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Hearing: Pricing and Technology Strategies to Address Congestion on and Financing of America's Roads

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Chair Norton, Ranking Member Davis, and Members of the Subcommittee, thank you for giving me the opportunity to testify before you today. My name is Marc Scribner. I am a senior fellow at the Competitive Enterprise Institute (CEI), where I focus on transportation, land use, and urban growth policy issues.[1] CEI is a nonprofit, nonpartisan public interest organization dedicated to the principles of free enterprise and limited, constitutional government. CEI has consistently supported pro-market approaches to infrastructure investment and management through analysis and advocacy during its 35-year history.

Congestion is a persistent and growing problem facing America's road network. The *2019 Urban Mobility Report* from the Texas A&M Transportation Institute (TTI) estimates that traffic congestion resulted in 3.3 billion gallons of wasted fuel and 8.8 billion hours in wasted time per year in 2017. It estimates the nationwide cost at $166 billion, or $1,010 per rush-hour commuter. This represents an 83.6 percent increase in travel time delay and wasted fuel congestion costs per commuting motorist since 1982.[2]

However, the TTI congestion analysis looks only at commuting motorists travel time delay and wasted fuel costs. When considering the costs associated with productivity losses, unreliability losses, truck cargo delays, and safety and environmental costs, the total annual economic cost of traffic congestion was estimated by the chief economist of the U.S. Department of Transportation to be more than double the TTI estimate.[3]

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1. My biography and writings are available at https://cei.org/expert/marc-scribner.
2. David Schrank et al., *2019 Urban Mobility Report*, Texas A&M Transportation Institute, August 2019, https://static.tti.tamu.edu/tti.tamu.edu/documents/mobility-report-2019.pdf.
3. Jack Wells, "The Role of Transportation in the U.S. Economy," PowerPoint presentation to the National Surface Transportation Policy and Revenue Commission, June 26, 2006, slide 21,

The challenge facing policy makers is how to address this growing problem. Given that traffic congestion is inherently a local phenomenon, the federal government has a limited set of tools to address it. Fortunately, in its role as a supporting partner to state and local transportation agencies, there are policy options available to members of Congress to promote effective congestion mitigation and management. Even better, these tend not to involve increasing federal highway-aid program spending. Rather, modernizing federal law to permit greater flexibility at the state and local level to price road use is the best way to address peak-hour traffic congestion that plagues many of America's metropolitan areas.

Unleashing Markets to Mitigate Traffic Congestion

Nobel-laureate economist William Vickrey, in a seminal 1963 paper, said of the then– and still–status quo of urban transportation management that in "no other major area are pricing practices so irrational, so out of date, and so conducive to waste."[4]

The problem, as Vickrey and other economists saw it, was scarce roadway space was inefficiently allocated by non-market means, so that the practical result of unpriced urban roads was queuing and a degradation of the network. With traffic flows increasingly unstable, travel times would lengthen and travel time predictability would worsen. In attempts to address this queuing due to a lack of pricing, policy makers would then make decisions to inefficiently expand physical roadway capacity, generally at great expense to society. This vicious cycle would then repeat.

To effectively address road traffic peak-hour congestion and efficiently allocate scarce urban road space, Vickrey proposed an electronic variable pricing scheme to promote stable traffic flows, quite similar to today's electronic transponder systems used by tolling networks such as E-ZPass in the United States. At the time, technology and budget limitations appeared prohibitive in carrying out this travel demand management vision, but today's modern and increasingly commonplace all-electronic tolling technology is relatively inexpensive and highly effective.

Variable road pricing is now generally viewed by economists as the most effective means to address peak-hour traffic congestion. Policy makers select a desired average speed to maintain and then let rising prices do the rest. Physical capacity expansions in the absence of pricing can temporarily reduce congestion and improve traffic flows, but such improvements may be fleeting due to what economist Anthony Downs labels "triple convergence."[5]

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https://web.archive.org/web/20090226032621/http://www.transportationfortomorrow.org/pdfs/commission_meetings/0606_meeting_washington/wells_presentation_0606_meeting.pdf.

