Penny Lane, Literally:

Funding Roads One Vehicle Mile at a Time

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ABSTRACT

The federal government and all fifty states tax motor fuels to generate revenue for roads, bridges, and highways. Unfortunately, motor fuel taxes are an increasingly unsustainable source of revenue as fuel efficient hybrid vehicles and completely electric vehicles grow in popularity. Accordingly, states must search for alternative methods of collecting revenue that encompass two important principles of the gas tax. Ideally, this new revenue source must be both easy to collect, and be based on a "user pays" principle, meaning the tax is proportional to an individual's use of the roads. Oregon, the first state to implement a fuel tax, recently launched a pilot program to test the vehicle-miles traveled ("VMT") tax in lieu of a tax on motor fuels. Under a VMT tax, drivers who voluntarily opt into Oregon's new program pay a certain number of cents per mile traveled rather than pay the gas tax. This program, which the Oregon state government calls "OReGO," is the state's newest attempt to create a sustainable source of revenue for the road fund. This Article examines OReGO and suggests that other states seriously consider drafting similar road-funding programs. The Article also identifies ways that Oregon and other states could improve upon the OReGO model, including measures that address environmental concerns and ensure that the tax adjusts to inflation. A sustainable VMT tax will eventually need to become mandatory, and coordinated at a regional or national level as multiple states adopt similar taxes. With these adjustments, VMT taxes could be a promising funding solution for states faced with falling revenue from the outdated fuel tax.

INTRODUCTION

In 2014, the Oregon Department of Transportation ("ODOT") released a report outlining the devastating economic impacts of deteriorating roads.[1] The report estimated

[1] *See* OR. DEPT. TRANSP., ROUGH ROADS AHEAD: THE COST OF POOR HIGHWAY CONDITIONS TO OREGON'S ECONOMY 1–2 (2014), https://www.oregon.gov/ODOT/COMM/Documents/RoughRoads2014.pdf.

that failing roads and bridges could cost Oregon 100,000 future jobs and around $94 billion in GDP by 2035.[2] Additionally, the trucking industry will see reductions in viable shipping routes as failing bridges become weight-restricted.[3] The report also calculated that rough road conditions would cost a medium sedan around $380 per year in lower fuel efficiency, excessive tire wear, and more frequent alignments.[4] Finally, rougher roads would increase the incidence of injuries and deaths from accidents.[5] Other reports present a mixed view of the status of America's infrastructure.[6]

The road infrastructure crisis in Oregon and other states is particularly troubling because projected revenues from gas taxes are falling ever shorter of projected costs for road maintenance and repairs.[7] Conventional revenue sources for highway funds, such as vehicle registrations and fuel taxes, are increasingly proving inadequate and are likely to fall behind in the coming years.[8] Moreover, while construction materials and labor costs

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[2] *See id.*
[3] *See id.* at 1.
[4] *See id.* at 2.
[5] *See id.* at 5.
[6] One report provides this bleak review: "Americans spend 5.5 billion hours in traffic each year, costing families more than $120 billion in extra fuel and lost time. American businesses pay $27 billion a year in extra freight transportation costs, increasing shipping delays and raising prices on everyday products. Underinvestment impacts safety, too. There were more than 33,000 traffic fatalities last year alone and roadway conditions are a significant factor in approximately one-third of traffic fatalities. Such fatalities occur disproportionately in rural America, in part because of inadequate road conditions." *See An Economic Analysis of Transportation Infrastructure Investment*, Nat'l Econ. Council & President's Council of Econ. Advisers 2 (July 2014), https://www.whitehouse.gov/sites/default/files/docs/economic_analysis_of_transportation_investments.pdf. *But see*, David T. Hartgen, M. Gregory Fields & Baruch Feigenbaum, *21st annual Report on the Performance of State Highway Systems* (1984–2012), at ES-1 (2014), https://reason.org/files/21st_annual_highway_report.pdf ("Over the past four years the overall condition of the system has improved. In 2012 the overall condition of the U.S. state-owned highway system continued to improve, but progress appears to be slowing.").
[7] *See, e.g.*, Debra K. Davenport, *Ariz. Off. Auditor Gen., Arizona Department of Transportation—Transportation Revenues Report No. 15-113*, 9 (2015), https://www.azauditor.gov/sites/default/files/15-113_Report_0.pdf; TRANSP. TRUST FUND TASK FORCE, DEL. DEPT. OF TRANSP., REPORT ON CONDITIONS, PLANNING AND REVENUE OPTIONS FOR SUPPORT OF THE TRANSPORTATION TRUST FUND 53 (2011), https://www.deldot.gov/information/pubs_forms/ttf_task_force/pdf/Final_Transportation_Trust_Fund_Task_Force_Report_033111.pdf.
[8] "Fuel taxes, the single largest source of road funding have been declining at the same time annual distance traveled has increased significantly." Utpal Dutta & Nishita Pate, *The Impact of Energy Efficient Vehicles on Gas Tax (Highway Trust Fund) and Alternative Funding For Infrastructure Construction, Upgrade, and Maintenance* 1 (2012), http://ntl.bts.gov/lib/46000/46200/46268/MIOH_UTC_TS51_2012-Final_Rpt_Impact_of_Energy_Efficient_Vehicles_on_Gas_Tax_etc.pdf.

rose with inflation, many states have not increased fuel taxes, and the federal fuel tax has not been raised since 1993.[9] Even if fuel taxes were raised to meet inflation, they are an unsustainable source of revenue. Vehicles with improved fuel efficiency and electric vehicles will continue to chip away at revenue until the majority of drivers are no longer paying any tax to use the roads.

Oregon state officials, recognizing the need for new sources of revenue developed a pilot program to test the effectiveness of charging a vehicle-miles traveled ("VMT") tax.[10] Voluntary participants in this program pay a tax based on the number of miles they drive in their vehicle within the state instead of paying per-gallon taxes for gasoline at the pump. Other states are beginning to look at VMT taxes, and a few other pilot programs have been conducted across the country.[11]

This Article describes the benefits of Oregon's VMT tax and suggests modifications to address environmental and sustainability concerns that the program raises. Part I discusses the history of the fuel tax, explains how roads are currently funded in the United States, and describes why this funding strategy has become increasingly unsatisfactory in recent years. Part II explains the history of Oregon's pilot VMT tax program, ORe*GO*. Part III highlights some of the advantages of this innovative funding approach, and proposes adjustments to the ORe*GO* funding model to address environmental concerns, keeping up with inflation, consumer privacy, and potential constitutional concerns. Part IV advocates for states to begin the process of switching from a fuel tax to a VMT tax. It also discusses the eventual need to make the VMT tax mandatory and efforts to coordinate the tax between multiple states. Part V evaluates other methods for developing a reliable and sustainable source of revenue for road funds and explains why each is deficient.

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[9] *See* B. Starr McMullen, Kyle Nakahara & Lei Zhang, *Distributional Impacts of Changing from a Gasoline Tax to a Vehicle-Mile Tax for Light Vehicles: A Case Study of Oregon*, 17 TRANSP. POL'Y 359, 359 (2010).
[10] *See* NEV. DEPT. TRANSP., NEVADA VEHICLE MILES TRAVELED (VMT) FEE STUDY – PHASE 1, at 16 (2010), https://www.nevadadot.com/uploadedFiles/NDOT/Documents/VMT%20FEE%20STUDY%20Bk.pdf.
[11] *See infra* Part IV.

I. THE FUEL TAX: AN UNSUSTAINABLE MODEL FOR FUNDING ROADS

Not long ago, poor road conditions were simply a fact of life. Traveling from coast to coast by car across America took months rather than days.[12] Although Europe made substantial early progress in efforts to pave major roads, in the early 1900s many considered America to have the "worst roads in the civilized world."[13] America's bad roads were caused, in part, by the lack of funding for road building. Before the emergence of mass-produced automobiles, state and local governments funded road projects through property taxes and poll taxes.[14] In some states, road taxation came in the form of personal labor, especially in rural areas.[15] These forms of taxation failed to facilitate quality road production.

