Michigan's Road Forward: Replacing the Fuel Tax With Mileage-Based User Fees

Chris Douglas, Ph.D.
Professor of Economics & Member
Board of Scholars at the Mackinac Center for Public Policy

FLINT

- This policy brief is co-authored with Robert Poole, the Director of Transportation Policy for the Reason Foundation.
  - Bob has coauthored similar studies for states such as Georgia and Florida, which are available on his website: https://reason.org/author/robert-poole/
- Data analysis was conducted with the assistance of Ed Regan, a long-time transportation analyst who recently retired from CDS Smith.
- Link to my page on the Board of Scholars at the Mackinac Center for Public Policy that includes this study as well as my other studies and articles I have written for them: https://www.mackinac.org/about/board-of-scholars/685

Summary

- We model Michigan fuel sales and fuel tax revenues through 2050 under four scenarios: The EIA's 2021 "Reference Case" MPG, under stricter Obama-era CAFE standards, under high EV penetration, and no change in average vehicle MPG.
- The first three scenarios have a significant fuel tax revenue loss compared to the baseline case of no MPG change.
- Fixing this problem is a heavy lift politically (to say the least).
- Dollar amounts are Michigan-specific but percentages should carry-over to other states.

Background: Michigan fuel taxes

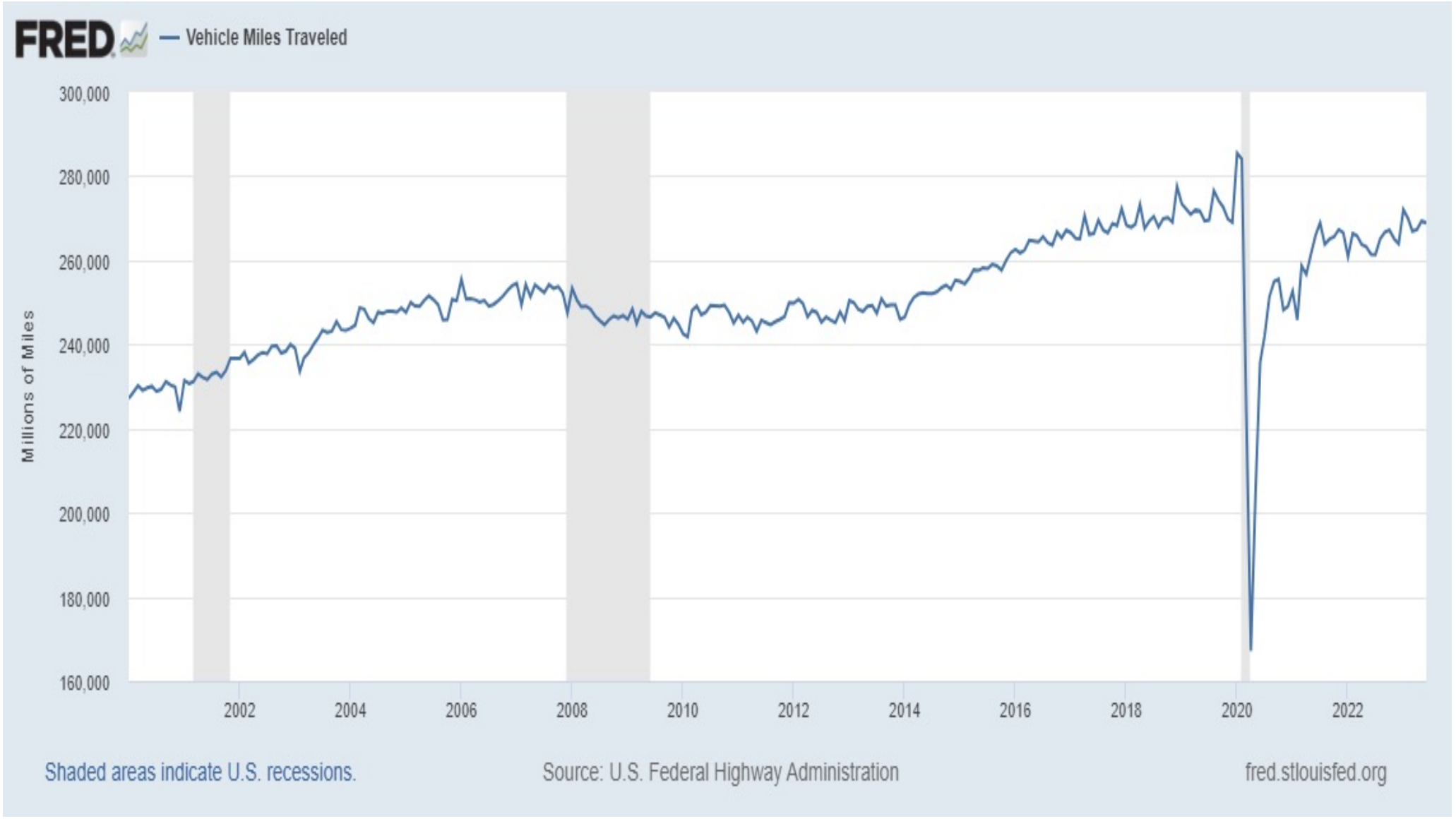
- Gasoline tax increased from $0.15/gallon to $0.19/gallon in 1997.
  - *Not* indexed for inflation and rate remained unchanged for *20 years*.
  - $0.19/gallon in 2017 equated to $0.13/gallon in 1997.
- Diesel tax rate set at $0.15/gallon in 1984 and unchanged for 33 years and not indexed for inflation.
  - Indexing of gasoline and diesel taxes apparently was repealed in 1984 for some reason.
- The gasoline and diesel taxes were increased to $0.27/gallon in 2017 and indexed to inflation (5% or rate of inflation, whatever is lower).
  - Vehicle registration fees also substantially increased.
  - New EV fees:
    - $100 for light EVs, $200 for heavy ones.
    - $30 for light plug-in EVs, $100 fore heavy ones.
- Fuel sales are subject to Michigan's 6% sales tax, but the proceeds *do not* go towards roads.

