



Unlocking the Box

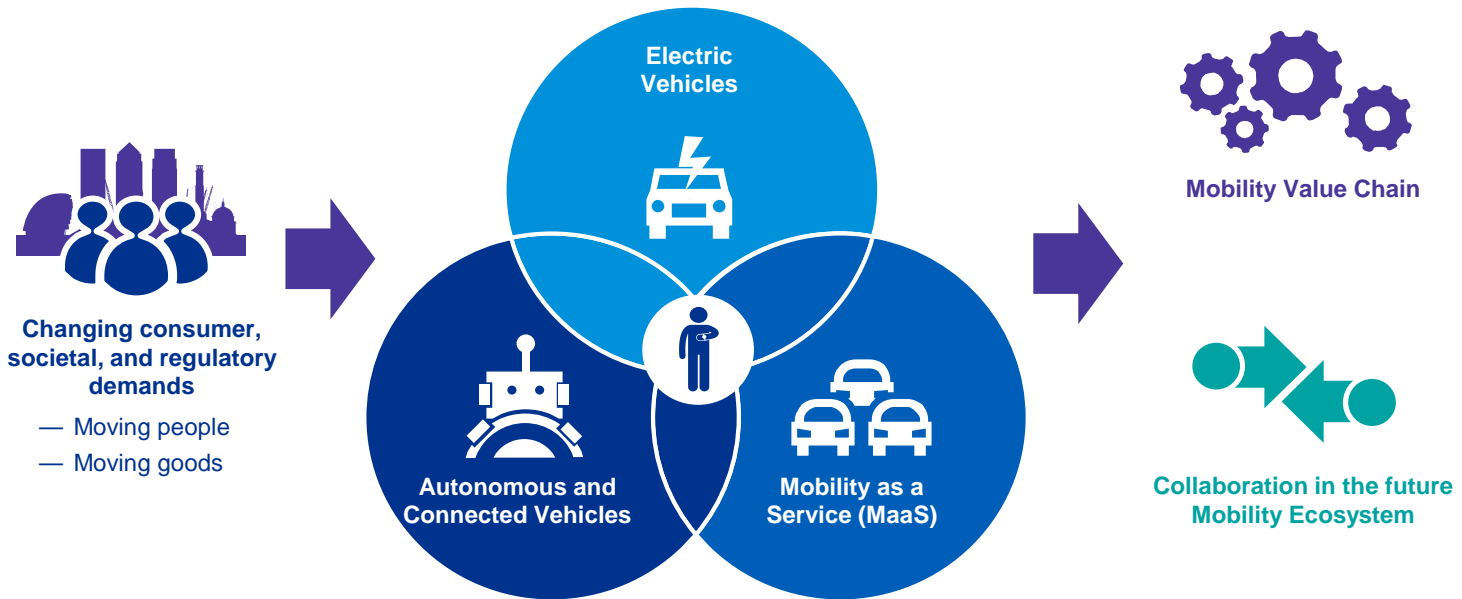
Best Practices for Financing Illinois Infrastructure