Dirt roads were often impassible after rainstorms, slowing commerce substantially.[16] Spurred by poor road conditions, the League of American Wheelmen, a group of cyclists, became the first highway lobby group.[17] The League's movement became known as the "Good Roads Movement," which was soon joined by other interested parties, such as automobile enthusiasts, agricultural industries, and

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[12] The first successful crossing by automobile from San Francisco to New York took place in 1903. The trip took sixty-three days, twelve hours, and thirty minutes to complete. *See* Dayton Duncan & Ken Burns, *Horatio's Drive: America's First Road Trip*, 117 (2003).

[13] Earl Swift, *The Big Roads* 15 (2011); *see also* Tom Lewis, *Divided Highways: Building the Interstate Highways, Transforming American Life* 7 (Cornell Univ. Press 2013) (1997).

[14] *See* Jonathan Williams, *Paying at the Pump: Gasoline Taxes in America*, 56 Tax Found. Background Paper, Oct. 2007, at 1, 3. http://financecommission.dot.gov/Documents/Tax%20Foundation%20paper%20on%20Gas%20Tax.pdf; Mark H. Rose & Raymond A. Mohl, *Interstate: Highway Politics and Policy Since 1939*, at 8 (Univ. Tenn. Press, 3d ed. 2012) (1979).

[15] "Each man's labor counted as a day, a boy counted as a half a day, a team counted two days, a plough or scraper counted as one, and in some instances, hoe, pick and shovel received credit for a day's labor each." Caitriona Quinn, *The League of American Wheelmen and The Good Roads Movement 1880 – 1912 with Particular Emphasis on the Trans-Mississippi West*, 14 (1968), http://john-s-allen.com/LAW_1939-1955/history/quinn-good-roads.pdf.

[16] *See* Swift *supra* note 13, at 14 ("[A] sprinkling of rain could turn [dirt roads] to bogs, their mud lay deep and loose, could suck the boots off a farmer's feet, prompted travelers to quit the established path for the open fields.").

[17] *See* Lewis, *supra* note 13, at 7–8.

transportation companies.[18] The demand for better roads eventually forced states to develop new ways to raise revenue. Initially, the Good Roads Movement was a state-level movement.[19] By 1914, all states collected motor vehicle licensing fees, with most of the revenue spent on road construction or maintenance.[20]

A. State Fuel Taxes

State governments were the first to impose gasoline taxes as a means of raising road funding revenue. In 1919, Oregon became the first state to tax gasoline purchases. The Oregon law required gasoline dealers in the state to collect a "license tax" of one cent per gallon of gasoline sold.[21] Other states soon followed, and by 1929, every state in the nation collected a gas tax.[22] Oregon lawmakers presented its new fuel tax as a "user tax" to pay for road construction. The public generally accepted the gas tax because it was easy to collect, equitably charged, and went to funding better roads.[23] Some states did experience opposition to their gas tax. New Mexico's law was before the Supreme Court within a year of being passed, and in 1928, the Illinois Supreme Court ruled the state's gas tax unconstitutional.[24] Despite a few setbacks, most state gas taxes were held constitutional. The U.S. Supreme Court held an excise tax was legitimate on commodities that have finally come to rest in the state and did not affect interstate commerce.[25]

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[18] The Oregon Supreme Court quoted President William Howard Taft as saying, "I have pleasure in saying that there is no movement that I know of that will have a more direct effect to alleviate the difficulties and burdens of the farmers' life, will stimulate traffic and add to the general happiness of the people more than the establishment of good roads throughout the country." Sears v. Steel, 55 Or. 544, 580 (1910).
[19] *See* Lewis, *supra* note 13, at 8.
[20] *See* Williams, *supra* note 14, at 3.
[21] *See id.* at 4.
[22] *See id.* The federal government and every state tax motor fuels. These taxes contribute nearly 40% of state revenues for highways, and 92% of federal Highway Trust Fund receipts. *See* Douglas Shinkle, Jaime Rall & Alice Wheet, *On The Move: State Strategies for 21st Century Transportation Solutions* 5 (2012), http://www.ncsl.org/documents/transportation/On-THE-MOVE.pdf.
[23] *See* John Chynoweth Burnham, *The Gasoline Tax and the Automobile Revolution*, 48 MISS. VALLEY HIST. REV. 435, 448-49 (1961).
[24] *See* Askren v. Cont'l Oil Co., 252 U.S. 444 (1920); Chicago Motor Club v. Kinney, 329 Ill. 120 (1928) (holding that the statutory construction violated the Fourteenth Amendment). *See also* Monamotor Oil Co. v. Johnson, 3 F. Supp. 189, 198 (S.D. Iowa 1933) aff'd, 292 U.S. 86, (1934); Bowman v. Cont'l Oil Co., 256 U.S. 642 (1921); In re Opinion of Justices, 124 Me. 453 (1924).
[25] Nashville, C. & St. L. Ry. v. Wallace, 288 U.S. 249, 267 (1933).

Oregon used the revenues from the gas tax to build a better road system. Within four years of creating the gas tax, Oregon became the first state west of the Mississippi River to have an interstate run the full length of the state.[26] However, at times the legislature did consider using the revenue for other projects. For example, in 1922, Oregon lawmakers narrowly rejected a proposal to use the funds to pay for a world's fair.[27] In 1942, the state amended its constitution to prevent diversion of fuel tax revenue.[28] The amendment required all revenue generated from taxing motor fuels, or the use of vehicles, to be placed in a highway trust fund.[29] From 1947 to 1981, Oregon only raised the gas tax twice, but from 1981 to 1993, it raised the tax ten times, from seven cents per gallon to twenty-four cents per gallon.[30] The tax remained unchanged until 2011, when it was again raised to thirty cents per gallon.[31]

Aside from the road tax, Oregon is one of four states that also has an alternative tax for heavy trucks.[32] Oregon's economy relies on the trucking industry, which places additional burdens on its infrastructure.[33] Heavy trucks damage roads at higher rates than light-weight passenger vehicles.[34] To address the disparity in damage to the road, Oregon imposes a weight-mile tax on all trucks weighing more than 26,000 pounds.[35] Trucks

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[26] *See* George Kramer, *The Interstate Highway System in Oregon: A Historic Overview* 8 (2004), http://www.oregon.gov/oprd/HCD/OHC/docs/statewide_interstatehighways_2004.pdf.
[27] *See* Burnham, *supra* note 23, at 455.
[28] *See* OR. CONST., art. IX, § 3a(b).
[29] *See id.*
[30] *See* OR. DEPT. TRANSP., COST OF SERVICES STUDY, at 5-63–5-64 (2013), http://www.oregon.gov/ODOT/DMV/docs/DMV_Cost_of_Services_Study.pdf.
[31] *See id.* at 5-64.
[32] There are only four states that still have a weight-mile tax: Oregon, New Mexico, New York, and Kentucky. Over the last few decades, states have moved away from weight-mile taxes, replacing them with fuel taxes. In 1989, eleven states had a weight-distance tax. *See* McMullen, *supra* note 9. Reasons for abandoning the weight-distance tax included administrative costs, legal challenges, and pervasive evasion of the tax. *See* U.S. GOV'T ACCOUNTING OFF., GAO/RCED-94-181, HIGHWAY USER FEES: UPDATED DATA NEEDED TO DETERMINE WHETHER ALL USERS PAY THEIR FAIR SHARE 15-16 (1994). http://www.gao.gov/assets/220/219742.pdf.
[33] Katherine Bell & Miguel Figliozzi, *Ancillary Functions for Smartphone Weight–Mile Tax Truck Data*, 2378 TRANSP. RES. REC. 22, 22 (2013) ("Oregon is the ninth most trade-dependent state in the nation and is expected to see significant increases in freight flows in the future.").
[34] *See* IAN W.H. PARRY, HOW SHOULD HEAVY-DUTY TRUCKS BE TAXED? RESOURCES FOR THE FUTURE 2 (2006), http://www.rff.org/files/sharepoint/WorkImages/Download/RFF-DP-06-23.pdf.
[35] *See* OR. DEPT. TRANSP., *FAQ - Truck Taxes and Fees*, http://www.oregon.gov/ODOT/MCT/pages/faq_taxes.aspx (last visited Dec. 12, 2016).

