



**County Road Association
OF MICHIGAN**

What's new with electric vehicles and road revenue

*Michigan Association of
Counties Conference*

Denise Donohue, CEO

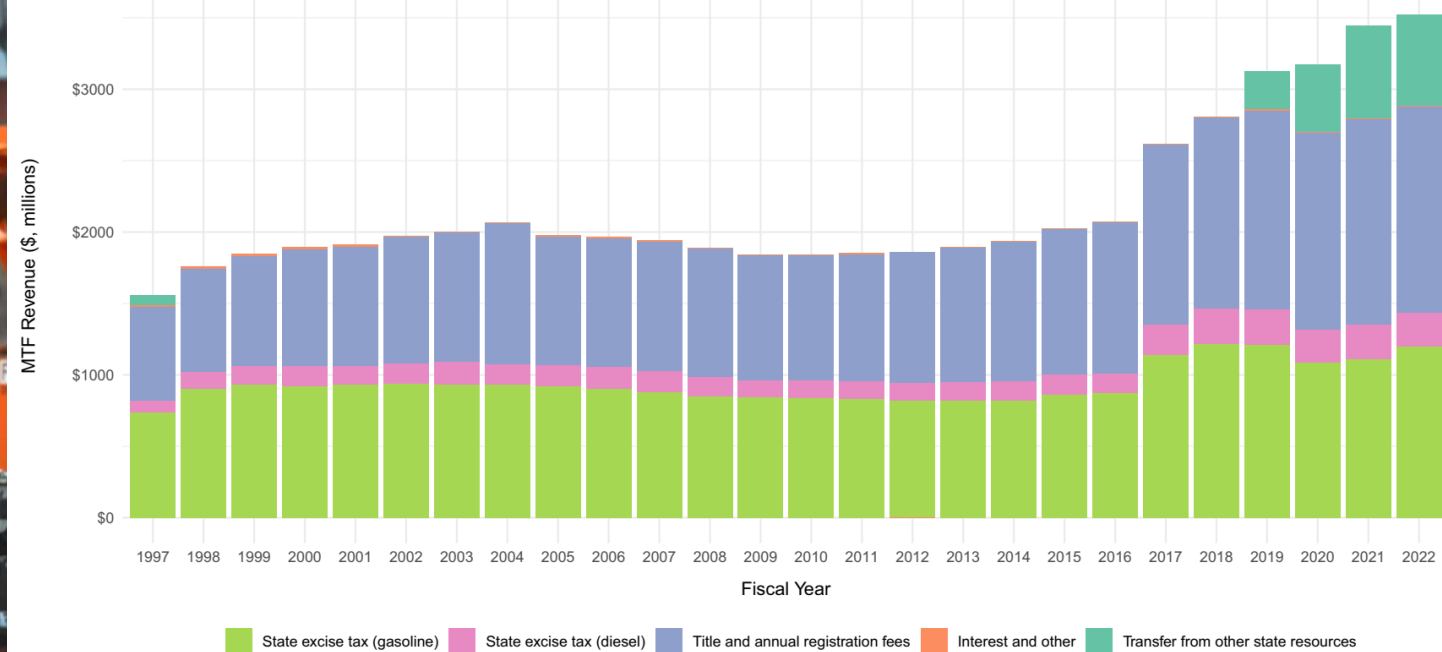
***Ed Noyola, Chief Deputy
and Legislative Director***



Period of Mi Transportation Fund (MTF) revenue growth



FIGURE 1. Michigan Transportation Fund Revenue, Fiscal Years 2003-2022 (millions)