Ted Hamer
Managing Director
(312) 665-2856
thamer@kpmg.com

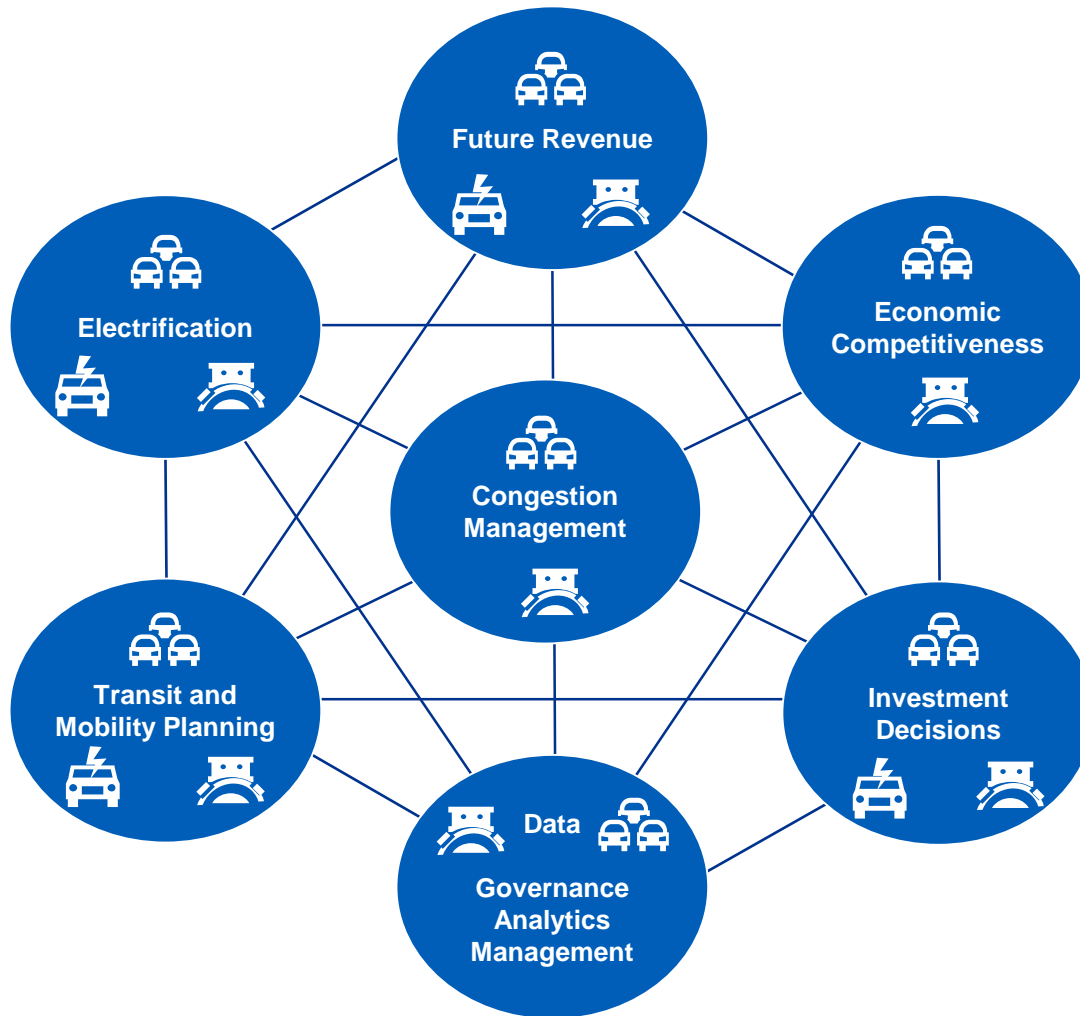


KPMG's View on Shifting Transportation Demand

A fundamental shift in mobility has been initiated, driven by three major forces

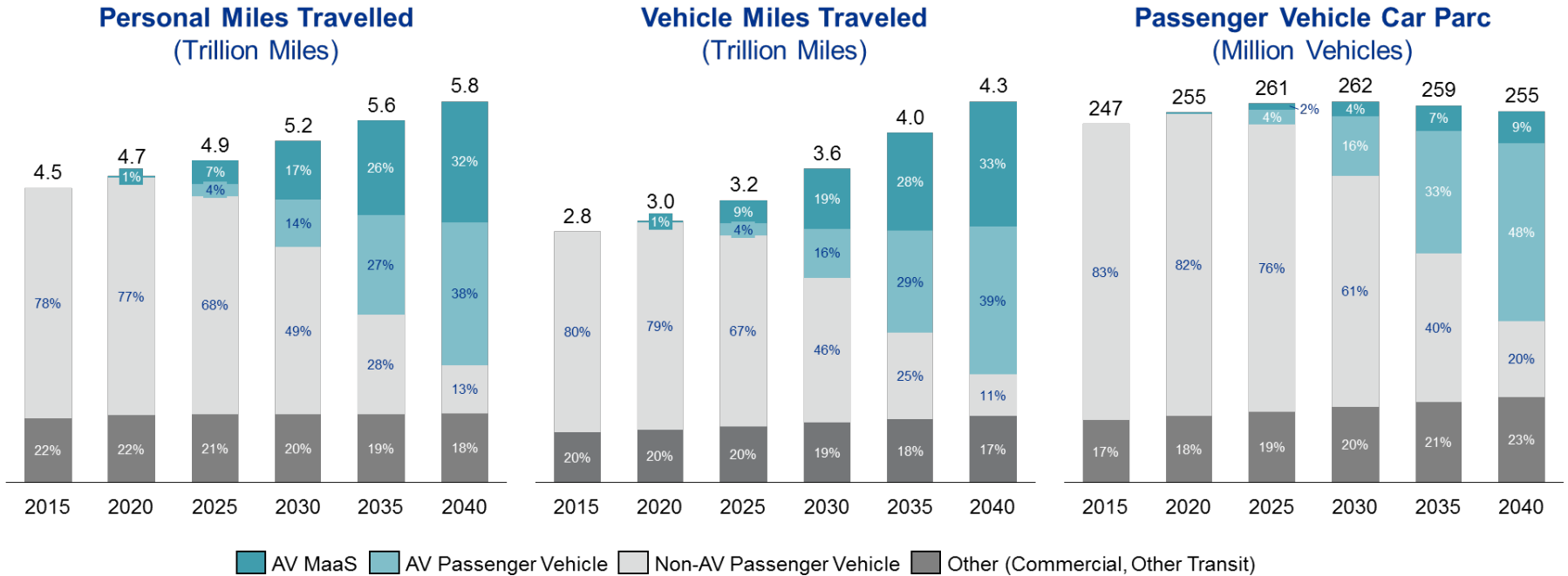


This shift will profoundly impact Illinois



KPMG's View on Shifting Transportation Demand