4. William S. Vickrey, "Pricing in Urban and Suburban Transport," *The American Economic Review*, Vol. 53, No. 2, May 1963, pp. 452–465.
5. Anthony Downs, "Traffic: Why It's Getting Worse, What Government Can Do," Brookings Institution, January 1, 2004,

Triple convergence refers to the expected events following roadway expansion in the absence of pricing during peak hours. Imagine a congested urban highway segment sees its physical capacity doubled overnight. The next day, we would expect to see free-flowing traffic. But as word spreads and motorists in the region internalize this new information, it would prompt three types of travelers to flock to and clog the new lanes: 1) motorists who previously avoided peak-hour travel on the congested road would shift back to peak-hour travel, 2) motorists who took alternative routes during the peak would shift to the expanded road, and 3) travelers who took other transportation modes during peak hours would switch to cars.

Under triple convergence, traffic flows on recently expanded roads soon begin to trend toward their pre-expansion state of congestion, albeit with greater traffic volumes and the resulting benefits of that additional travel. In that sense, while roadway expansions can certainly benefit travelers in a given region—even at congested peak hours—in the absence of pricing, many of the potential benefits may be unrealized due to persistent network congestion.

To effectively address traffic congestion in many of America's largest metropolitan areas, policy makers need to embrace road pricing. This can come in several forms—from central city cordon pricing to high-occupancy toll lanes on urban Interstate segments—and each approach should be tailored to the local peculiarities of a given metropolitan area. Research has found that congestion pricing implementation is highly case specific and subject to public perceptions of value.[6] It follows that policy makers should be extremely concerned with the details of specific projects and in ensuring public trust in any implementation of congestion pricing. It also means the most successful congestion pricing regimes will be narrowly focused on improving traffic flows during peak hours, as opposed to providing governments with new general revenue sources to be appropriated to projects that do not directly benefit the paying users of the priced road.

Federal Policy and Road Pricing

Federal law permits some congestion pricing on federal-aid highways, but can be improved to allow the states to fully take advantage of this tool. Under longstanding federal law, tolling is generally prohibited on the federal-aid highway system. However, in more recent times, Congress has enacted several exceptions to this rule:

- **Section 129 general toll program exemptions**.[7] Initially codified to exempt pre-Interstate system toll facilities from the federal prohibition, Congress has gradually expanded Section 129 to include exemptions for:

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https://www.brookings.edu/research/traffic-why-its-getting-worse-what-government-can-do/.

6. Diana Vonk Noordegraaf et al., "Policy implementation lessons from six road pricing cases," *Transportation Research Part A: Policy and Practice*, Vol. 59, 2014, pp. 172–191.
7. 23 U.S.C. § 129(a).

    - Initial construction of highways, bridges, or tunnels;
    - Initial construction of new lanes on highways bridges, and tunnels as long as the number of toll-free lanes is not reduced;
    - Reconstruction or replacement of a bridge or tunnel;
    - Reconstruction of a non-Interstate highway; and
    - Reconstruction, restoration, or rehabilitation of an Interstate highway as long as the number of toll-free lanes is not reduced.
- **Section 166 HOV/HOT lane conversion exemptions**.[8] Section 166 permits the conversion of high-occupancy vehicle lanes to high-occupancy (HOV) toll lanes. High-occupancy toll (HOT) lanes are defined as high-occupancy vehicle lanes that allow vehicles traveling below the minimum occupancy requirement to use the lanes in exchange for paying a toll.
- **Interstate System Reconstruction and Rehabilitation Pilot Program**.[9] This pilot program allows three participating projects to impose tolls on existing Interstate lanes. Each of the three projects must be in different states. Section 1411(c) of the Fixing America's Surface Transportation (FAST) Act of 2015 added additional requirements on state legislative authority and a "use it or lose it" three-year time frame for participating states to complete the program's requirements.
- **Value Pricing Pilot Program (VPPP)**.[10] In 1991, Congress established a congestion pricing program open to up to 15 projects. Since 2012, Congress has authorized no additional funding for the program and the Federal Highway Administration strongly encourages states seeking to impose tolls on federally aided highway segments to seek exemptions under Sections 129 and 166 rather than via VPPP.