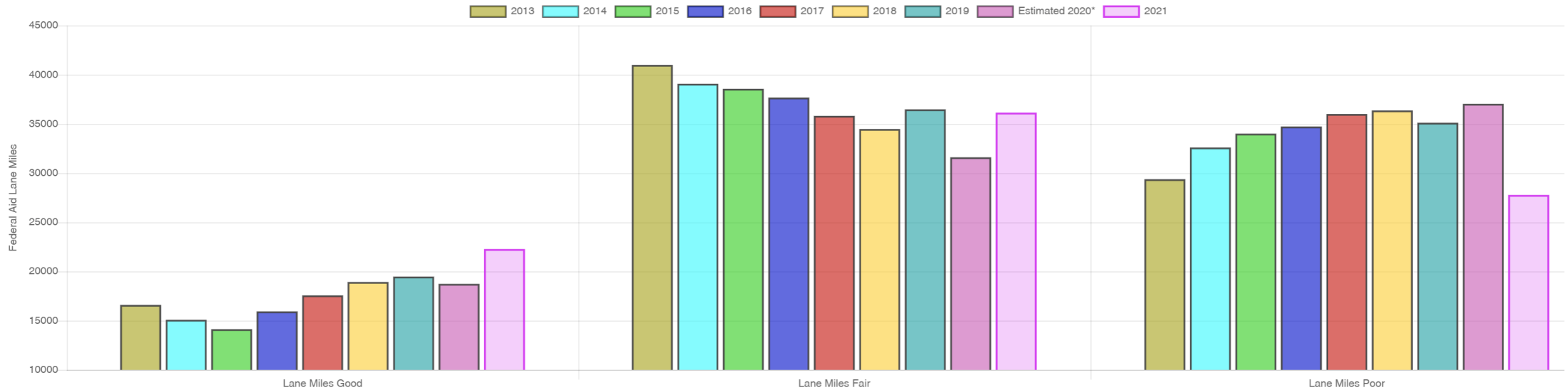


Source: House Fiscal Agency, "MTF Distribution Formula to Local Road Agencies," March 2022.

MI federal aid road ratings



Pavement Condition Trends
State - State of Michigan, All Roads, Federal Aid Lane Miles



2015
G 6,731 (15%)
F 17,359 (39%)
P 22,657 (50%)

54% Good/Fair

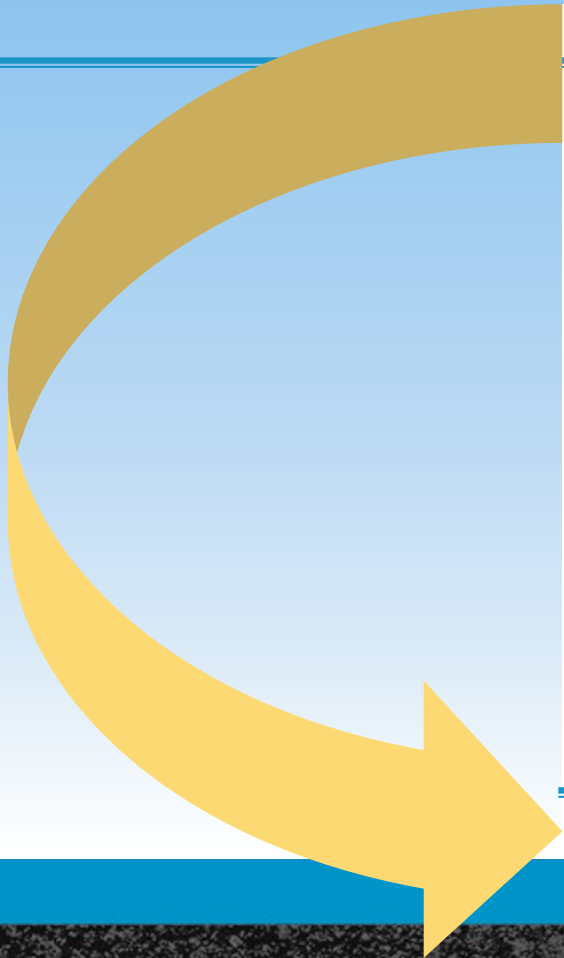
2021
G 12,695 (26%)
F 19,315 (38%)
P 18,061 (36%)