The “demand curve” for transportation will dramatically increase through 2040 and mobility modes will evolve



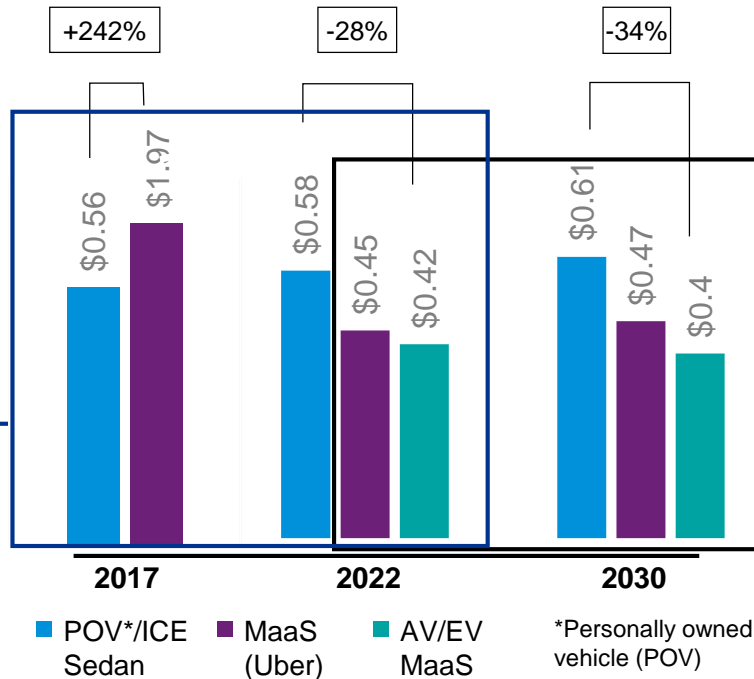
KPMG Tool – the VMT Model

Meanwhile there is accelerating mass market pull for electrification

Ownership: The First Transition

- Cost per mile of MaaS is initially higher, because of convenience factor
- Increased MaaS adoption reduces value of personal vehicle ownership