typically do not pay the Oregon fuel tax at the pump, and are provided a reimbursement if charged.[36] Oregon instituted the weight-mile tax in 1947, and bases the rate on the declared weight of the vehicle.[37] The tax rate varies anywhere from four cents per mile to over eighteen cents, depending on the declared weight and the number of axels.[38]

Historically, the weight-mile tax has been collected through manual reports, which can be administratively burdensome both to truckers and the Department of Transportation.[39] However, in 2010, Oregon tested new tracking methods to improve efficiency in data collection including on-board recording devices and smartphone applications.[40] After successful testing, Oregon approved a private company to take over the electronic services.[41] Trucking associations generally oppose weight-mile taxes because of the additional recording burdens.[42]

The greatest political pushback to state or federal gas taxes comes not in the collection of the tax, but in how the revenue is used. As of 2015, twenty-three states have constitutional provisions that require motor fuel tax revenues to be spent exclusively on highways and roads.[43] Three other states have statutory provisions prohibiting

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[36] *See id.*
[37] *See id.*
[38] *See id*.
[39] The reports require drivers to record a multitude of data points, such as origin and destination points, Oregon entry and exit points, actual Oregon miles for each trip, pickup and delivery points in Oregon for each trip, routes for travel for each trip, dates of each trip, daily beginning and ending odometer readings for each vehicle, and load tickets or bills of lading for each shipment transported. *See id.*
[40] *See* OR. DEPT. TRANSP., TRUCK ROAD USE ELECTRONICS PILOT PROJECT, http://library.state.or.us/repository/2010/201002111053044/index.pdf (last visited Dec. 12, 2016); *See also*, Bell & Figliozzi, *supra* note 33, at 30.
[41] *See* Sara Goessi, *EROAD Inc. Launches Commercial Service in Oregon* (April 15, 2014), http://www.eroad.com/us/news-entry?title=EROAD+Inc.+launches+commercial+service+in+Oregon+&cat=News/.
[42] *See, e.g.*, Robert C. Pitcher, *An Assessment of the Vehicle Miles Tax*, 72 STATE TAX NOTES 365, 369 (2014), http://www.trucking.org/ATA%20Docs/What%20We%20Do/Trucking%20Issues/Documents/Tax/Pitcher0512.pdf ("Administrative mechanisms to enforce collection of [weight-mile] taxes are one of the main causes of their complexity, expense, and unfairness.").
[43] *See* Kevin Pula, Jaime Rall & Douglas Shinkle, *On Track: How States Fund and Support Public Transportation* 19 (2015), http://www.ncsl.org/Portals/1/Documents/transportation/ontrack.pdf.

diversions.[44] Even with provisions specifically prohibiting diversions from transportation funds, some states still report diversions for other purposes.[45]

B. The Federal Gas Tax

By the 1920s, the American citizenry was fairly supportive of state-level taxes to help fund roads, but still generally opposed to any calls for a federal gas tax.[46] The first federal gas tax was enacted not for roads but to counteract the Great Depression and large deficit.[47] The Revenue Act of 1932 passed a one cent tax on each gallon of gas sold, and was set to expire in June of 1933. However, the tax was extended and increased to 1.5 cents per gallon.[48] Highway lobbies and state officials continued to fight for the elimination of the federal gas tax, but it continued to be "temporarily" extended until the Revenue Act of 1941 made the gas tax permanent.[49] The act authorized the funds to be used "for the immediate construction of roads urgently needed for the national defense, and for other purposes."[50]

In 1947, with World War II now over, hundreds of national, state, and regional organizations of highway users petitioned Congress to eliminate all automotive taxes, including the federal gas tax.[51] These groups represented many interests, including trucking, manufacturing, oil, automobile, and farming.[52] The Governors' Conference also

[44] *See* Jaime Rall et al., *Transportation Governance and Finance: A 50-State Review of State Legislatures and Departments of Transportation* 29 (2011), http://www.ncsl.org/documents/transportation/FULL-REPORT.pdf.
[45] *Id.* at 30.
[46] *See* James Stouder Sweet, *The Federal Gasoline Tax at a Glance: A History* 1 (1993).
[47] *See id.*
[48] The National Industrial Recovery Act, which created the half-cent increase, included a provision that conditioned the tax increase. Section 217(b) provided for the gas tax to revert back to one cent per gallon when either the total federal receipts exceeded total federal expenditures, or when the Eighteenth Amendment (prohibition) was repealed. Thus, when the Eighteenth Amendment was repealed six months later, the gas tax returned to one cent and remained at one cent until 1940. *See* Pamela J. Jackson, *The Federal Excise Tax on Gasoline and the Highway Trust Fund: A Short History* 2 (2006), http://fas.org/sgp/crs/misc/RL30304/. The reasoning behind Section 217(b) was two-fold. Either the gas tax increase would solve the deficit problems of the Great Depression and no longer be necessary, or taxing the sale of alcohol would generate the same or more revenue than the half-cent increase. *See* id.
[49] *See* Sweet, *supra* note 46, at 2.
[50] *See id.*
[51] Rose & Mohl, *supra* note 14, at 34.
[52] *See id.*

opposed the federal gas tax.[53] However, Congress did not eliminate the tax, and instead raised it to two cents to help fund the Korean War.[54]

Frustrated by failure to eliminate the gas tax, highway lobby groups switched focus to changing how the revenue from the gas tax was spent.[55] Reform efforts led to the Federal-Aid Highway Act of 1956. The act increased the gas tax to three cents per gallon, but the revenue was placed in a newly created Highway Trust Fund (HTF), only to be spent on the interstate system and other highway projects.[56] The gas tax remained largely unchanged until 1982, when it was raised to nine cents.[57] Two separate accounts were created in the HTF, eight cents going to the Highway Account and one cent to the Mass Transit Account, which is used to fund mass transit projects.[58]

Soon after diversions of gas tax revenue began flowing into the mass transit account, other diversions made their way back into the gas tax. For example, the Superfund Amendments and Reauthorization Act of 1986 added a 0.1 cent tax for the Leaking Underground Storage Tank (LUST) Trust Fund.[59] Then, in 1990, the tax was raised another five cents, with half of the increase diverted to deficit reduction.[60] Three years later, the tax was increased by another 4.3 cents, with the entire increase spent on deficit reduction.[61] This brought the total gas tax to 18.4 cents per gallon.[62] In 1997, the latest 4.3 cent increase was redirected back to the HTF.[63] There have been no changes to the amount of the federal gas tax in the twenty-three years since the 1993 increase.[64] However, plenty of attempts to raise, or even reduce, the tax have been proposed, though

[53] *See id.*
[54] Sweet, *supra* note 46, at 2.
[55] Rose & Mohl, *supra* note 14, at 46–47.
[56] Sweet, *supra* note 46, at 2–3.
[57] *See id.* at 3.
[58] *See id.*
[59] *See id.*
[60] *See id.*
[61] *See id*.
[62] *See* Williams, *supra* note 14, at 8.
[63] *See id.*
[64] *See* Clifford Winston, *On the Performance of the U.S. Transportation System: Caution Ahead*, 51 ECON. LIT. 773, 780 (2013).

none have become law.[65] Since 2008, the HTF has been in deficit, forcing the government to transfer funds from the general fund to cover expenditures.[66]

C. The Fuel Tax is Financially and Politically Unsustainable

Although fuel taxes have served as a valuable road funding source for nearly a century, improvements in both fuel efficiency technology and electric vehicles diminish the tax's effectiveness. Fuel taxes only generate revenue if consumers are purchasing fuel. Fuel efficiency standards and the growing popularity of hybrid and electric vehicles continue to reduce American consumption of gas and diesel, which diminishes fuel tax revenue.[67] The effect of electric vehicles is particularly concerning to the west coast, which is projected to change over to electric vehicles at a faster rate than the rest of the United States.[68] Recent federal fuel economy standards roughly double the required average fuel economy of US fleets by 2025.[69] To put this in perspective, drivers will be able to drive almost twice as far, or cause twice as much wear and tear on roads, while paying the same amount in gas taxes. This problem is still in its infancy. Hybrid vehicles made up just under 3% of new vehicles in 2015, and electric vehicles made up 0.8%,

[65] For example, in the 114th Congress, three bills proposed an increase in the federal motor fuels excise tax. Four bills also contained provisions linking the excise tax rate to increases in inflation. One bill proposed to reduce the tax. *See* Sean Lowry, *The Federal Excise Tax on Motor Fuels and the Highway Trust Fund: Current Law and Legislative History* 15-16 (2015), http://nationalaglawcenter.org/wp-content/uploads/assets/crs/RL30304.pdf.