64% Good/Fair

CRA
Goal = 90% G/F

TAMC online dashboard, 2021

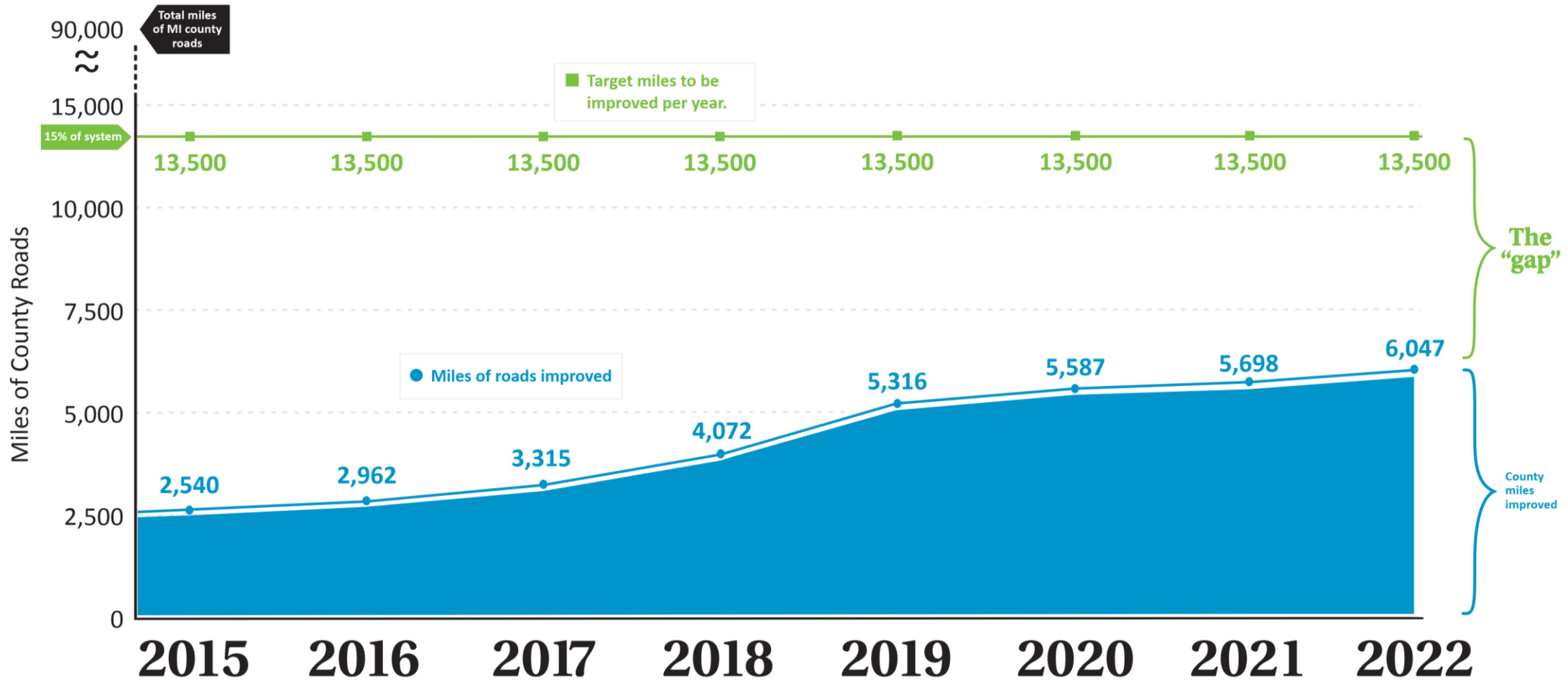
Annual financial need on Mi county roads



Need Category	Annual Cost
Bridges	\$ 222,177,467 ↑
Buildings, Maintenance Facilities	\$ 44,624,483 ↑
Maintenance	\$ 912,903,033 ↑
Equipment	\$ 164,615,464 ↑
Federal Aid-Eligible Roads	\$ 764,613,642 ↓
Nonfederal Aid-Eligible Roads	\$1,516,405,856 ↓
Annual County Road Investment Needs	\$3,625,366,945 ↑
Less county road revenue documented in 2019 PA 51 Report	- <u>\$1,734,106,480*</u> ↑
<small>*Total revenue is Line 97 minus Lines 77 & 78 from PA 51 Reports of 2019.</small>	
Outstanding Annual Funds Needed for County System	\$1,844,185,068 ↓

Source: 2021 County Road Investment Plan

2022 County Road Progress Report



Inflation trend for construction costs



National Highway Construction Cost Index (NHCCI)



**New road funding headwinds:
Electric and hybrid vehicles**



EV terms defined

ICE

Internal **C**ombustion **E**ngine

BEV

Battery-powered **E**lectric **V**ehicle

HEV

Hybrid **E**lectric **V**ehicle

PHEV

Plug-in **H**ybrid **E**lectric **V**ehicle



Chevrolet Equinox (ICE)



Tesla Model X (BEV)



Toyota Prius (HEV)



Ford Escape (PHEV)



Transition to EVs

Adoption grows in Michigan and the U.S.