Levelized cost per mile



Driver Removed: The Second Transition

- High utilization of vehicles in AV MaaS in fleet settings will lead to EV cost per mile advantage
- Battery cost and range continue to improve, magnifying this effect

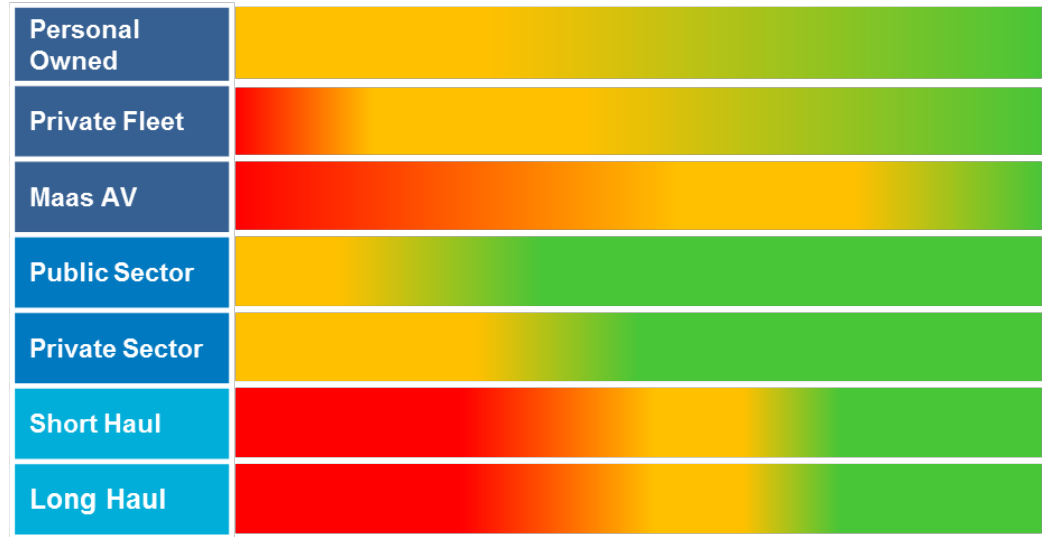
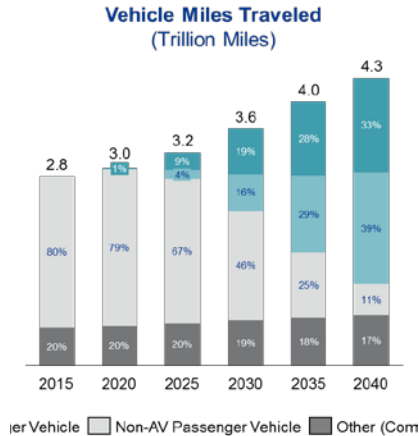
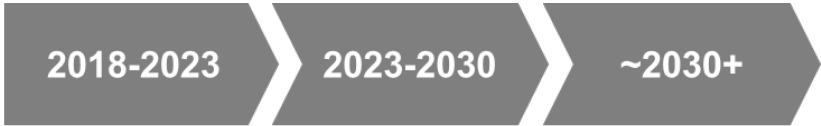
Note: (a) Average Uber cost per mile for 5 min to 20 min trip in top 10 largest cities in U.S in 2015 (b) AV MaaS and POV assume 5 year TCO (MaaS - 70k miles/year, POV - 15k miles/year) (c) AV/EV vehicle used for comparison is 2018 Chevrolet Bolt, AV/ICE is 2018 Prius (d) 2.2% historical price growth CAGR applied to ICE sale price forecast (e) 50% drop in EV battery price between 2017-2025 (from \$250/kWh to \$125/kWh), range = 240miles/60kWh Battery (f) AV MaaS includes 30% operator profit margin (g) Fuel Assumptions = \$3.00/gal ICE (10 year national historical average), \$0.12/kWh EV
Sources: (1) Uber (2) Business Insider (3) AAA (4) Kelley Blue Book (5) KPMG Analysis

KPMG's View on Shifting Transportation Demand

Electrification will be adopted on a scale based on type

VMT Forecast

EV Adoption Forecast (By mode, geography, powertrain, etc....)