Scenarios

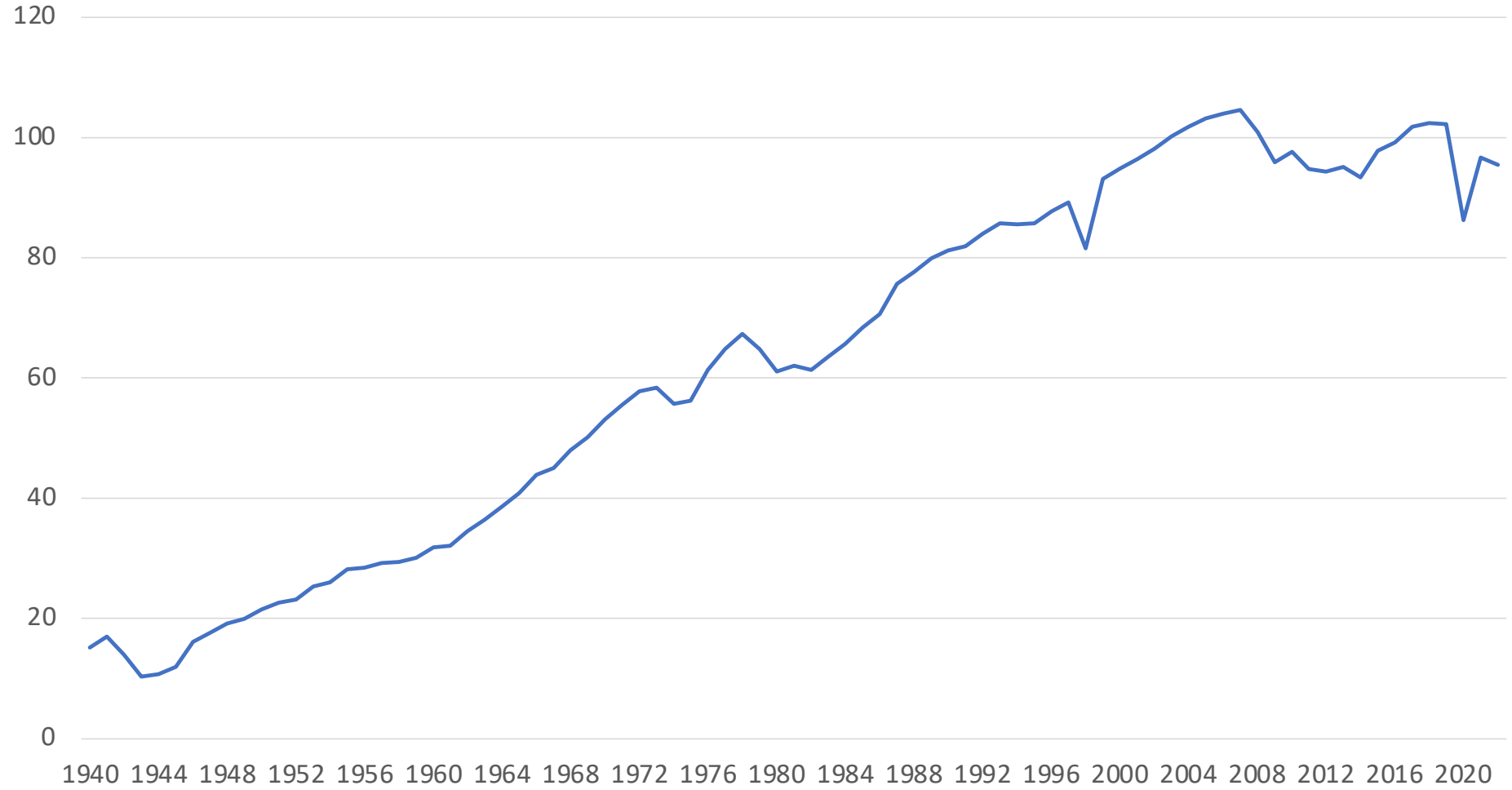
- Scenario #1: 2021 Energy Information Administration (EIA) “reference case.”
  - Older vehicles are gradually replaced with newer, more fuel efficient vehicles over time under Trump CAFE standards.
  - Trump rolled-back Obama-era CAFE standards to from 46.7 mpg by 2026 to 40.4 mpg.
  - The rollback of Obama-era CAFE standards under Trump has already been overturned by the Biden Administration.
- Scenario #2: restoration of Obama-era CAFE standards by the Biden Administration.
  - Already happened and is proposing to raise them to 58 mpg by 2032.
- Scenario #3: half of all vehicles are EVs by 2050.
  - Bloomberg New Energy Finance’s global projection and stated goal of the auto industry and federal government.
  - Scenario #1 assumes 8% EV penetration by 2050. Currently 12% of vehicle sales are EV.
- Scenario #4: No change in average MPG between now and 2050
  - Unlikely, but useful as a baseline case

