

Impact of Electric Vehicles on MFT Revenue

City of Chicago

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City of Chicago
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**MOTOR FUEL VS. ELECTRIC VEHICLES IMPACT ON
TRANSPORTATION FUNDING**

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Motor Fuel Tax vs. Electric Vehicles Impact on Transportation Funding

Transportation is experiencing a fundamental shift, with electric vehicles (EVs) and fuel-efficient vehicles becoming more common. This shift will offer benefits to communities, individuals, and businesses but it will impact Illinois' transportation revenues. I will analyze the impact of electric and hybrid vehicles on motor fuel tax revenue and look at policies that can offset the revenue lost from EVs and hybrid vehicles.

The state of Illinois relies on motor fuel taxes to help pay for transportation projects and keep roads and highways in good condition. There is a fundamental shift in transportation with the increase in electric vehicles (EVs) and increasingly fuel-efficient vehicles becoming more common. This shift is welcome due to the benefits offered, but it does have an adverse impact on Illinois' transportation revenues.

The road tax is built into the price of gas and goes to support road infrastructure. Electric Vehicles (EVs) do not fuel up, so electric vehicles are using the roads but not paying in that way. How can the contribution from EV owners be comparable to their non-EV counterparts. Another issue is hybrid vehicles, they also contribute less than their fair share to the support of road infrastructure improvements. The economic vitality of Illinois is critical to the quality of life for residents and businesses. The Illinois transportation network is key to the development of both local and state economies supporting the movement of people and goods. The economic state of the city of Chicago will be discussed briefly.

Economy in Chicago

The economy in Chicago (Chicago-Naperville-Arlington Heights) is outperforming other areas in the State and the Midwest but does not measure up to the U.S. or country's other major metro areas.¹ The labor market is almost at full recovery and job growth is slowing but improvements have been seen across all industries with healthcare, leisure/hospitality and manufacturing being particularly strong.

Chicago continues to be a transportation and finance hub and a major center for business and distribution. Chicago has highly regarded educational institutions and pulls from a huge talent pool and boasts an upcoming high-tech center in the River North neighborhood. On the other hand, Chicago has state and local budget pressures, out-migration and weak population trends, high crime rates, immigration woes, racial division, and poverty. Chicago is also impacted by the global stage with impacts from the War in Ukraine, bank failures, and Washington's failed debt ceiling discussions. Chicago remains in a recovery and the Economic outlook for Chicago is mixed (in some areas unchanged from the prior 3-month period, in other areas worse than the 3-month period) this directly impacts MFT.

ECONOMIC HEALTH CHECK						
3-MO MA	Jul 22	Aug 22	Sep 22	Oct 22	Nov 22	Dec 22
Employment, change, ths	14.8	15.3	12.6	8.8	7.3	5.4
Unemployment rate, %	4.6	4.6	4.7	4.8	4.9	4.9
Labor force participation rate, %	66.4	66.2	66.1	66.0	66.0	66.0
Average weekly hours, #	34.4	34.1	34.0	34.2	34.2	34.2
Industrial production, 2012=100	101.6	101.4	101.6	101.7	101.5	100.8
Residential permits, single-family, #	4,161	4,217	4,001	4,319	4,363	4,168
Residential permits, multifamily, #	4,887	4,756	8,097	8,805	9,462	9,623
Dec/Dec	Dec 17	Dec 18	Dec 19	Dec 20	Dec 21	Dec 22
Employment, change, ths	26.9	22.7	29.5	-325.0	209.8	112.7
Better than prior 3-mo MA Unchanged from prior 3-mo MA Worse than prior 3-mo MA						

Sources: BLS, Census Bureau, Moody's Analytics

Discussion: Revenue options for loss revenue and Motor Fuel Sales Tax Revenue Trends

Some recommended proposals for EV revenue are adding a tax for EV charging stations so drivers pay when they fill up, like what is done with gas-powered cars. The issue with that is many EV drivers charge their car at home, states would capture the fill-up only in public charging station.

