines from the residential (-5.4%), commercial (-7.4%), and industrial (-7%) sectors. Weather variation greatly affects natural gas usage in the electric power sector. Current projections from NOAA's Climate Prediction Center (CPC) indicate that the 2023 summer cooling season (May-September) may be about 2.3 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 2023 are projected to be 1,022.3 Bcf, compared to 999.8 Bcf in 2022.



## Supply

Storage levels in Michigan are projected to be 476 Bcf to end 2023, which would be 3.5 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. Working gas storage inventories for the lower 48 states were 2,446 Bcf for the week ending May 26, 2023, 29 percent higher than the same time last year. 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

The Energy Information Administration's (EIA) May STEO projects Henry Hub natural gas spot prices to average \$3.02/Mcf through 2023, a 55 percent decline from the 2022 average. Prices are expected to rise slightly to an average of \$3.86 for 2024. The EIA's projected prices reflect several factors helping to lower near term prices including storage levels above the five-year average, a warmer than normal spring for the Central and Eastern part of the country and increasing natural gas production. The EIA expected that by early 2023 natural gas supply would begin to outpace natural gas demand as producers responded to the dramatic rise in prices in crude oil and natural gas markets during 2022. This appears to be coming to fruition and 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
<b>Historical</b>	2020 Total	901.1	304.2	160.5	154.1	282.3
	2021 Total	880.6	305.5	161.4	158.6	255.1
	2022 Total	999.8	336.6	182.4	167.4	313.4
<b>Projection</b>	2023 January	123.6	50.0	26.6	17.4	29.7
	February	116.6	50.0	23.1	16.0	27.6
	March	106.1	39.2	22.0	15.3	29.5
	April	82.9	27.8	14.3	12.8	28.0
	May	58.9	12.3	8.4	10.6	27.5
	June	55.7	7.2	5.6	9.7	33.2
	July	62.3	6.2	5.0	9.9	41.2
	August	60.7	5.6	5.3	10.1	39.8
	September	54.9	7.3	5.7	10.6	31.3
	October	73.7	19.9	10.0	12.4	31.4
	November	97.2	37.4	17.3	14.2	28.3
	December	129.6	55.4	25.7	16.6	32.0
	2023 Total	1,022.3	318.3	168.9	155.7	379.4
	2022-2023 change	2.2%	-5.4%	-7.4%	-7.0%	21.1%

NOTE: Projected demand is based on historical trends.

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

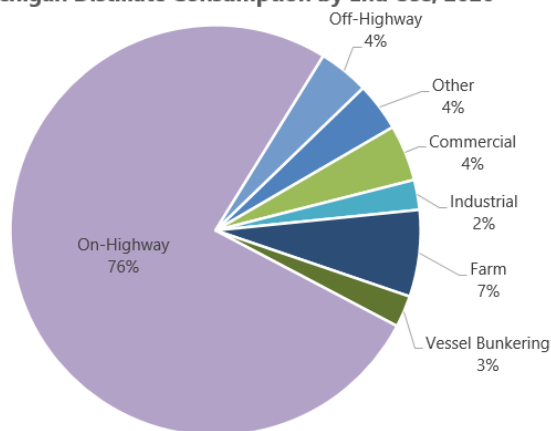
Projection: Energy Security Section, MPSC, using primarily EIA data (see methodology section for additional detail).

## Distillate Fuels

### Demand

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 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.

Michigan Distillate Consumption by End Use, 2020



Source: Energy Information Administration

### Supply

Regional refineries are expected to produce an average of 845 million gallons of distillate fuel oil per month in 2023, just an increase of 0.6 percent from 2022 averages. For the week ending May 26, national inventories of distillate oil were 106.7 million barrels, about 300 thousand barrels higher than this same time of last year. Midwest inventories for the same week totaled 24.8 million barrels, 200 thousand barrels lower than a year ago. National production levels of distillates remain strong, and marginal increases in year over year inventories are a result of increased demand and a robust export market. For the week ending May 26, national production of distillates totaled 5.04 million b/d, while net exports averaged 1.25 million b/d, and consumption averaged at 3.65 million b/d. These figures demonstrate why distillate stocks have struggled to build over the course of the past year when demand plus net exports is nearly equal to production levels.

### Price

Nationally, the EIA expects retail prices for on-highway diesel fuel will average \$3.90 per gallon for 2023, a decrease of \$1.12 from 2022. Further, it is expected that distillate prices will pull back even more for 2024, with prices estimated to average \$3.62 per gallon. According to AAA Michigan, the average price of diesel in Michigan was \$3.97 per gallon on June 5, \$1.62 per gallon lower than the price seen at this time last year.

The average cost of No. 2 heating oil in Michigan was \$3.58 to end the 2022-2023 heating season, \$0.87 per gallon lower 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 24 dollars less per barrel compared to the end of the 2021/22 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.

## Conclusion

As the summer driving season begins, residents should expect energy supplies to be readily available to meet their needs. 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 any risks to the state's energy systems.