- BEV → 1.3% of new MI vehicles in 2021 vs. 0.4% in 2019
- EVs (all) → 6% of new MI vehicle registrations in 2021
- 2021 → 1.9% of vehicles on MI roads were electric
- 2022 (Q2) → 5.5% of new vehicle sales in US were EV



Source: Anderson Economic Group, "The Impact of Electric Vehicle Adoption on Road Funding in Michigan, September 2022."



Transition to EVs

Electric vehicle penetration in Michigan, 2021

Vehicle Type	Share of Total New Vehicle Sales	Share of Total Vehicles in Operation
Battery Electric	1.3%	0.2%
Hybrid Electric	3.9%	1.5%
Plug-in Hybrid Electric	0.8%	0.2%
Total Electric Vehicles:	6.0%	1.9%
<i>Memo: Internal Combustion Engine Vehicles</i>	<i>94.0%</i>	<i>98.1%</i>

Source: IHS Markit (units in operation, new vehicle registrations)

Analysis: Anderson Economic Group (2022).

Transition to EVs



New federal/state policy initiatives on EVs to encourage MI transition from ICE to EV.

- US EV purchase tax credit (up to \$7,500, ltd.)
- Big investments in EV charging
- Developing domestic EV battery supply
- Policy targets for EV share of new vehicle sales (US, CA)



Transition to EVs

Automakers have set aggressive targets for EV sales.

Manufacturer	Goals
Ford	Aims to produce 2M annual EVs by 2026
GM	Cadillac aims to become an EV-only brand by 2030
Stellantis	Targets 50% of its new U.S. sales to be BEVs by 2030
Audi	Plans to become an EV-only brand after 2026
BMW	Aims to achieve 50% new sales from EVs by 2030
Honda	Aims to produce 30 BEV models over the next decade
Toyota	Aims to achieve 3.5M new EV sales by 2030

Automakers investing ~\$500B in EV production, battery development.

Source: Anderson Economic Group, "The Impact of Electric Vehicle Adoption on Road Funding in Michigan, Sept. 2022.



Report released

"The Impact of Electric Vehicle Adoption on Road Funding in MI"

- Funded by Coalition on EVs and Transportation Revenue
 - CRA, MITA, MML, MTA, MAC, MPTA, MI Chamber
- Jan. 17 news conference





Impacts to road funding

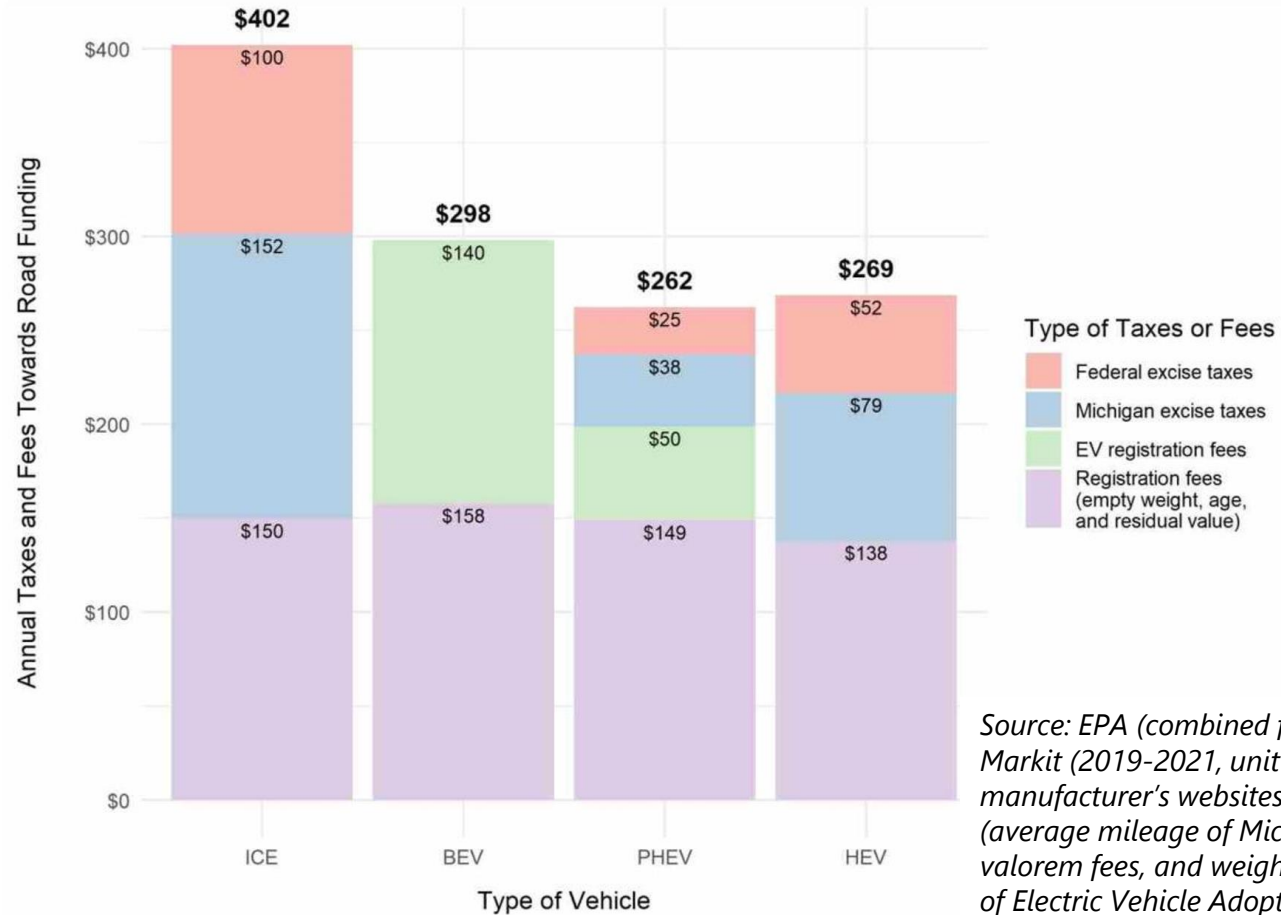
Discrepancy in per-driver contribution worsens road funding shortfall.