[66] *See* Kyle Pomerleau, *Options to Fix the Highway Trust Fund,* TAX FOUND., no. 456, Mar. 2015, at 1-2, http://www.taxfoundation.org/sites/taxfoundation.org/files/docs/FF456.pdf.

[67] *See* Zhirong Zhao, et al. *Revisiting the Fuel Tax–Based Transportation Funding System in the United States*, 20 PUB. WORKS MGMT. & POL'Y 105, 116 (2015) (noting that 3.1% of the model year 2012 fleet are hybrids).

[68] *See* Dutta, *supra* note 8, at 9.

[69] *See* Paul Sorensen, Liisa Ecola & Martin Wachs, *Mileage-Based User Fees for Transportation Funding: A Primer for State and Local Decisionmakers*, 5 (2012), http://www.rand.org/content/dam/rand/pubs/tools/TL100/TL104/RAND_TL104.pdf (noting that the required average fuel economy of 54.5 mpg by 2025 is almost double the 2012 average fuel economy of 27.5 mpg for passenger vehicles).

while plug-in electric hybrids made up another 0.3%.[70] However, these percentages are likely to rise in the coming years.[71]

Road funding deficits are also growing because the gas tax is not adjusted regularly for inflation at both the state and federal level.[72] The last time the federal gas tax was raised was in 1993.[73] Proposals to raise fuel taxes to compensate for budget shortfalls often give way to political pressure.[74] However, raising the fuel tax does not address the larger issue of paying a fair share of the expenses for road maintenance. A Hummer driver pays much more in gas taxes per mile driven than a Prius driver because of fuel economy.[75] For completely electric vehicles, drivers pay no fuel tax but still damage the road. As noted above, the fuel tax was meant to be a "use" tax, proportional to the cost of using the road. Raising the fuel tax will not address how to charge hybrid and electric vehicles their fair share.

Tax hikes also tend to be politically unpopular, which may explain why so many states have been slow to increase taxes in recent years.[76] For example, after a report

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[70] *See* Aaron Hula, Amy Bunker & Jeff Alson, *Light-Duty Automotive Technology, Carbon Dioxide Emissions, and Fuel Economy Trends: 1975 Through 2015*, 58 (2015), https://www.epa.gov/sites/production/files/2016-11/documents/420s16001.pdf.

[71] ExxonMobil projects hybrid vehicles will "grow from 1 percent of new-car sales in 2010 to close to 50 percent of sales by 2040, making up about one-third of the global fleet at that time." ExxonMobil, The Outlook for Energy: A View to 2040, at 19 (2015), http://cdn.exxonmobil.com/~/media/global/files/outlook-for-energy/2016/2016-outlook-for-energy.pdf.

[72] *See* Sorensen, Ecola & Wachs, *supra* note 69.

[73] *See* Williams, *supra* note 14, at 8.

[74] For example, when President Obama included a $10.75 tax on each barrel of oil in his proposed 2016 budget, Republicans immediately reacted negatively. House Ways and Means Chairman Kevin Brady described the proposal as "hammering the pocketbooks of every American while killing good-paying energy jobs." Speaker of the House Paul Ryan stated the proposal was "dead on arrival." *See* Elana Schor, *Republicans Savage Obama's Oil Tax Plan*, POLITICO (Feb. 4, 2016, 6:55 PM), http://www.politico.com/story/2016/02/obama-oil-tax-gop-reaction-218774/.

[75] The combined city/highway fuel economy for a 2010 Hummer H3 is 16 miles per gallon, whereas a 2010 Toyota Prius has a combined fuel economy of 50 miles per gallon. *See* U.S. DEPT. ENERGY, *Fuel Economy of 2010 Hummer H3*, https://www.fueleconomy.gov/feg/bymodel/2010_Hummer_H3.shtml (last visited Dec. 12, 2016); U.S. DEPT. ENERGY, *Fuel Economy of 2010 Toyota Prius*, https://www.fueleconomy.gov/feg/bymodel/2010_Toyota_Prius.shtml (last visited Dec. 12, 2016).

[76] *See* Meg Handley, *Poll: Americans Say Slow Down on Increasing the Gas Tax*, U.S. NEWS (April 22, 2013, 2:31 PM), http://www.usnews.com/news/articles/2013/04/22/poll-americans-say-slow-down-on-increasing-the-gas-tax/.

published in Arizona projected large funding deficits[77] by 2035 and proposed raising the gas tax, a press aide for the Governor stated "such ideas will be dead on arrival if they reach the desk of Gov. Doug Ducey."[78] In Massachusetts, voters repealed a 2013 law that automatically adjusted gas taxes for inflation through a repeal initiative.[79] The initiative passed by a margin of 53 to 47 percent.[80] The legislature in Wisconsin similarly eliminated indexing in 2005.[81] In 2011, Maine also repealed its indexing law.[82] Only three states currently adjust their fuel taxes to the consumer price index.[83] Four other states and the District of Columbia adjust their fuel tax based on the wholesale price of gasoline.[84] Nebraska adjusts its fuel tax based on state transportation revenue needs.[85]

[77] Davenport, *supra* note 7, at 12 (noting that Arizona will collect less than one-third of the money it needs in fuel taxes to meet the projected transportation costs by 2035, resulting in a $62.7 billion shortfall).
[78] Howard Fischer, *Report: Arizona Won't Collect Enough Taxes to Meet Transportation Needs*, KJZZ.ORG (Sep. 29, 2015), http://kjzz.org/content/198352/report-arizona-wont-collect-enough-taxes-meet-transportation-needs/.
[79] Andy Rosen, *Mass. Voters Eliminate Gas Tax Indexing*, BOS. GLOBE (Nov. 4, 2014), https://www.bostonglobe.com/metro/2014/11/04/massachusetts-voters-weigh-gas-tax-indexing/jvI6PvaacfOfLNkbolMYRI/story.html.
[80] *See id.*; *see also* Daniel C. Vock, *Massachusetts Rolls Back Automatic Gas Tax Hike*, GOVERNING (Nov. 5, 2014), http://www.governing.com/topics/elections/gov-massachusetts-rolls-back-inflation-measure-for-gas-tax.html ("People don't want any taxes automatically tied to anything") (quoting David Paleologos, director of the Suffolk University Political Research Center).
[81] In 2015, when Democrats proposed to reinstate the annual index, one state representative joked, "If only we indexed the gas tax . . . we would have peace in the Middle East and pet unicorns." The proposal never made it out of committee. Jessie Opoien, *Joint Finance Rejects Democrats' Proposal to Reinstate Wisconsin Gas Tax Indexing*, CAPITAL TIMES (July 3, 2015), http://host.madison.com/ct/news/local/govt-and-politics/joint-finance-rejects-democrats-proposal-to-reinstate-wisconsin-gas-tax/article_e6ca5192-20e0-11e5-9d67-635a901f85f1.html.
[82] *See* Rich Cebra, *The Automatic Indexing of Fuel Taxes is Gone*, BRIDGTON NEWS (June 23, 2011), http://www.bridgton.com/the-automatic-indexing-of-fuel-taxes-is-gone/.
[83] Florida and Maryland adjust their gas tax annually, while Rhode Island adjusts its tax every two years. *See* Richard C. Auxier, *Reforming State Gas Taxes: How States Are (and Are Not) Addressing an Eroding Tax Base* 7 (2014), http://www.taxpolicycenter.org/UploadedPDF/413286-reforming-state-gas-tax.pdf; Colin Spence, *RI Gas Tax Increase Goes Into Effect*, WPRI.COM (updated July 1, 2015, 11:59 AM), http://wpri.com/2015/07/01/ri-gas-tax-increase-goes-into-effect/.
[84] The four states are Kentucky, North Carolina, Virginia, and West Virginia. Joseph Henchman, *State Inflation-Indexing of Gasoline Taxes*, TAX FOUND. (Sept. 30, 2014), http://taxfoundation.org/blog/state-inflation-indexing-gasoline-taxes/.
[85] *See id.*