Another option for obtaining revenue from EV owners is an additional fee at registration. This option may be the easiest option to implement. The downside to this option is in some states they are taxing electric drivers at much higher rates, punishing the drivers for choosing an EV. Below is a list of Electric, Hybrid, and Total Vehicle Registrations in Illinois compared to other Midwestern states (2017-2021).

Additional Electric and Hybrid Vehicle Fees in Other Midwestern States

	Electric Vehicle Fee*	Hybrid Vehicle Fee*
Illinois	\$100	-
Indiana	\$150	\$50
Iowa	\$130	\$65 for plug-in hybrids
Michigan	\$100 Evs up to 8,000 lbs \$200 Evs over 8,000 lbs	\$30 certain plug-in hybrids up to 8,000 lbs \$100 certain plug-in over 8,000 lbs
Minnesota	\$75	-
Missouri	\$75	\$37.50 for plug-in hybrids
Ohio	\$200	\$100
Wisconsin	\$100	\$75

*Additional Fee in addition to standard vehicle registration fee

Source: NCSL, 2021

The estimated sales tax revenue was on an upward trend until the pandemic hit due to more people working from home and fewer people traveling. The estimated sales tax revenue from motor fuel spiked from \$511 million to \$840 million from FY2021 to FY2022 due to a 49% increase in the average price of gasoline.² Consumption rose slowly, but most growth in sales tax revenue was due to the price increase. Expectations for motor-fuel tax revenue in the future remain uncertain. The EIA (Energy Information Administration) expects U.S. gasoline consumption to remain flat in 2023 to 2022 levels, with rising fuel efficiency offsetting price and economy-driven increases in transportation demand.³