- Michigan fuel tax directly allocated to MTF.
- BEV drivers do not pay state or federal fuel taxes.
- HEV, PHEV pay less fuel tax and less reg. premium.
- Michigan's "EV registration fee" attempts to recoup lost taxes. Insufficient for lost revenue.

**Bottom line:
Michigan EV drivers
pay only 70-80%
of an ICE driver's
road funding burden.**

Source: EPA (combined fuel economy); EIA (federal and state excise taxes); IHS Markit (unit sales of all vehicles by fuel type, 2019-2021; vehicles in operation, 2019); Kelley Blue Book (average mileage of Michigan drivers); Michigan Secretary of State website (EV registration fees on BEVs and PHEVs); Anderson Economic Group, "The Impact of Electric Vehicle Adoption on Road Funding in Michigan, Sept. 2022.

Estimating MI's road funding gap per EV



Source: EPA (combined fuel economy); EIA (federal and state excise taxes); IHS Markit (2019-2021, unit sales of vehicles in Michigan); Edmunds.com and manufacturer's websites (price and curb weight of vehicles); Kelly Blue Book (average mileage of Michigan drivers); Michigan Secretary of State website (ad valorem fees, and weight-based fees); Anderson Economic Group, "The Impact of Electric Vehicle Adoption on Road Funding in Michigan, Sept. 2022."