However, since 2013, eighteen states have addressed their gas tax, the first time in over twenty years for many of them.[86] In 2015, Washington State passed an 11.8 cent increase over a two-year period and Idaho passed a seven cent increase.[87] Other states passed smaller increases.[88] One state, California, reduced its gas tax by six cents.[89] For many of these states, pressures to balance the state budget forced the leadership to accept tax adjustments.[90]

Adding to the confusion, voters send mixed messages to legislators about their willingness to pay increased taxes to improve road infrastructure. Michigan voters soundly rejected a recent ballot measure to increase a sales tax to fund roads, with 80% voting no.[91] However, a similar ballot measure in the City of Phoenix passed in the same year.[92] On the whole, however, tax increases for road funding have proven a tough sell in recent decades, making it ever more difficult for governments to adequately expand and maintain road systems.

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[86] *See* Carl Davis, *Sweet Sixteen: States Continue to Take on Gas Tax Reform*, TAXJUSTICE (updated May. 10, 2015), http://www.taxjusticeblog.org/archive/2015/05/sweet_sixteen_states_continue.php#.VpNC8RUrLcs/.

[87] *See* Rachel La Corte, *Gas Tax Increases by 7 Cents in Washington* State, SEATTLE TIMES, (updated August 1, 2015, 12:34 PM), http://www.seattletimes.com/seattle-news/gas-tax-increases-by-7-cents-in-washington-state/; Bill Dentzer, *New Plan for Roads Includes 7-cent Fuel Tax Increase*, IDAHO STATESMAN (March 11, 2015, 4:28 PM), http://www.idahostatesman.com/news/politics-government/state-politics/article40856067.html.

[88] *See* Davis, *supra* note 86.

[89] *See* Fenit Nirappil, C*alifornia Agency Votes to Reduce Gas Tax by 6 Cents*, WASH. TIMES (February 24, 2015), http://www.washingtontimes.com/news/2015/feb/24/agency-to-vote-on-reducing-california-gas-tax-by-7/.

[90] *See* Russell Berman, *How Red States Learned to Love the Gas Tax*, ATLANTIC (Mar. 31, 2015), http://www.theatlantic.com/politics/archive/2015/03/how-red-states-learned-to-love-the-gas-tax/389084/.

[91] *See* Leonard N. Fleming & Gary Heinlein, *Michigan Voters Reject Proposal 1 Tax Hike*, DETROIT NEWS (May 6, 2015, 7:41 AM), http://www.detroitnews.com/story/news/politics/2015/05/05/proposal-one/26952783/.

[92] *See* Brenna Goth, *Phoenix Voters Pass Prop. 104 Transit Tax*, ARIZ. REPUBLIC (August 26, 2015, 10:05 AM) http://www.azcentral.com/story/news/local/phoenix/2015/08/25/phoenix-elections-transit-results-prop104/32283455/.

II. ORE*GO*

Recognizing the need for a sustainable way to generate funds for the transportation system, the Oregon Legislature created the Road User Fee Task Force in 2001.[93] Consequently, Oregon was one of the first states to launch a pilot VMT tax program in 2006.[94] The 2006 pilot program lasted for twelve months and had 299 volunteer participants.[95] A second pilot program was launched in 2012 with eighty-eight participants.[96] Several other states also launched pilot programs a few years after Oregon.[97] Oregon's 2006 pilot program found that a VMT tax was technologically feasible with existing technology, and that the tax was supported by a majority of the volunteers.[98] However, the main feedback from participants was related to privacy concerns.[99]

In response to these privacy concerns, in 2013, the Oregon legislature passed SB 810. SB 810 created the most recent VMT tax program, Ore*GO*. Specific language in the

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[93] *See Road User Fee Task Force*, OR. DEPT. TRANSP., https://www.oregon.gov/ODOT/HWY/RUFPP/Pages/ruftf.aspx (last visited Dec. 12, 2016).

[94] A similar study for congestion pricing was commissioned in 2002 and began operation on July 1, 2005, in Washington. The study involved roughly 275 households over an eighteen-month period. Each vehicle was equipped with a GPS meter with a pre-set map of roads and their respective tolls. While the study was primarily focused on changing drivers' behavior with regards to congestion, the equipment used was very similar to how a VMT tax would be tracked. *See* Traffic Choices Study – Summary Report 7 (2008), http://www.psrc.org/assets/37/summaryreport.pdf?processed=true. A similar study was also conducted in Minnesota from March 2004 through February 2005 involving roughly 130 participants. *See* Cambridge Systematics, Inc., Mileage-Based User Fee Demonstration Project: Pay-As-You-Drive Experimental Findings, at ES-3 (2006), http://www.lrrb.org/media/reports/200639A.pdf.

[95] *See* NEV. DEPT. TRANSP., *supra* note 10, at 17.

[96] *See* OR. DEPT. TRANSP., ROAD USAGE CHARGE PILOT PROGRAM & PER-MILE CHARGE POLICY IN OREGON 3 (2013), https://www.oregon.gov/ODOT/HWY/RUFPP/docs/RUCPP%20Final%20Report%20-%20May%202014.pdf.

[97] Notable pilot programs include one from Minnesota in 2011, and another from the University of Iowa from 2008-2010. *See* Jennifer A. Rephlo, Connected Vehicles for Safety, Mobility, and User Fees: Evaluation of the Minnesota Road Fee Test (Feb. 2013), http://www.dot.state.mn.us/mileagebaseduserfee/pdf/EvaluationFinalReport.pdf; Paul F. Hanley & Jon G. Kuhl, *National Evaluation of Mileage-Based Charges for Drivers Initial Results*, 2221 TRANSP. RES. REC. 10-18 (2011). *See also* Meghan McCarty, *How to Pay for California Road Repairs? One Idea: Pay-by-the-Mile*, 89.3KPCC (Dec. 15, 2015), http://www.scpr.org/news/2015/12/15/56245/how-to-pay-for-california-road-repairs-here-s-one/; *State Transportation Commission Looking at Road Usage Charge*, KXRO (Dec. 4, 2015), http://www.kxro.com/state-transportation-commission-looking-at-road-usage-charge/.

[98] *See* NEV. DEPT. TRANSP., *supra* note 10, at 17.