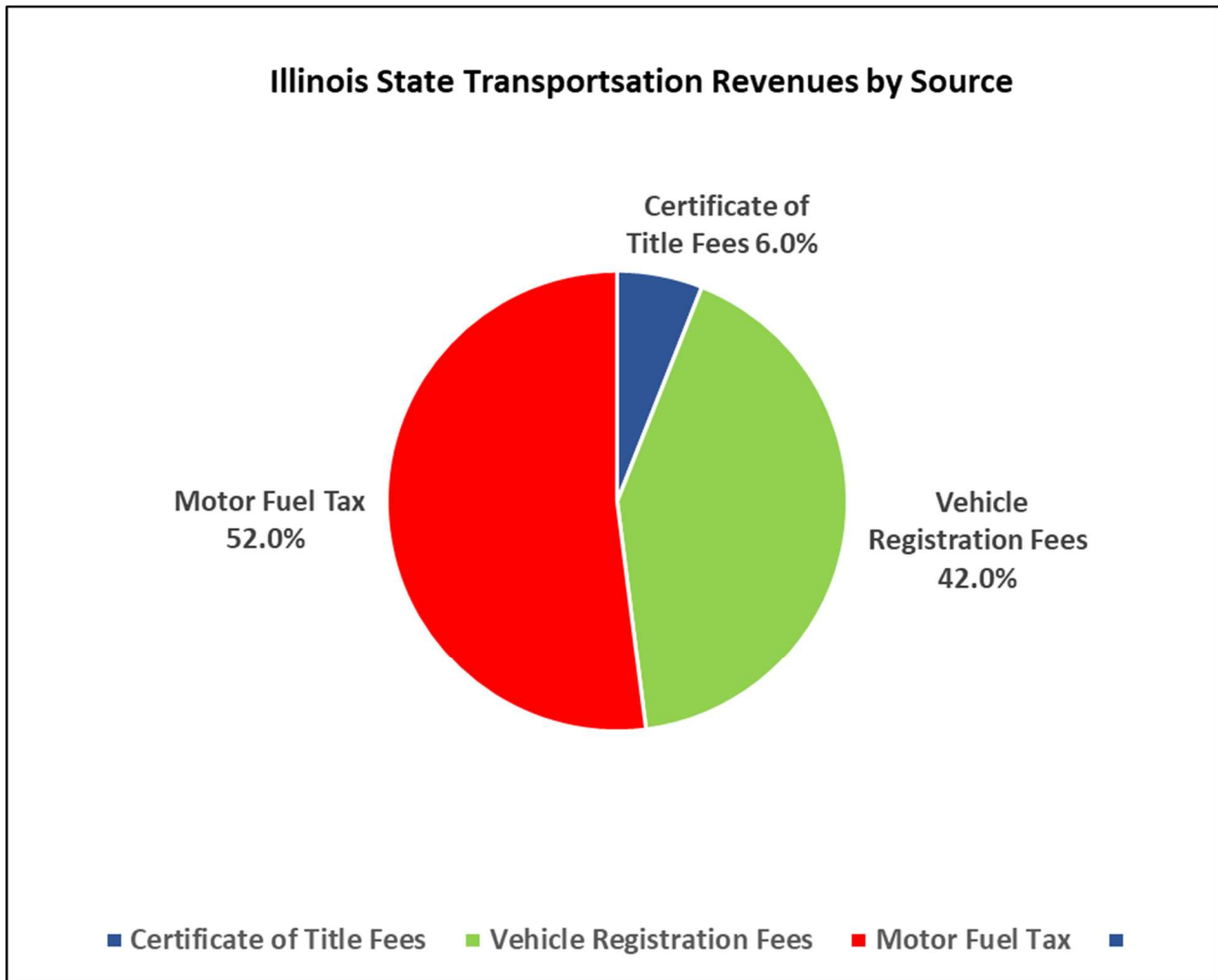
Illinois Motor Fuel Related Sales Tax Data (revenue amounts in millions)						
	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022
Average Gasoline / Gasohol Price	\$2.20	\$2.49	\$2.53	\$2.26	\$2.36	\$3.51
Taxable Gallons of Gasoline / Gasohol (in billions)	4.61	4.60	4.55	4.04	3.92	4.08
Average Diesel Price	\$2.49	\$2.93	\$3.16	\$2.85	\$2.75	\$4.20
Taxable Gallons of Diesel (in billions)	1.44	1.52	1.55	1.42	1.47	1.47
Est. Sales Tax Revenue from Gasoline / Gasohol	\$342.1	\$472.0	\$492.0	\$350.5	\$356.9	\$587.6
Est. Sales Tax Revenue from Diesel	\$150.9	\$190.1	\$210.1	\$156.4	\$154.5	\$252.0
Est. Sales Tax Revenue from Motor Fuel*	\$493	\$662	\$702	\$507	\$511	\$840

*The amounts shown above refer to the State's 5% portion of the sales tax on motor fuel. The amounts are estimates, there is not a sales tax report that distinguishes motor fuel sales from other types of sales from a motor fuel retailer. The estimates are based on fiscal year average gasoline/gasohol and diesel prices as published by the U.S. Energy Information Administration. Motor fuel gallonage figures come from the Department of Revenue's motor fuel gallonage report.

Source: Commission on Government Forecasting and Accountability

Motor Fuel Tax Revenue major source for Transportation revenue

The Illinois Economic Policy Institute warns of a reduction in transportation revenue as electrification accelerates. The primary issue is revenue from motor fuel taxes, which will see a precipitous drop as more electric vehicles hit the road. Electric vehicles do not pay gasoline tax. Motor fuel revenue makes up over half of the transportation revenues and has labor ties, therefore revenue sources must be identified to replace the lost revenue and ensure that the capital improvement plans are maintained. Below is a graphical depiction of Illinois transportation revenue by source.



Source: Illinois Economic Policy Institute

As the number of electric vehicles on the road increases, this raises questions about the most equitable way to replace revenue lost from fuel taxes. The foregone tax revenue is highly regressive since most electric vehicles are driven by high-income households.⁴

Electric vehicles do not pay the gasoline tax, therefore as the number of electric vehicles on the road increases, it raises questions about equity. Some states have considered the implementation of a mileage tax to make up for lost revenue. Should electric vehicles be taxed every time they charge the vehicles, should an annual charging station fee be set up, should we implement a vehicle mile tax? What is the most equitable and effective solution for this financing mechanism?