Estimating MI's road funding gap



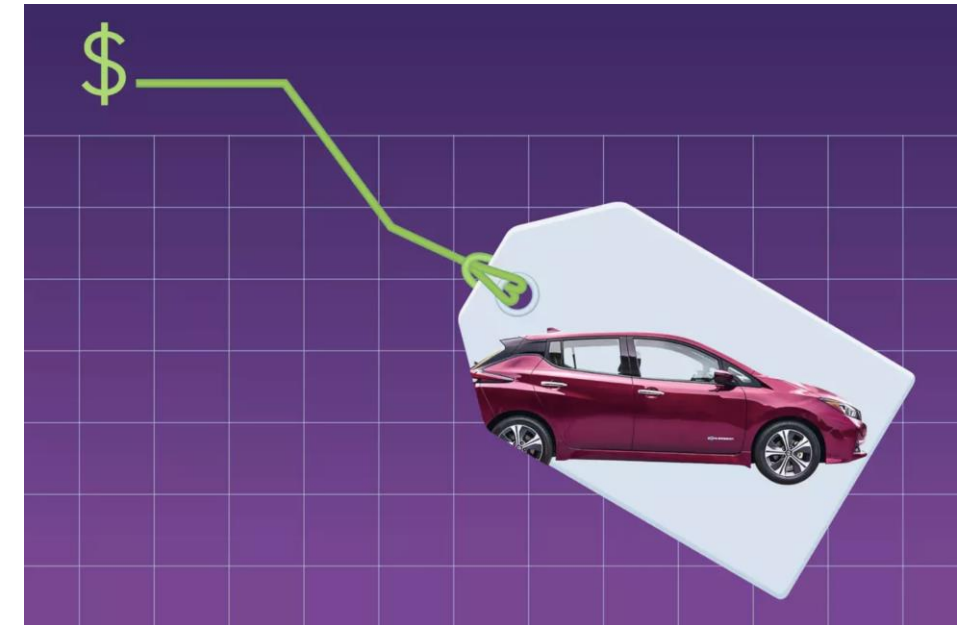
- At 6% new vehicle market, EV transition has already driven significant MI road funding deficit.
- From 2019 to 2021, EV transition represented cumulative **\$50M deficit** in MI road funding.
- EVs 1,000 pounds heavier than ICE cars.
 - ↑ likelihood for road damage
 - ↑ construction and maintenance costs

Source: Anderson Economic Group, "The Impact of Electric Vehicle Adoption on Road Funding in Michigan," Sept. 2022.

Estimating MI's road funding gap

Revenue shortfall will be geometric.

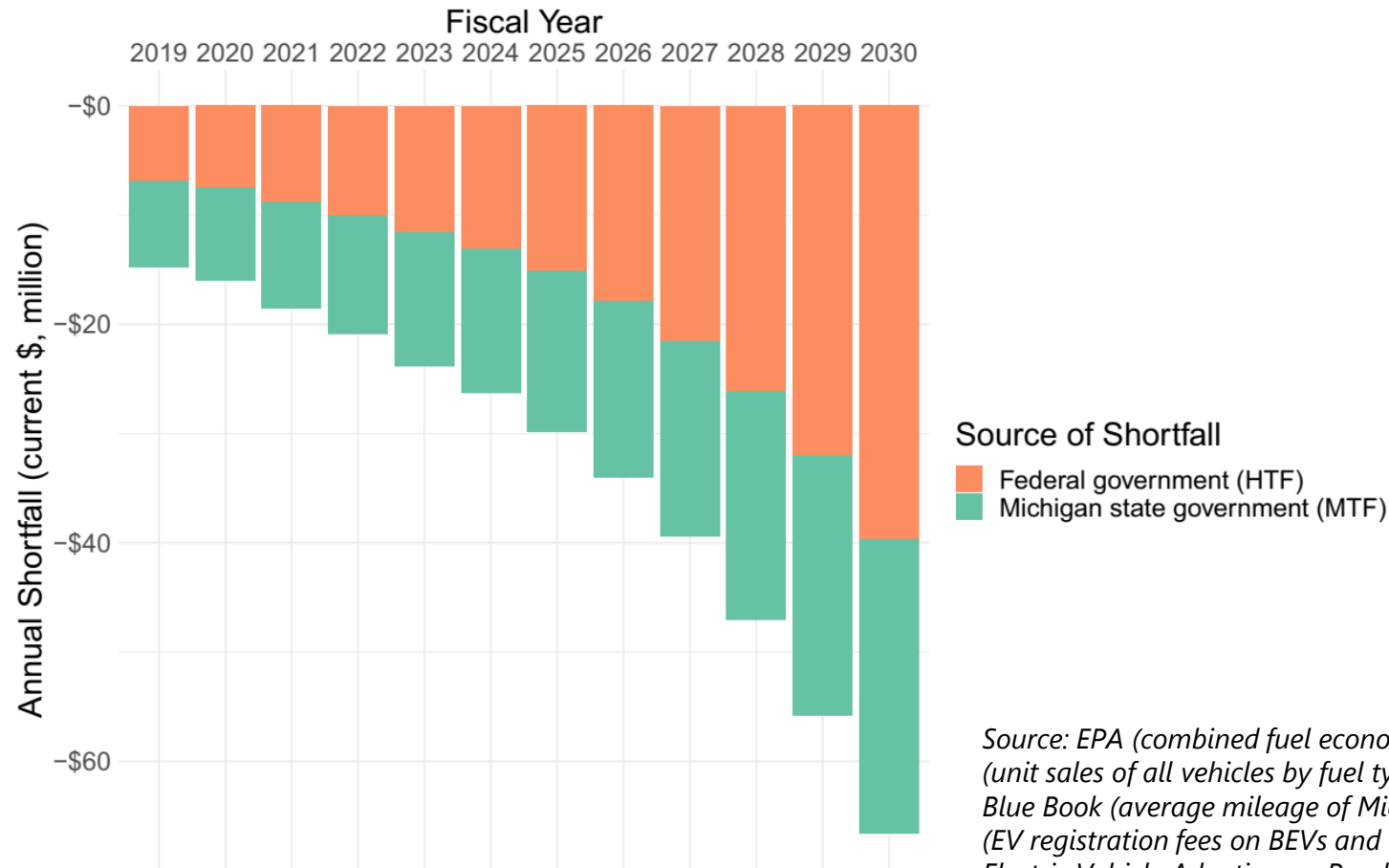
- Grows as EVs gain market share.
- Already \$50M MTF shortfall (2019-2021)
- By 2030, annual MTF shortfall = **\$65-\$95M**.
- FHWA's MI shortfall almost 2X MTF.
- Cumulative shortfall to road funding from MI EV drivers will be > **\$390 - \$470M** **by 2030.**