[99] *See* OR. DEPT. TRANSP., *supra* note 96, at 8.

bill expressly addressed data collection methods and privacy concerns from the prior trial runs.[100] Additionally, the bill set the VMT tax to 1.5 cents per mile.[101] According to the bill, the VMT tax program was intended only for motor vehicles with a gross weight of 10,000 pounds or less and was not to exceed 5,000 volunteers.[102] SB 810 also established that ODOT and its implementing associations may not disclose personally identifiable information,[103] except in a few specific instances.[104] SB 810 also required that police officers obtain a valid court order upon a showing of probable cause before gaining access to personally identifiable information.[105] Additionally, SB 810 created investigation procedures for refunds under ORe*GO* that make intentional false statements under ORe*GO* and tampering with the ORe*GO*'s metering system Class A violations[106]

Through ORe*GO*, 5,000 people will voluntarily pay a VMT tax in lieu of a fuel tax. Oregon officials are hoping to generate additional funds through ORe*GO* by collecting funds from hybrid and electric car users who have historically underpaid for their use of roads in comparison to other road users. ODOT emphasizes a fair share principle in its program, requiring hybrid and electric car users to pay as much as other cars for their use of roads. ORe*GO* started its enrollment on July 1, 2015, and is slated to be the largest VMT tax pilot program ever conducted in the United States.[107]

ORe*GO* requires access to the vehicle's data port. Participants receive a recording device to plug into the data port, typically located below the vehicle's steering wheel.[108]

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[100] SB 810 77th Leg. 2013 Reg. Sess. (Or. 2013).
[101] *See id.*
[102] Of the 5,000 volunteers, there can be no more than 1,500 vehicles with a fuel efficiency less than 17 mpg, and no more than 1,500 vehicles with a fuel efficiency of 17 to 22 mpg. *See id.*
[103] Personally identifiable information is defined as "any information that identifies or describes a person, including, but not limited to, the person's travel pattern data, per-mile road usage account number, address, telephone number, electronic mail address, driver license or identification card number, registration plate number, photograph, recorded images, bank account information and credit card number." *Id.*
[104] *See id.*
[105] *See id.*
[106] *See id.*
[107] At 5,000 possible participants, the program will be nearly twice the size of the program conducted by the University of Iowa in 2008. However, as of January 20, 2016, only around 1,000 vehicles were registered in the program. *See* William Maetzold, *Sign-Ups Pass 1,000 for OReGO*, KTVL (Jan. 20, 2016), http://ktvl.com/news/local/sign-ups-pass-1000-for-orego/.
[108] *See* OR. DEPT. TRANSP., *supra* note 96, at 19.

This device records mileage information from the vehicle, which is then calculated to determine the distance traveled and the fuel consumed by the vehicle.[109] Volunteers may choose between three recording options, two of which utilize GPS tracking technology.[110] The recorded data is transmitted to a third party known as the "account manager."[111] The account manager receives the mileage information and then bills the volunteer every quarter according to how many miles have been driven. Currently, the volunteers may sign up with three account managers.[112]

The success of ORe*GO* may lie in educating the public about the costs of road maintenance, the benefits of a "fair share" system, and the methods used to administer a VMT tax. Consequently, ODOT spends a lot of time and resources educating the public on the benefits of ORe*GO*. The Department primarily emphasizes how a VMT tax is fair to all road users, and prominently explains the various tracking options available to volunteers.

III. PROPOSED MODIFICATIONS TO ORE*GO*

ORe*GO* in its current state is not a viable replacement for the fuel tax, but with a few modifications, it could become a sustainable source of funding for roads. The creators of ORe*GO* are willing to make changes based on user feedback. For example, after the second pilot program revealed serious privacy concerns, additional language was added to SB 810 to strengthen consumer privacy. However, ORe*GO* still needs to address

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[109] *See id.*
[110] *See* Irvin Dawid, *GPS Technology Chosen for Oregon's Road Usage Charge,* PLANETIZEN (Mar. 11, 2015), http://www.planetizen.com/node/74756/.
[111] *See* WASH. ST. TRANSP. COMMISSION, WASHINGTON STATE ROAD USAGE CHARGE ASSESSMENT—PHASE 4 APPENDIX, at 7 (2016), http://www.wstc.wa.gov/StudiesSurveys/RoadUsage/RUC2013/documents/2016_0112_RUCAppendices.pdf.
[112] The three account managers that the volunteers can sign up with are Azuga, Oregon Department of Transportation powered by Sanef, and Verizon Telematics. Azuga and Verizon Telematics use GPS technology in calculating the miles driven by each volunteer. If a volunteer does not want to relay GPS information to an account manager, then he or she may decide to opt into the Oregon Department of Transportation powered by Sanef account manager where the data port operates more as an odometer. *See id.* at 3-5.

four potential concerns related to the environment, inflation, privacy, and the constitution. Below we explain each of these concerns and propose modifications that might remedy the deficiencies in SB 810.

A. ORe*GO* and the Environment

ORe*GO* was created, in part, to tax a group of consumers who do not contribute an equal share of revenue to road funds: hybrid and electric car users. ORe*GO* is singularly dedicated to creating a new source of revenue for road funding,[113] but lawmakers should consider what impact the tax will have on the market demand for environmentally friendly vehicles in Oregon. Although they do not pay as much in fuel taxes as drivers of conventional cars, hybrid and electric car users do help to serve environmental interests that benefit the public, promoting cleaner air and reducing greenhouse gas emissions. In a country where the transportation sector emits the second most greenhouse gas emissions—27% in 2013 compared to the energy sector that emitted 31% of the United States' greenhouse gas[114]—the promotion of hybrid and electric vehicles is important to environmental interests and the general public.

1. Overview of Electric Vehicles and their Benefits

The first vehicles ever created were powered by electric motors.[115] However, the vehicle industry quickly shifted from electric motors to oil and gas with the introduction of assembly lines.[116] Now the U.S. fleet is primarily made up of conventional gasoline-powered vehicles. The important difference between hybrid and electric vehicles and the gasoline-powered vehicles is the motors. Electric vehicles are operated by an electric

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[113] For example, on OR*eGO*'s website, the first paragraph explaining OR*eGO* states: "Diminishing fuel tax returns led Oregon decision-makers back to the drawing board to create a fair, reliable source of revenue to fund transportation projects for all Oregonians. The result is OR*eGO*." *Getting to OReGO*, OR. DEPT. TRANSP., http://www.myorego.org/about/ (last visited Dec. 12, 2016).
[114] *Sources of Greenhouse Gas Emissions*, EPA (last updated Dec.12, 2015), http://www3.epa.gov/climatechange/ghgemissions/sources/transportation.html.
[115] Iain Carson & Vijay V. Vautheeswaram, ZOOM: THE GLOBAL RACE TO FUEL THE CAR OF THE FUTURE 24 (2007).
[116] *The History of the Electric Car*, ENERGY.GOV (Sept. 15, 2014), http://energy.gov/articles/history-electric-car/.

motor that gets energy from a controller.[117] Such vehicles use energy stored on a rechargeable battery that the consumer plugs into an electrical outlet.[118] Electric vehicles do not have an internal combustion engine, and, consequently, do not require the traditional maintenance that a gasoline vehicle requires.[119] Hybrid vehicles use two engines that work in conjunction with one another.[120] Hybrid vehicles typically have both a gasoline engine and an electric engine that work together to increase distance and emit lower emissions than a typical gasoline vehicle.[121]

Hybrid and electric vehicles generate lower emissions.[122] Vehicle emissions are generally divisible into two major categories: air pollutants and greenhouse gases. Air pollutants contribute to smog and health problems while greenhouse gases are substances such as carbon dioxide and methane that contribute to climate change.[123] Accordingly, a transition to an electric vehicle has both a local impact in reducing air pollution in major cities, but a disparate effect on climate change. However, while the environmental impacts associated with driving hybrid and electric vehicles are much lower than those of conventional vehicles, the environmental costs of manufacturing hybrid and electric vehicles are roughly the same as conventional vehicles.[124]

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[117] Brad Berman, *What is an Electric Car?*, PLUGINCARS (Oct. 14, 2014), http://www.plugincars.com/electric-cars/ (Electric vehicles get "energy from a controller, which regulates the amount of power—based on the driver's use of an accelerator pedal").
[118] *Id.*
[119] *Id.*
[120] Jeff Cobb, *What is a Hybrid?*, HYBRIDCARS (Jul. 8, 2014), http://www.hybridcars.com/what-is-a-hybrid/.
[121] *Id.*
[122] *Emissions from Hybrid and Plug-In Electric Vehicles*, U.S. DEPT. OF ENERGY (last updated Dec. 22, 2015), http://www.afdc.energy.gov/vehicles/electric_emissions.php.
[123] *Id.*
[124] Ibrahim Dincer et al., *Economic and Environmental Comparison of Conventional and Alternative Vehicle Options, in* ELECTRIC AND HYBRID VEHICLES-POWER SOURCES, MODELS, SUSTAINABILITY, INFRASTRUCTURE AND THE MARKET, 6 (Pistoia & Gianfranco, 2010) ("Since the engines of the hydrogen and ammonia-fueled vehicles are similar to that of a conventional gasoline vehicle, the environmental impact associated with vehicle manufacture is of the same order as that for the conventional vehicle.").