While transportation agencies face funding crises from declining revenues and greater infrastructure investment needs

Key insights



- It is estimated that \$163 billion in additional revenue is required to keep the Highway Trust Fund solvent through FY2028 at current spending levels
- Additionally, it is estimated that on average DOTs are spending an estimated one-third to one-half as much as necessary to adequately maintain the transportation system
- At a national level infrastructure spending has remained relatively flat over the past 30 years, resulting in major underinvestment
- Current proposals to rebuild the infrastructure focus on the use of private funds to help finance a significant share of the reconstruction effort

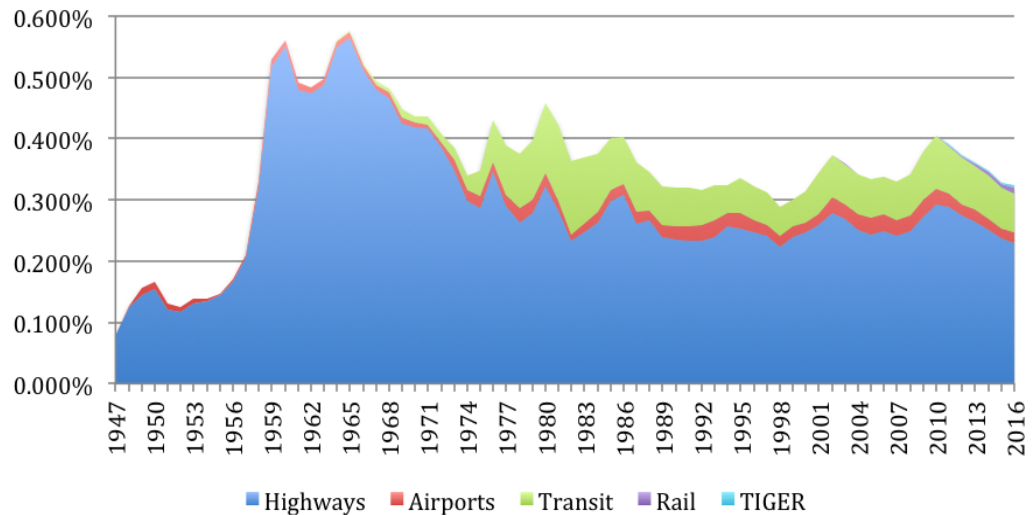
\$163 billion

The Congressional Budget Office (CBO) estimates that \$163 billion in additional revenue is required to keep the Highway Trust Fund solvent through FY2028

1/3 TO 1/2

It is estimated that on average DOTs are spending only one-third to one-half of the amount required to adequately maintain and make key improvements to the transportation system

Outlays from Federal Grants for Transportation Infrastructure, as a Share of U.S. GDP, by Mode