Source: Anderson Economic Group, "The Impact of Electric Vehicle Adoption on Road Funding in Michigan, September 2022."

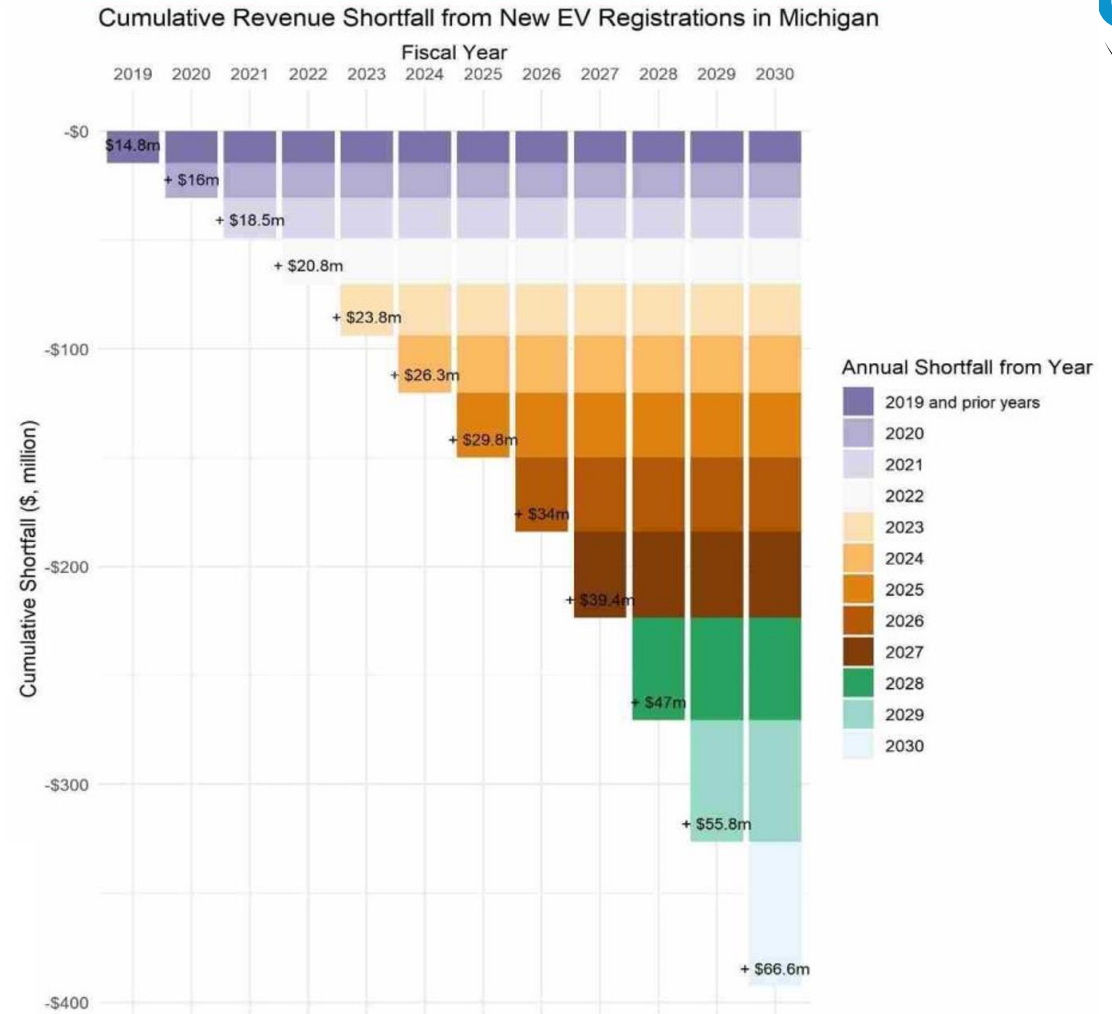


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Proposed concepts for road funding



Proposed concepts for road funding in EV world:

- Should be fair and equitable.
- Should be closely tied to road usage, likely considering mileage and weight, or capturing both in application.
- Need for growth mechanisms.
- Status quo in funding likely unsuitable. MI roads and bridges need increased revenue.



Source: Anderson Economic Group, "The Impact of Electric Vehicle Adoption on Road Funding in Michigan, September 2022.

Policy options to replace lost funding



Annual Flat Registration Fees (28 states have)

A fixed fee, higher than the current “EV registration fee,” is levied on all EV drivers.

Pros	Cons
Perhaps minor legislative hurdles because annual registration fees are already part of the code.	Because the fee is fixed, drivers who drive less than average annual miles (14,000) pay higher usage fees on per-mile basis. Above this, costs “free.”

Source: Anderson Economic Group, “The Impact of Electric Vehicle Adoption on Road Funding in Michigan, September 2022.”

Policy options to replace lost funding



Mileage-Based User Fees (19 states have)

Per-mile fee for all vehicles, which can vary by vehicle weight and other factors.

Pros	Cons
Ensures payment is proportionate to each driver's road usage.	Interstate and tourism travel cannot be readily taxed.
Already implemented in parts of Oregon and Utah.	Privacy concerns due to GPS device on vehicle to track mileage.

Source: Anderson Economic Group, "The Impact of Electric Vehicle Adoption on Road Funding in Michigan, September 2022."

Policy options to replace lost funding



Per Kilowatt-Hour Fees

Retains current system for ICE cars but charges a fixed fee per kilowatt-hour while charging EVs. (Vermont)

Pros	Cons