2. States Should Subsidize Hybrid and Electric Vehicles

Hybrid and electric vehicles are well known to emit lower carbon emissions and therefore provide a more environmentally friendly alternative to gas guzzling vehicles. However, hybrid and electric cars can, and often do, cost substantially more than gasoline vehicles.[125] This will often deter consumers from making these environmentally friendly purchases. However, hybrid and electric vehicles provide a societal benefit, or positive externality, that all persons enjoy. Therefore, in order to encourage consumers to purchase more hybrid and electric cars, the government must provide an incentive.

i. Hybrid and Electric Vehicles have Positive Externalities

In economics, individuals are considered rational consumers that make expenditures based on beneficial outcomes. Accordingly, individuals tend to focus solely on their own benefits when considering a purchase, but not the additional benefits to society, known as positive externalities. A positive externality exists when the consumer does not receive the full benefit of a purchase. For example, when purchasing a hybrid or electric vehicle, a rational consumer will only purchase the vehicle if the benefits outweigh the sticker price. But hybrid and electric vehicles also generate fewer emissions, a benefit to society as a whole. When a positive externality exists, supply and demand of these vehicles falls below the optimal level for society.

However, such behavior is inefficient and considered a market failure.[126] In response, governments might provide a subsidy to encourage greater consumption. Subsidies help the individual internalize the additional benefits created by the electric vehicle, and then the government can evenly distribute the cost of the subsidy amongst taxpayers who benefit from the lower emissions. For example, consumers who purchase solar panels often receive rebates for installation and use of the devices from the

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[125] *What You Should Know Before Buying a Hybrid*, EDMUNDS.COM, http://www.edmunds.com/hybrid/before-buy.html (last visited Dec. 12, 2016).

[126] A market failure is "a situation where free markets fail to allocate resources efficiently." *See Types of Market Failure*, ECONOMICS ONLINE, http://www.economicsonline.co.uk/Market_failures/Types_of_market_failure.html.

government. Without these incentive programs, there would be far fewer solar panels installed today because solar panels have a large upfront cost, and consumers will likely not pay for such devices without these incentives. Hybrid vehicles also have a large upfront cost, which governments counteract through multiple incentive programs.

ii. Existing Incentives and Subsidies for Electric Vehicles

The primary incentive to purchase hybrid and electric vehicles is the long-term savings in gas purchases.[127] Additionally, for consumers who place a higher value on the environment, reducing pollution is often an incentive. As discussed previously, reducing pollution creates a positive externality for society that the government should subsidize.[128] Currently, there are several state-level incentives to purchase hybrid or electric vehicles.[129] These incentives range from privileges to drive in carpool lanes and park in designated parking spots to tax rebates and waivers.[130] In fact, there are so many incentives to purchase a hybrid or electric vehicle that some critics refer to hybrid or electric vehicle owners as having a "green privilege."[131] However, such critiques often ignore the benefits society gains from pollution reduction and the state's interest in encouraging the purchase of these vehicles.

Consumers appear to be the most motivated by financial incentives, such as purchasing less gasoline and receiving income tax credits or sales tax waivers. In 2011, the average hybrid and electric vehicle owner enjoyed a sales tax waiver with a mean

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[127] Kelly Sims Gallagher & Erich Muechlegger, *Giving Green to Get Green? Incentives and Consumer Adoption of Hybrid Vehicle Technology*, 61 J. OF ENVIRON. ECON. & MGMT 1, 7 (2011) (finding that the purchase of hybrid and electric vehicles is positively correlated with higher gasoline prices).
[128] *See* Cal. Pub. Util. Code § 740.12(a)(2) (West 2016) (noting that "it is the policy of the state and the intent of the Legislature to encourage transportation electrification as a means to achieve ambient air quality standards and the state's climate goals").
[129] *See, e.g.*, Brad Berman, *Incentives for Plug-in Hybrids and Electric Cars*, PLUGINCARS (Sept. 27, 2016), http://www.plugincars.com/federal-and-local-incentives-plug-hybrids-and-electric-cars.html.
[130] *But see* Gallagher & Muechlegger *supra* note 127 (finding little evidence to support that permitting hybrid and electric vehicles to travel in HOV lanes has a significant impact on the purchase of hybrid and electric vehicles).
[131] Daniel Gross, *Green Privilege: The Wealthy Don't Need Taxpayer-Funded Perks for Buying Electric Cars. They Get Them Anyway.*, SLATE (Jul. 9, 2015), http://www.slate.com/articles/business/the_juice/2015/06/electric_car_incentives_how_the_wealthy_get_unnecessary_perks_for_buying.html.

value of $1,037 and an income tax credit with a mean value of $2,011.[132] Sales tax waivers tend to make consumers respond more positively to hybrid and electric vehicle purchases than federal income tax credits.[133] Consequently, a VMT tax must not significantly reduce the value of these incentives.

3. How ORe*GO* Discourages Hybrid and Electric Vehicle Purchases

ORe*GO* discourages hybrid and electric vehicle purchases by imposing additional costs that owners would not have otherwise paid. An ORe*GO* volunteer driving a hybrid or electric vehicle will incur an estimated average of $16.20 per month in taxes,[134] which totals an average of $194.40 per year in additional costs. Consequently, ORe*GO*'s hybrid and electric vehicle owners could expect an additional cost of $1,944 over the span of ten years, assuming the tax rate remains the same. At some level, this is to be expected. Oregon started the pilot program to determine how to capture lost revenue from hybrid and electric vehicles. Thus, under any VMT tax system, these vehicles will see an increase in costs.

The ORe*GO* account managers do provide some non-financial incentives, which are referred to as "value added services."[135] Azuga, one of the account managers, provides a driving score system, which tracks the driver's driving patterns and gives him or her a score based upon multiple factors such as speeding and braking.[136] The driver is then able to analyze this score to see in what areas he or she brakes too hard or speeds too much.[137] The program also provides a status on both the battery voltage of the electric and hybrid vehicles and the engine.[138] Through this system, the driver can earn badges

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[132] S*ee* Gallagher & Muechlegger *supra* note 127, at 2.
[133] *Id.* at 10.
[134] ORe*GO* Commc'n., *The Rewards of Driving Hybrids and EVs* (Jun. 9, 2015), http://www.community.myorego.org/blog/the-rewards-of-driving-hybrids-and-evs/.
[135] *Sign up with an OReGO Account Manager!*, ORE*GO*, http://www.myorego.org/about/vendor-options/ (last visited Dec. 12, 2016).
[136] *See* OR. DEPT. TRANSP., *Road User Fee Task Force - May 20, 2015 Meeting materials, Item D-Value-Added Services*, https://www.oregon.gov/ODOT/HWY/RUFPP/Pages/ruftf.aspx; Tom Fuller, *What's Your Score with OReGO?*, ORE*GO*: BLOG (Oct. 27, 2015), http://www.community.myorego.org/blog/whats-your-score-with-orego/.
[137] *See* OR. DEPT. TRANSP., *supra* note 136.
[138] *See id.*

similar to videogame achievements (no monetary value).[139] Azuga also offers a "safe zone" program that allows parents to set geographical boundaries. When a teenager drives across the boundary, the program will alert the parent, and the parent can then track his or her child's progress home from school or work.[140] Finally, Azuga provides a program that provides the vehicle owner directions to locate his or her vehicle.[141] Verizon Telematics, another account manager, offers similar incentive programs such as "incident alerts, stolen vehicle location, maintenance/service reminders, [and] vehicle health reports . . ."[142]

Volunteers in ORe*GO* must determine whether these incentive programs justify the additional costs that ORe*GO* imposes on hybrid and electric vehicle users. Because these incentive programs can be provided by other companies that also use data ports, such as car insurance companies, these value added services most likely do not justify paying additional taxes.