“It is difficult to make predictions, especially about the future.” –Yogi Berra

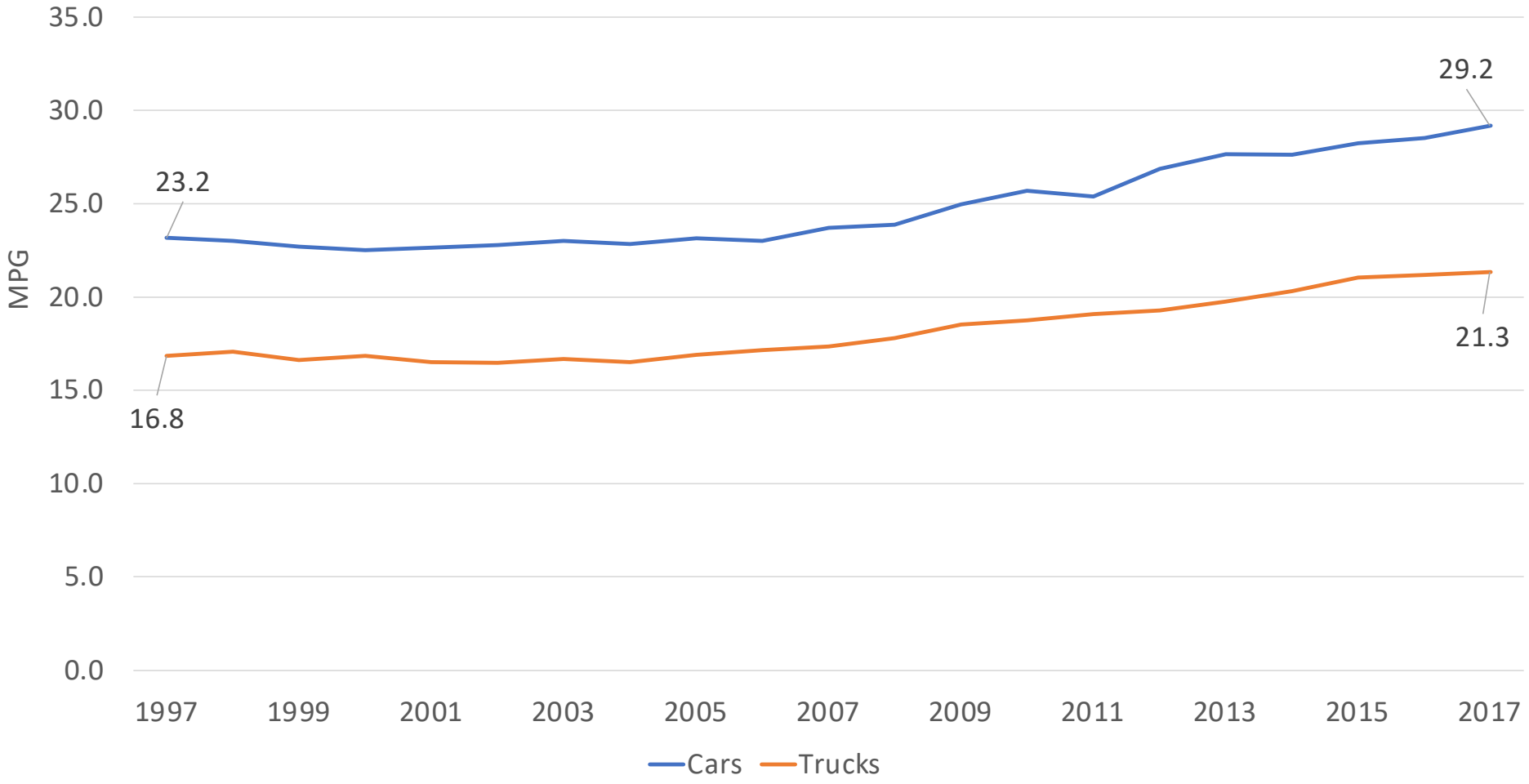
- We assume vehicle miles travelled (VMT) rebounds from COVID and then grows at 1% annually.
  - The potential impact of long-term work-from-home is not modeled in this.
- We assume Michigan’s fuel tax rate increase by the rate of inflation or 5% (whichever is less) as per the 2017 fuel tax increase.
  - We assume that inflation returns to the Fed’s 2% target by 2023 and remains there until 2050.
  - Inflation remains roughly double that target, which will increase fuel tax rates above what was forecast.
- We do not assume any future fuel tax increases on top of inflation indexing.
- We do not assume any future recession, which would depress VMT, fuel tax revenues, and fuel tax rates.


FRED
— Vehicle Miles Traveled
300,000
280,000
260,000
240,000
220,000
200,000
180,000
160,000
Millions of Miles
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020
2022
Shaded areas indicate U.S. recessions.
Source: U.S. Federal Highway Administration
fred.stlouisfed.org