<p>Charges drivers for electricity use in the same way that ICE vehicle drivers pay per-gallon taxes at the gas pump.</p> <p>Feasible if implemented through legislation, assuming there is infrastructure for data collection.</p>	<p>At-home charging makes it difficult to determine electricity used only for charging an EV.</p> <p>Not feasible to monitor 120V home charging by vehicle owners.</p>

Source: Anderson Economic Group, "The Impact of Electric Vehicle Adoption on Road Funding in Michigan, September 2022."

Policy options to replace lost funding



Miles at Registration Fees

Mileage is reported during annual registration. The difference in miles driven over the previous year is taxed.

Pros	Cons
No privacy issues.	Interstate and tourism travel cannot be taxed as efficiently.
Minimal setup, implementation, and administrative burden.	Does not account for variations in vehicle weight and impact on road deterioration.
A federal vehicle mileage tax may provide feasibility context and lower administrative burden further.	May have to rely upon self-reporting.

Source: Anderson Economic Group, "The Impact of Electric Vehicle Adoption on Road Funding in Michigan, September 2022."

Policy options to replace lost funding



Tolling

Fees paid electronically for the use of a certain stretch of road.

Pros	Cons
Allows precise pricing of road usage based on quality, congestion, weight of the vehicle, etc.	Requires vast capital investment and changes to federal and state laws. Public opinion perceives toll roads as double taxation.

Source: Anderson Economic Group, "The Impact of Electric Vehicle Adoption on Road Funding in Michigan, September 2022."

Coalition on EV/Hybrid Infrastructure Road Revenue



County Road Association of Michigan



Michigan Association of Counties



Michigan Municipal League



Michigan Townships Association



Michigan Infrastructure & Transportation Association



Michigan Chamber of Commerce



Michigan Public Transit Association





**County Road Association
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Thank you!

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