

**Draft Research Plan: Electric Vehicles and Other Issues Affecting Road and Highway Funding**

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Research Manager: David Lewis

Lead Research Associates: Bob Moreo

Support: Michael Mount

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Deputy Executive Director Approval: Initial: Date:

Executive Director Approval: Initial: Date:

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**Purpose:**

To

1. Study the effect that increased electric vehicle (EV) adoption and other trends will have on state-shared revenue for road construction and maintenance,
2. Investigate the effect increased EV adoption will have on total electricity consumption and on TVA PILOTs,
3. Examine potential alternative means of financing transportation infrastructure to offset lost revenues without discouraging electric vehicle expansion, and
4. Describe the initiatives state and other stakeholders are working on for building EV-related infrastructure.

**Background:**

At the Commission’s January 2021 meeting, several members raised concerns that the increased adoption of electric vehicles (EVs) as replacements for gas- or diesel-powered vehicles would reduce state-shared tax revenue—specifically from state fuel taxes—that the state and local governments use to build and maintain roads. They further raised the possibility that this decrease in revenue from one state-shared tax might be at least partially offset by increases from another—the payments in lieu of taxes (PILOTs) made by the Tennessee Valley Authority (TVA)—resulting from the additional electricity used to charge EVs. And they noted growing demand from residents for more EV charging infrastructure.

Most (53.5%) of the revenue local governments in Tennessee spend on highways comes from the state, \$378.5 million of the \$707.8 million in expenditure in fiscal year 2017-18. Nearly all the revenue from the state is state-shared gasoline, motor fuel, and special petroleum tax revenue (\$373.4 million of \$378.5 million). In comparison, the latest Public Infrastructure Needs Inventory includes \$8.3 billion in county and city transportation needs, and only \$3.5 billion of these needed projects are fully funded.

Recognizing a need for more funding, the Tennessee General Assembly enacted Public Chapter 181, Acts of 2017—known as the IMPROVE Act—which raised Tennessee’s gas and diesel taxes over a period of three years, raised passenger and commercial vehicle registration fees, and created a new \$100 electric vehicle registration fee. Other legislation has also been introduced, though not passed, to address the need to adapt the state’s transportation revenue stream. In 2016, House Bill 1564 and Senate Bill 1561, as introduced, would have established a mileage-based use tax on autonomous vehicles.

Even without electric vehicles, gains in fuel efficiency coupled with rising highway construction costs have eroded the purchasing power of fuel taxes. Commission staff calculated that a vehicle in Tennessee getting 24 mpg over 12,000 miles per year provides \$135 in state fuel tax; at 30 mpg the amount falls to \$108 (–20%). Improving to 40 mpg would further reduce revenue to \$81. Meanwhile, road construction costs have gone up much faster than overall inflation: The Federal Highway Administration’s National Highway Construction Cost Index has doubled since its inception in 2003, compared to a 25% increase in the index for personal consumption spending over the same period. So, not only does revenue decrease as vehicles get more efficient, the money collected doesn't buy as much as it used to.

## **Define the Problem**

If current trends toward vehicle electrification, increasing fuel efficiency, and increasing road maintenance and construction costs continue, Tennessee’s current structure for funding transportation infrastructure may not be able to support the state’s future transportation needs.

## **Step 2. Assemble Some Evidence**

- Interview TACIR commissioners to determine their concerns.
- Interview other stakeholders to determine what is driving this issue, including
  - Tennessee Department of Transportation
  - Tennessee Department of Revenue

- Tennessee Department of Environment and Conservation
  - Tennessee Valley Authority
  - Drive Electric Tennessee
  - Subject matter experts and authors
  - County Technical Assistance Service
  - Tennessee County Highway Officials Association
  - Municipal Technical Advisory Service
- Review Tennessee's statutes and regulations relevant to electric vehicles and how roads are currently funded.
  - Review past bills meant to address this issue, including committee hearings on those bills and the fiscal notes.
  - Review existing laws and regulations of other states, and how other states plan to respond to an increase in the number of electric vehicles.
  - Review relevant federal statutes and regulations.
  - Review relevant literature.
  - Gather relevant data sets, including statistics related to the number of electric vehicles in Tennessee (now and forecasted), current transportation infrastructure needs (e.g. PINI), and tax data (e.g. data from the Tennessee Department of Revenue and the Tennessee Comptroller of the Treasury).
  - Identify alternative funding models for building and maintaining roads (taking care not to limit data gathering to these examples).