While federal funding for VPPP projects has not been renewed for nearly a decade, VPPP can still be used to provide tolling authority to states and support innovative projects. But Section 166 HOV/HOT conversions are likely the most promising near-term vehicles for implementing road pricing. Historically, HOV lanes have suffered from chronic underutilization. Converting HOV lanes to HOT lanes allows road authorities to make better use of lane capacity while providing motorists traveling below minimum HOV occupancy requirements a choice to pay for shorter and more predictable travel times.

However, Section 166 HOV/HOT lane conversions by themselves will not be able to address the related problems of growing traffic congestion and aging highway infrastructure.

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8. 23 U.S.C. § 166(c).
9. Federal Highway Administration, "Fact Sheet: Interstate System Reconstruction and Rehabilitation Pilot Program (ISRRPP)," FHWA Center for Innovative Finance Support website, accessed September 5, 2019, https://www.fhwa.dot.gov/ipd/tolling_and_pricing/tolling_pricing/interstate_rr_fact_sheet.aspx.
10. Federal Highway Administration, "Value Pricing Pilot Program," FHWA Office of Operations website, accessed September 5, 2019, https://www.fhwa.dot.gov/ipd/tolling_and_pricing/tolling_pricing/vppp.aspx.

Reconstruction needs for the Interstate Highway System alone are estimated to be more than $1 trillion over the next two decades.[11] If Congress wishes to address both this fiscal challenge and congestion, it must reconsider the federal general tolling prohibition.

In addition, given the potential for dedicated revenue collection, transportation agencies can attract private investment and management to shifts costs and risks associated with these projects away from taxpayers and onto private investors. These public-private partnerships (P3s) have been used sparingly in the U.S., but are widely used internationally.

In countries as varied as Australia, France, China, and Chile, P3s have played major roles in the provision and management of transportation infrastructure.[12] Concession agreements under which the concessionaire designs, builds, finances, operates, and maintains the project over the long term have successfully reduced project costs, shifted costs and risks away from taxpayers and onto private investors and users, and delivered projects in a more timely fashion.[13] In the U.S., several states have enacted robust P3 legislation and have entered into long-term leases with private concessionaires to build, modernize, and/or manage public-purpose tolled highways.[14] This has resulted in road users getting better infrastructure and taxpayers saving billions of dollars.

These P3 toll roads rely on a mix of equity and debt financing. Private activity bonds (PABs) play a key role, with toll revenue used to service this debt. PABs are tax exempt like traditional municipal bonds, leveling the playing field between the public and private sectors in financing infrastructure. Unfortunately, Congress created a national aggregate volume cap on PABs of $15 billion for surface transportation projects.[15] According to the latest data from the U.S. Department of Transportation, more than two-thirds of that $15 billion has already been issued or allocated.[16] If Congress wants to free the states and private sector to deliver better infrastructure value to the traveling public, this cap should be greatly increased or eliminated and project eligibility should be expanded.

But Congress shouldn't stop there. Looking to the future, new technologies may enable superior congestion management and revenue collection than is currently possible with all-electronic tolling. A number of states in recent years have been piloting new mileage-based revenue collection technologies and practices, which are variously known as mileage-based

11. National Academies of Sciences, Engineering, and Medicine, *Renewing the National Commitment to the Interstate Highway System: A Foundation for the Future*, Transportation Research Board Special Report 329, 2019, p. 165, https://www.nap.edu/catalog/25334/renewing-the-national-commitment-to-the-interstate-highway-system-a-foundation-for-the-future.
12. Robert W. Poole, Jr., *Rethinking America's Highways: A 21st Century Vision for Better Infrastructure* (Chicago: University of Chicago Press, 2018), pp. 52–66.
13. Ibid., pp. 96–135.
14. Ibid., p. 104.
15. 26 U.S.C. § 142(m)(2)(A).
16. Build America Bureau, "Private Activity Bonds," U.S. Department of Transportation website, updated August 9, 2019, https://www.transportation.gov/buildamerica/programs-services/pab.

user fees, road usage charges, and vehicle-miles traveled taxes. All refer to the same approach, whereby road users are directly charged based on the distance (and perhaps weight of the vehicle) they drive.