The benefits of electric vehicles are well documented. An electric vehicle in full electric mode produces zero tailpipe emissions, lowers smog and greenhouse gas emissions. Cleaner cars translate into cleaner air and better health. There is an absolute benefit to having EVs, but it will have an impact on transportation funding and fuel tax revenues.

A report from the Illinois Economic Policy Institute is warning of a potential decline in revenue for transportation as electrification increases. As more electrical vehicles get on the road, we will see a drop in revenue from motor fuel taxes. Motor fuel taxes are a large part of the state funding stream for bridge and road projects. Motor fuel tax is the state's leading source of transportation funding and makes up 52 percent of Illinois' transportation revenue as well as 82 percent of its contributions to the federal highway trust fund.⁵

Illinois Goal of putting 1 million EVs on the road

Studies have shown that implementing a vehicle mile traveled, or VMT fee that would replace the existing motor fuel tax with a fee determined by the number of miles a car drives is an equitable solution and mitigates the impact of loss fuel tax revenue.⁶ Illinois has a goal of putting 1 million electric vehicles on the road by the end of the decade and this was written into law in the Climate and Equitable Jobs Act in 2021.⁷ Even prior to the promise, Illinois was seeing a surge in electric vehicles. From 2017 to 2021, registrations rose from 8,255 to 36,482; the most recent data as of December shows 57,311 registrations.⁸ Proposals to counter a loss of fuel-tax revenue include a higher registration fee, per-mile fee, annual fee for charging stations, and a fee for EV fill ups. Illinois would need to add 119,000 electric vehicles annually to meet the goal of 1 million by 2030. If that does happen the state of Illinois will lose \$765 million in sales and motor fuel taxes when accounting for added EV fees, adding federal revenue, that figure would be \$1.1 billion.

Estimated Fiscal Impact of Reaching 1 million EVs		2021-2030
EV Registration & Fuel Data	Annual EV registrations by 2030	1,000,000
	Average fuel efficiency for light-duty vehicles	24.2 - 28.0
	Gallons of fuel no longer purchased	2,037,207,254
Tax Rates (per gallon)	State gasoline MFT rate	\$0.39 - \$0.47
	State sales tax on motor fuels rate	\$0.16
	Federal gasoline MFT rate	\$0.18
Revenue Calculations	Annual state MFT revenue lost	\$915,099,245
	Annual state sales tax on motor fuels revenue lost	\$325,953,161
	Annual EV fee offset (\$100 per vehicle)	\$475,660,850
Total Impact on Transportation Revenue	Total state revenue lost (MFT and sales tax on motor fuels revenue lost)	\$765,391,556
	Annual Federal MFT revenue lost	\$374,846,135
	TOTAL REVENUE LOST	\$1,140,237,691

Source: Illinois Economic Policy Institute

Electrical Grid Capacity

By 2030 experts believe EVs will make up a third or even half of all light vehicles sold annually in the U.S., up from 7% in 2022.⁹ Will the power grid be capable of handling tens of millions of vehicles? Grid operators are already struggling at certain times due to heat waves to avoid overloading, while other utility officials in other areas warned of possible rolling blackouts to prevent system breakdowns. To bolster electricity transmission to individual homes and businesses expensive upgrades could be needed for neighborhood power-distribution systems. Additional spending will be needed to expand the bandwidth of wires and transformers servicing commercial sites. Combined, all these investments would result in higher electric rates, many industry analysts warn. Power companies have tackled big increases in demand before, such as the air conditioning installation boom 50 years ago, and more recently the construction of massive data centers for cloud storage.