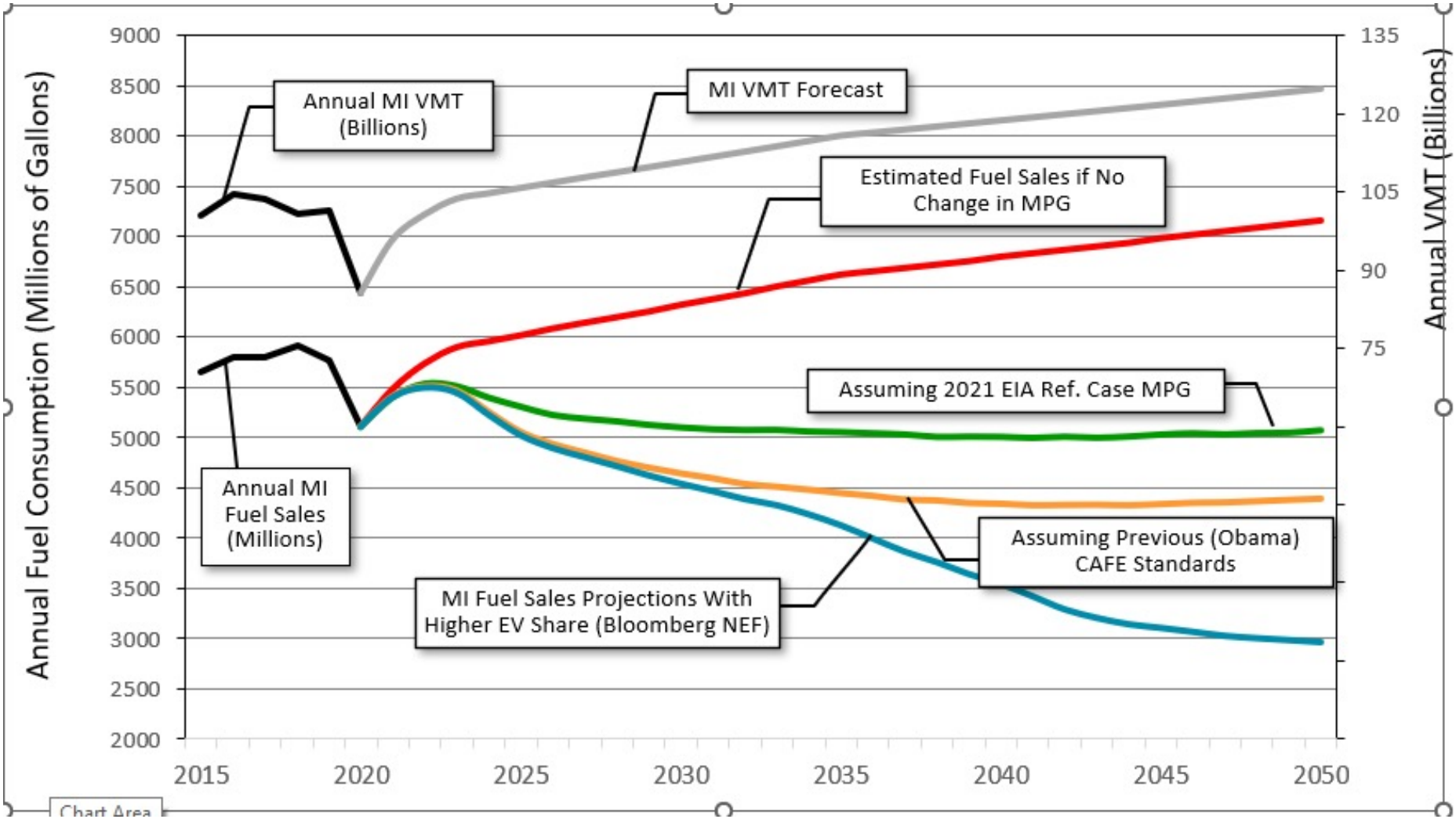
Michigan Annual Vehicle Miles Traveled



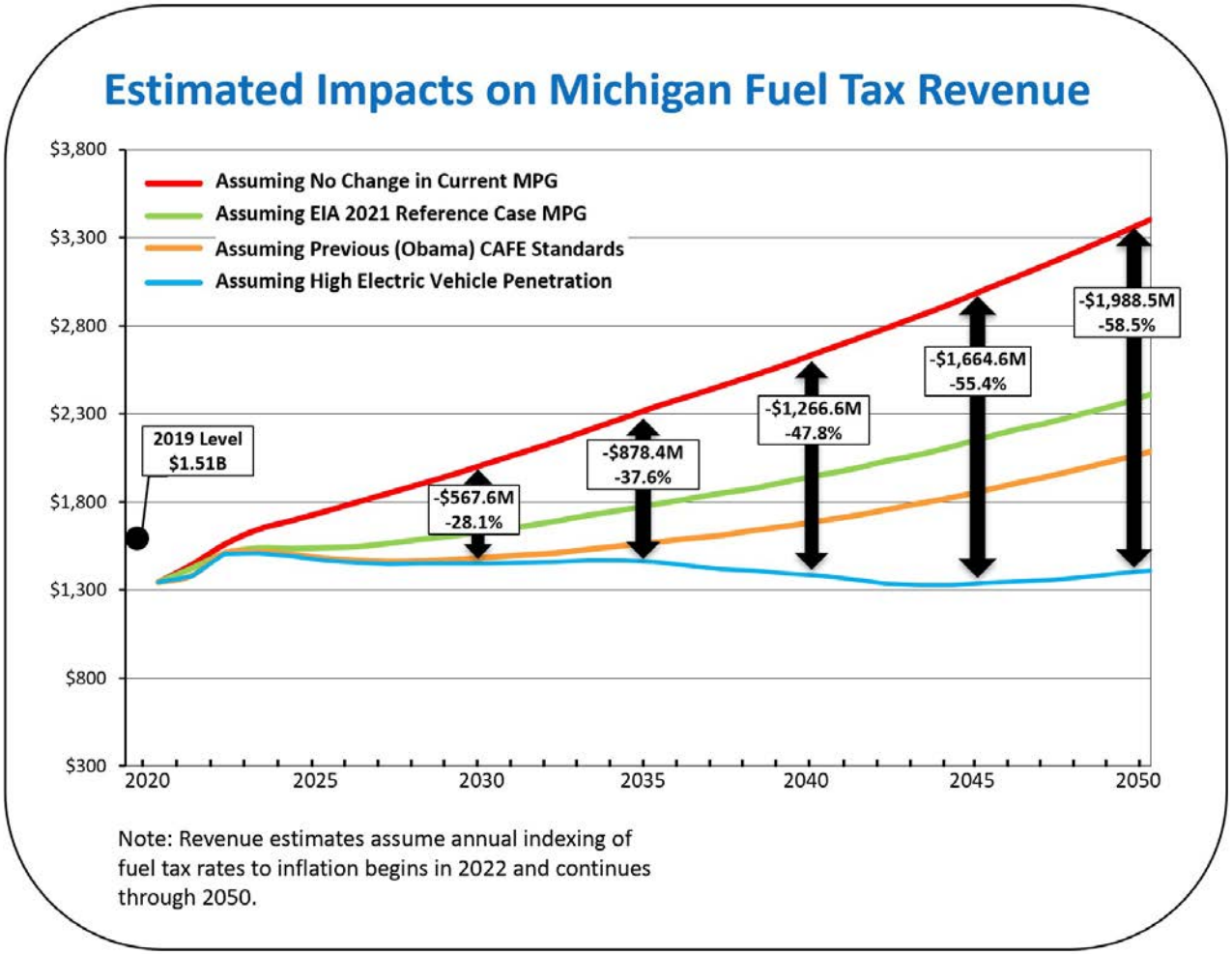
Average Vehicle MPG: 1997-2017



Michigan VMT and Fuel Consumption Forecasts



Estimated Michigan Fuel Tax Revenues



Fixing the problem with fuel taxes-what the tax rate would have to rise to

	No Change in MPG	2021 EIA Baseline	Obama-CAFE	High EV Penetration
2023	$0.29	$0.29	$0.29	$0.29
2030	$0.32	$0.40	$0.42	$0.53
2040	$0.39	$0.53	$0.52	$0.72
2050	$0.48	$0.68	$0.73	$1.08

EV Fee growth over time

- Under high EV penetration scenario:

	EVs on the road	Total EV fees paid
2022	33,150	probably ≈$7.4 million
2035	1 million	$150 million
2050	4 million	$900 million

- EV fees will increase with inflation, but,
- EV fees are lump sum and not a user fee.
- No allowance for damage heavier EVs due to roads.

Conclusion

- There is a high likelihood that the viability of fuel taxes in the future is limited. The question is to what degree.
- Fixing this problem will be difficult (to say the least).
  - Voters are *very* resistant to higher fuel taxes or any new tax, especially on top of the exiting fuel tax.
- It is important start addressing the problem sooner rather than later.