Oregon has the most advanced pilot in operation, established by 2013 legislation. The program's volunteers can opt for two versions of mileage-recording technology: non-location-based supplementary odometers and a location-based option that can offer users more precision and add-on features such as geofenced alerts for parents of teen drivers. Participants are refunded their estimated fuel tax payments upon transmission of their mileage data.

Location-based systems can differentiate between roads by satellite, thereby allowing for dynamic pricing across the entire road network with less costly infrastructure investments. In the long run, Congress should consider a shift away from fuel taxation as the primary highway revenue source and toward mileage-based user fees. As was noted above, congestion is inherently a local problem and is best addressed locally through tailored pricing solutions and capacity enhancements. This means that while Congress should not seek to impose congestion pricing, it should consider how states can integrate their own congestion pricing programs into future mileage-based user fee systems.

Principles for Sound Road Pricing Implementation

For congestion pricing to be publicly acceptable, policy makers should focus on delivering value to those paying the charges. As such, they should not seek to divert toll revenue to address unrelated projects. To do so, they should first adhere to the longstanding users-pay/users-benefit principle that has guided U.S. highway policy for two generations, which offers the following advantages over alternatives:

- **Fairness**: Road users benefit from the improvements their user charges generate.
- **Proportionality**: Users who drive more pay more.
- **Funding predictability**: Highway use and highway user revenues do not fluctuate wildly in the short-run.
- **Signaling investment**: Because revenue roughly tracks use, the mechanism provides policy makers with an important signal as to how much and where infrastructure investment is needed to maintain a desired level of efficiency.

Policy makers will face persistent calls from special interest groups to impose congestion pricing and direct toll revenue to their favored projects, such as with New York City's cordon pricing plan to direct nearly all revenue from a Manhattan central business district congestion charge to mass transit improvements.[17] To be sure, congestion pricing revenue

17. Winnie Hu, "Confused About Congestion Pricing? Here's What We Know," *The New York Times*, April 24, 2019, https://www.nytimes.com/2019/04/24/nyregion/what-is-congestion-pricing.html.

can—and in some places should—be used to support mass transit enhancements. However, New York City is an extreme outlier and should not be treated as a model for other U.S. cities. At a time when urban surface streets are riddled with potholes and other road infrastructure is being neglected, the first revenue priority of policy makers should be to improve the nation's tolled roadways to a state of good repair.

Public acceptance of congestion pricing is crucial to its success. Adherence to this fairness principle will do much to address public concerns that additional road charges will simply amount to more wasteful government spending to benefit politically favored constituencies. One way to better ensure public buy-in to a pricing regime—particularly when converting previously unpriced lanes to priced lanes—is for policy makers to adopt a proposal from transportation policy scholar Robert Poole, which he calls "value-added tolling."[18] Poole's five value-added tolling principles are:

1. Begin tolling only after major improvements are completed;
2. Prohibit toll revenue diversion to projects outside the facility or system where they are collected;
3. Toll rates should only be high enough to cover initial construction or rehabilitation, maintenance and operations, and needed improvements;
4. Motor fuel taxpayers should be reimbursed for the taxes they paid while using toll roads; and
5. Provide a better level of service on the facility after tolling is imposed.

If these principles are adopted by policy makers seeking to implement road pricing, they can lead to better informed infrastructure investment decisions. Policy makers would be able to learn both the revenue potential of a tolled roadway and the distribution of motorists' willingness to pay. This information can be used to conduct robust benefit/cost analyses and better target roadway expansions.

In conclusion, road pricing generally and congestion pricing specifically will be valuable tools going forward. The primary federal concern should not be the implementation of any given pricing project. Rather, Congress should focus on removing outdated barriers to road pricing and give states the flexibility to use these tools that best suit their own needs.

Thank you for the opportunity to testify before the Subcommittee, and I welcome your questions.

18. Robert W. Poole, Jr., "Value-Added Tolling: A Better Deal for America's Highway Users," *Policy Brief* 116, Reason Foundation, March 2014, https://reason.org/wp-content/uploads/files/value_added_tolling.pdf.