EVs present a different challenge. It is difficult to project the rate of EV adoption. It involves variables such as price of gasoline, price of EVs, availability of EVs, build-out of public charging stations, economic factors, and continuance of government incentives. In contrast, power companies know well in advance of other types of energy drains such as big-housing developments, new shopping centers, and new factories giving them time to upgrade.¹⁰

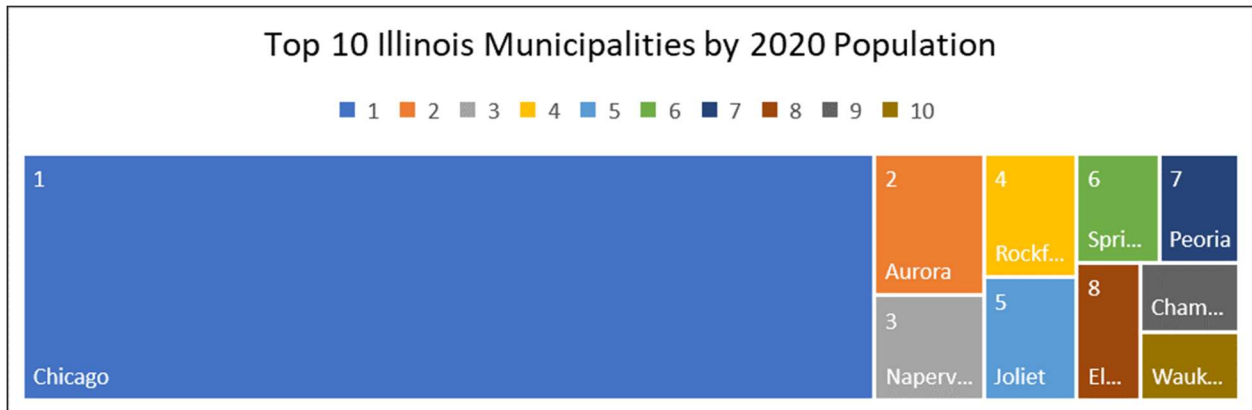
To make it easier for all parts of the grid to deal with higher demand, some utility companies are working with car makers and technology providers on deferrable, managed, or smart charging.

The rise in electric vehicles (EV) sales and the increasing popularity of fuel-efficient vehicles risk cutting fuel-tax revenue that Illinois uses to maintain bridges, roads, and other transportation infrastructure.

Revenue based on Localities Population

The revenue for the Motor Fuel Tax (“MFT”) Fund are for repair of the right-of-way, debt service on MFT backed loans and maintenance. The revenues are generated through a \$0.392 per gallon tax on gasoline and \$0.467 per gallon on diesel prescribed by the State, of which the City receives a distribution based on population.¹¹ Anticipated revenues from this tax are expected to rise by \$4.3 million from the 2022 budget to \$113.3 million in 2023, total 2023 resources for the MT Fund are budgeted at \$126.5 million.¹²

MFT funds are used for concrete, street-sign, pavement, street lighting, traffic signal, bridge maintenance, traffic study and road salt costs.¹³ Below is a graphical depiction that displays the distribution based on population. As you can see the City of Chicago has the largest population of 2.7 million with Aurora being a distant second at 199,326.



Ranking	Municipality	2020 Population
1	Chicago	\$ 2,699,347
2	Aurora	\$ 199,326
3	Naperville	\$ 147,734
4	Rockford	\$ 147,441
5	Joliet	\$ 147,323
6	Springfield	\$ 115,075
7	Peoria	\$ 112,644
8	Elgin	\$ 112,062
9	Champaign	\$ 88,288
10	Waukegan	\$ 87,157

The price of motor fuel has risen significantly especially since the war in Ukraine broke out. Prices vary in the State of Illinois due to differences in marketing costs, the varied cost of distribution to certain locations, retail dealer cost, and the differences in the amount of local taxes applied to motor fuel.¹⁴ Higher-taxed locations like Chicago would have motor fuel prices that are higher.

Potential Policy Changes

To offset the fiscal impact of changes in transportation, policy changes will need to be implemented to ensure funding levels for transportation funding. Without change, the state will fall short of funding to support the transportation infrastructure. The next section will discuss possible policy changes that could be implemented to address transportation funding shortfalls.