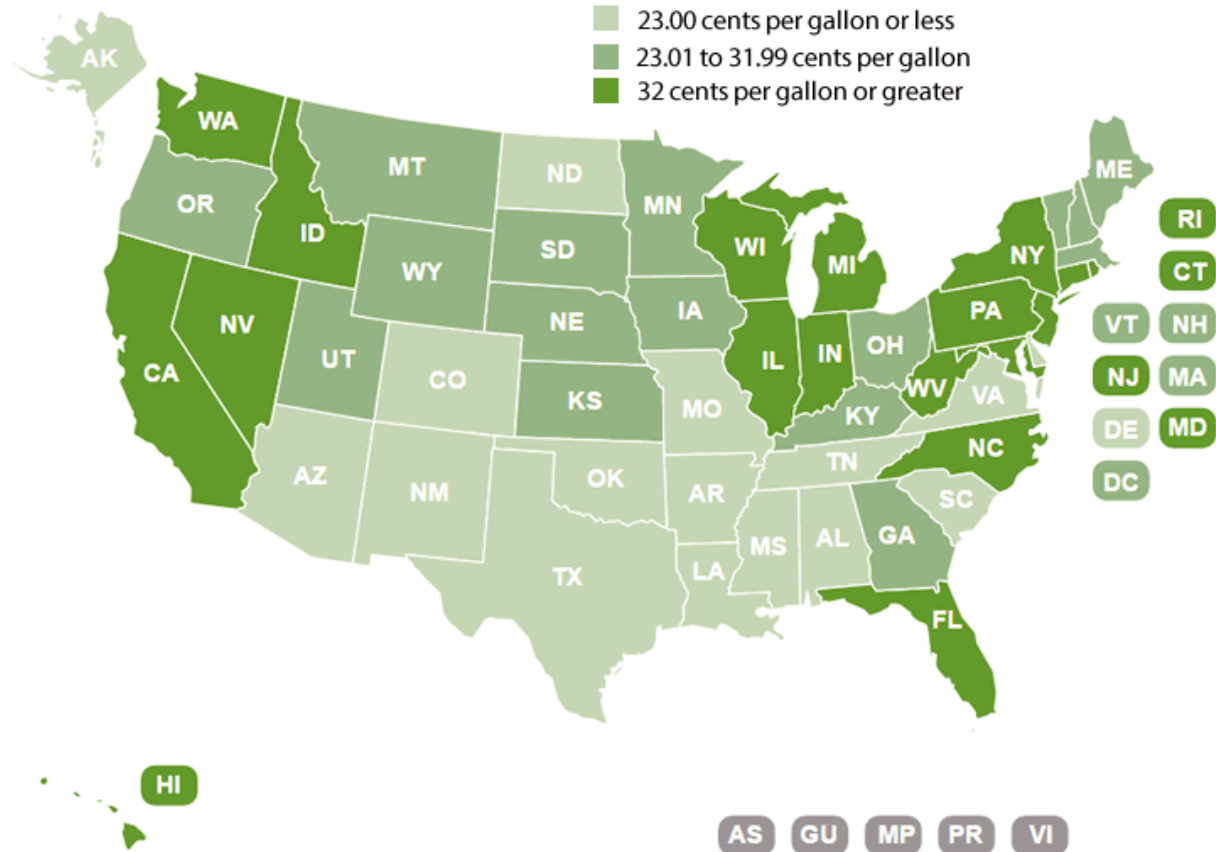
Source: Eno Transportation

The Motor Fuel Tax – which had long satisfied much of this funding – is losing relevance in this new mobility ecosystem

Key insights



- Adoption of ACE vehicles is expected to result in a significant decrease in fuel consumption
- On average 40 percent of DOT's transportation funding is based on revenues from the motor fuel tax
- Demand for gasoline is expected to decrease 18% by 2030
- Transition to new / innovative revenue sources is key to maintain the current level of service