A Vehicle mile traveled (VMT) fee will be a fee implemented to equitably charge the user a fee based on the actual distance traveled. This fee would provide a funding source for electric vehicles and serve as a replacement fee for the existing motor fuel tax. VMT fees have been piloted in various states and currently voluntarily used as an alternative to the MFT in Oregon.¹⁵ The concept of the VMT fee have been discussed and introduced in Illinois, however the bill failed.¹⁶ VMT fees remains an option and recently proposed in IDOT's Long Range Transportation Plan (IDOT, 2018) and other public policy organizations.

Another option to minimize the fiscal impact would be to increase existing fees and consider a fee for hybrid vehicles. As mentioned earlier in this discussion, Illinois currently has a \$100 additional annual registration fee for all EVs. This fee does not adequately cover the MFT revenue paid by the typical driver of a gas-powered vehicle. To compensate for the average MFT loss the annual EV fee should be at least \$187. Another consideration for equity among drivers is hybrid vehicles. Some hybrids are dependent on gasoline-powered engines while others primarily depend on electric engines. Fuel efficiency varies and more studies should be done to determine the overall fuel savings and MFT revenue lost.

The Kilowatt-per-hour fee is another user fee applied to EV users. This fee charges based on the electricity used to charge the EV and plug-in the hybrid vehicle. Implementation of the kilowatt-per-hour fee can be challenging when determining where EVs are being charged and the appropriate tax rate.

A statewide policy adopted in Iowa was the Alternative Fuel Tax, in which electricity is subject to the excise tax of \$0.026 kilowatt-hour of fuel delivered to a battery or other energy storage device.¹⁷ The Iowa policy of electric charging station fees are not commonly used to support or make up for transportation funding. The Iowa policy effectiveness is limited as many opt to charge

their vehicle at home free. Therefore, additional work would be needed to develop a policy that can replace all lost MFT revenue with a kilowatt-per-hour fee.

Conclusion

The increase in the sale of electric cars in Illinois is likely to have a significant impact on the revenue generated from Motor fuel tax. As more people switch to electric cars, they are no longer using gasoline or diesel and therefore not paying motor taxes. This could potentially result in a decrease in revenue generated which may have an adverse effect on road infrastructure maintenance and other transportation projects that rely on this funding.

Some states are taking steps to remedy this issue by implementing new fees or taxes specifically for electric vehicle owners. Illinois has recently enacted legislation that requires EV owners to pay an additional registration fee annually to make up for lost revenue from motor fuel taxes.

The increasing popularity of electric cars presents both opportunities and challenges for local and state governments as they seek to balance environmental concerns with financial sustainability.

Endnotes

¹Moody's Analytics, Chicago-Naperville-Arlington Heights IL

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³Varner, B. Commission on Government Forecasting and Accountability. <http://cgfa.ilga.gov>.

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⁵Source: Illinois Economic Policy Institute. <https://illinoisupdate.com/2023/01/16/study-more-electric-vehicles-for-illinois-and-higher-fuel-economy-standards-could-mean-4-billion-less-for-transportation-projects-over-next-decade/>.

⁶Source: Illinois Economic Policy Institute. <https://illinoisupdate.com/2023/01/16/study-more-electric-vehicles-for-illinois-and-higher-fuel-economy-standards-could-mean-4-billion-less-for-transportation-projects-over-next-decade/>.

⁷Source: Illinois Economic Policy Institute. <https://illinoisupdate.com/2023/01/16/study-more-electric-vehicles-for-illinois-and-higher-fuel-economy-standards-could-mean-4-billion-less-for-transportation-projects-over-next-decade/>.

⁸Source: Illinois Economic Policy Institute. <https://illinoisupdate.com/2023/01/16/study-more-electric-vehicles-for-illinois-and-higher-fuel-economy-standards-could-mean-4-billion-less-for-transportation-projects-over-next-decade/>.

⁹B. Ziegler. 2023. Can the Power Grid Handle a Wave of New Electric Vehicles? The Wall Street Journal. <https://www.wsj.com/articles/url-us-power-grid-electric-vehicles-ev-charging-11675444994>.

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