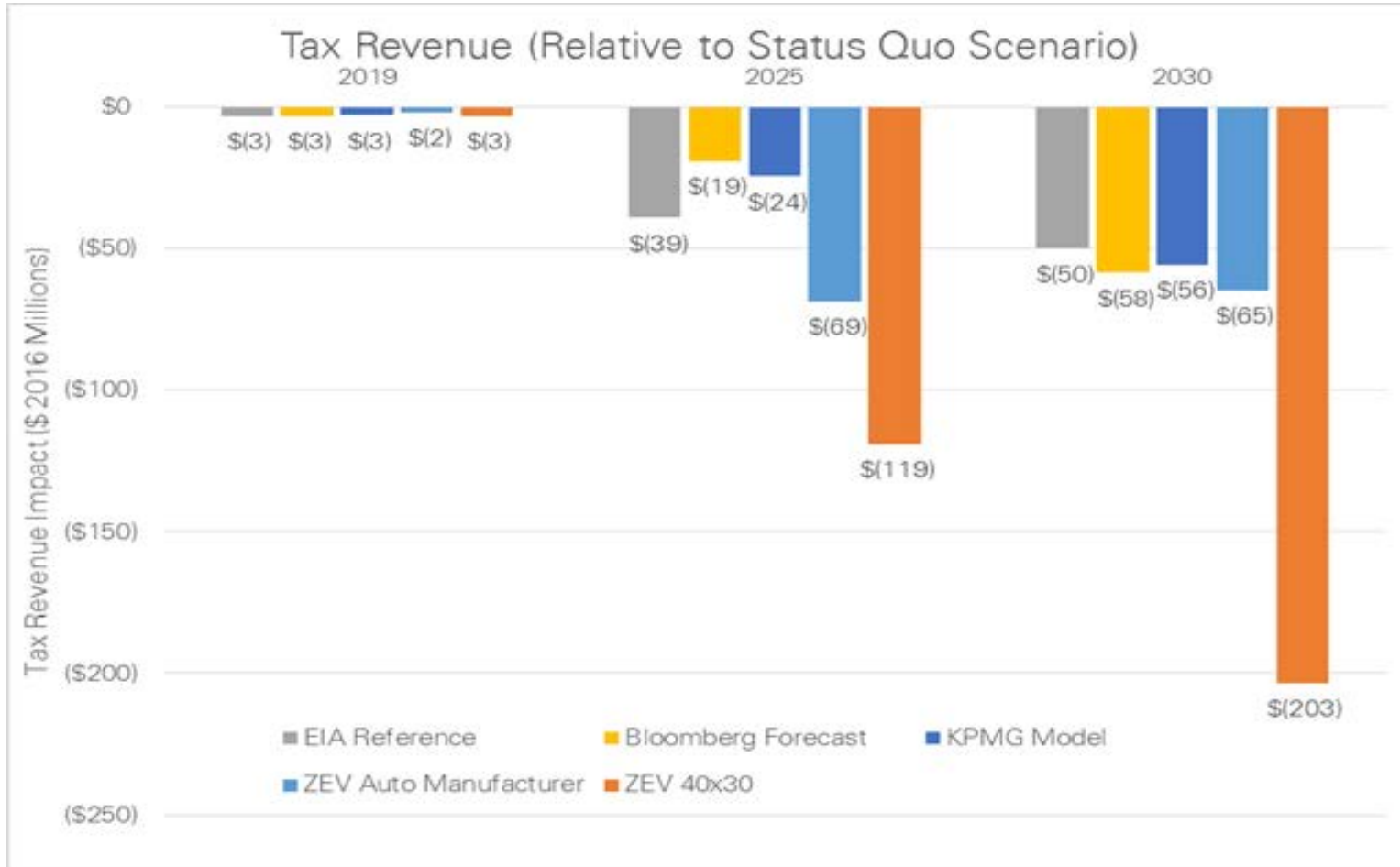


Source: <http://www.ncsl.org/bookstore/state-legislatures-magazine/deep-dive-transportation-funding.aspx>

KPMG's View on Shifting Transportation Demand

The negative acceleration of MFT revenues will only increase. States and DOTs have a small window to determine what is next.

Tax Revenue Implication (Relative to Status Quo in Real 2016\$):



Illinois must begin pulling on “levers” including the use of partnerships to manage risk and accelerate projects

Levers

Regulation – Government needs to proactively embrace the autonomous vehicle movement through logical and growth oriented legislation

Funding – How governments raise money for Infrastructure investment and maintenance is a paramount concern. MFT is under accelerating pressure; VMT, tolling, fees will all need to be considered.

Partnerships – Investment focus is changing. Advances in mobility, connectivity, and autonomy are encouraging more dollars toward joint ventures and partnerships to bridge the gap between public and private interest

Execute Projects – Plan, Design, Build, and Maintain infrastructure capable of promoting a connected and autonomous environment

Data Access – Access to data has quickly become one of the most valued resources in the world. Government needs to effectively aggregate, analyze and protect data to drive strategic insights