4. Proposed Modifications to ORe*GO* to Incentivize Hybrid and Electric Vehicle Purchases

ODOT currently relies on the altruism of hybrid and electric vehicle owners to encourage them to volunteer under ORe*GO*. For example, in one blog post on ORe*GO*'s website, the Department states: "[F]or Oregonians who drive hybrids and [electric vehicles], it's often about more than saving the planet and saving dollars. According to a recent ODOT survey, most also support pitching in their fair share to help keep our roads and bridges safe and in good shape."[143] Historically, the "user pays" or "fair share" principle is the most supported method of collecting road funds. However, if electric vehicles are charged the same rate as high-emissions vehicles, the tax is not a true "user pays" tax. ORe*GO*'s tax does not take into consideration the costs of air pollution on

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[139] *See id.*
[140] *See id.*
[141] *See* OR. DEPT. TRANSP., *supra* note 136.
[142] George L. Koroneos, *Oregon Taps Verizon Telematics for First Large-Scale Road Usage Charge Program*, VERIZON (Jul. 27, 2015), http://news.verizonenterprise.com/2015/07/verizon-telematics-oregon-road-usage/.
[143] ORe*GO* Commc'n., *supra* note 134.

society, and only considers the damage caused to the roads. The health costs of vehicle emissions should be incorporated into the VMT tax rate, and drivers of low-emission vehicles should be charged a lower rate, proportional to the societal benefits of driving an environmentally friendly car.

This proposal will require substantial cost-benefit analysis to determine appropriate rates for each class of vehicle. However, this is the future of VMT taxes. Already many academics propose variable pricing to solve a host of traffic-related problems, such as congestion, air pollution, parking, and road repair.[144] As recording technologies improve, the administrative costs of variable pricing will decrease. Additionally, as the public becomes more familiar with VMT taxes in lieu of gas taxes, acceptance of variable pricing will become more common.[145]

B. ORe*GO* and Funding Sustainability

In addition to the environmental concerns discussed above, ORe*GO* also lacks a mechanism to adjust the VMT tax for inflation. Just as states tax fuel at a certain number of cents per gallon, ORe*GO* likewise charges a certain number of cents per mile, currently 1.5 cents.[146] ORe*GO* has no mechanism in place to automatically adjust the tax to inflation. Admittedly, citizens overwhelmingly seem to reject inflation indexing, as discussed in Part I. Many legislatures may view indexing to be a fruitless endeavor, destined to be defeated by a special ballot measure. However, states may be able to compromise by creating a requirement to review the tax every two or three years and adjusting for inflation if necessary. This forces the legislature to review the tax often, and provides some flexibility to avoid raising the tax if the revenue is not needed. The goal

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[144] *See, e.g.*, Jessica Coria et al., *Air Pollution Dynamics and the Need for Temporally Differentiated Road Pricing*, 75 TRANSP. RES. PART A 178, 178 (2015); Matthew Gibson & Maria Carnovale, *The Effects of Road Pricing on Driver Behavior and Air Pollution*, 89 J. URBAN ECON. 62, 62 (2015).
[145] The public already encounters variable pricing in the transportation industry. For example, Uber will add a "surge charge" when demand for transportation is higher than normal. Even more common are changes in the price of gasoline. A commute in the summer will typically cost much more than the exact same trip in the winter, and consumers adjust their behaviors accordingly.
[146] *See* S.B. 810 77th Leg. 2013 Reg. Sess. (Or. 2013).

should be to avoid long periods without tax increases, like the twenty-year gaps in the gas tax.

As it currently stands, ORe*GO* avoids the cardinal sin of raiding the coffers for purposes other than road building.[147] This is in part because Oregon's constitution requires revenue from "[a]ny tax or excise levied on the ownership, operation or use of motor vehicles" to be deposited in the HTF.[148] Nearly two-thirds of states have some anti-diversion law, either in their constitution or as a statute. Any state considering a VMT program would be wise to dedicate the revenue to its highway fund to avoid protest from taxpayers.

C. ORe*GO* and Privacy

One of the most consistent objections raised against VMT taxes is consumer privacy.[149] Some argue that just because GPS technology allows for efficient and sophisticated VMT taxes, this does not necessarily mean governments should use it to track the public's movements.[150] However, others argue that the infringement on privacy does not need to exceed similar uses of technology, such as cell phones and credit cards, to effectively administer the tax.[151] For those who are most concerned about the government tracking their movements, an alternative option could be offered, such as a simple odometer reading on a monthly basis.[152] In preserving personal privacy, those consumers would surrender opportunities to contest taxes on miles driven out-of-state or

[147] "Moneys collected from the road usage charges imposed under section 3 of this 2013 Act shall be deposited in the State Highway Fund and allocated for distribution as follows: (1) 50 percent to the Department of Transportation. (2) 30 percent to counties for distribution . . . . (3) 20 percent to cities for distribution . . ." *Id.*
[148] Or. Const. art. IX, § 3a(b).
[149] *See* Norman Y. Mineta, Samuel K. Skinner & Jeffrey N. Shane, *Well Within Reach: America's New Transportation Agenda*, *Miller Ctr. Pub. Aff.* 32 (2010), http://web1.millercenter.org/conferences/report/conf_2009_transportation.pdf.
[150] *See* Saqib Rahim, *Tax on Vehicle Miles Traveled Gains Support, but Raises Orwellian Questions*, N.Y. TIMES (Oct. 7, 2010), http://www.nytimes.com/cwire/2010/10/07/07climatewire-tax-on-vehicle-miles-traveled-gains-support-22995.html?pagewanted=all ("If you think about it, you'll realize that your location history indicates where you sleep, where you work, who you sleep with, who you go to business meetings with, where you go to church, what political meetings you attend, what nightclubs you go to.").
[151] *See id.*
[152] *See id.*

on private roads. Once states implement a tracking system, however, they must set adequate safeguards to protect any personal identifiable information that is generated.

States should look to ORe*GO* for a good example of consumer privacy protection. During the first pilot program, the government learned that the public felt very strongly about privacy.[153] In an effort to protect these privacy interests, SB 810 requires that a third party, the account manager, take all the GPS or odometer information and then subsequently provide ODOT only the quantity of taxable miles the individual has driven. Further, the account manager is instructed to "have security measures in their operations and systems to provide protection for [ORe*GO* volunteers] and program information."[154] These account managers have been evaluated by ODOT for adequate safeguards.[155] The account managers are also required to protect personally identifiable information and to pay for the costs of any security breach.[156] Additionally, account managers must be audited for security processes, must destroy all personally identifiable ORe*GO* account information within thirty days after payment, and must submit weekly, monthly, and quarterly reports on security measures to ODOT.[157] With these requirements in place, the ACLU has approved ORe*GO*'s privacy measures.[158]

ODOT relies on the average American's dependence on GPS-enabled cellphones to explain how ORe*GO*'s technology is not something novel in regards to privacy.[159] The

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[153] For example, despite providing recording devices that did not transmit real-time travel information, nor stored travel logs, "no matter how clearly [administrators] explained their privacy protection strategies; there were still people who were against the idea of using GPS technology for charging mileage user fee." NEV. DEPT. TRANSP., *supra* note 10, at 18.

[154] OR. DEPT. TRANSP., BUSINESS REQUIREMENTS: FOR ROAD USAGE CHARGE IMPLEMENTATION 6 (Jun. 5, 2015), http://www.oregon.gov/ODOT/HWY/RUFPP/Documents/RUCP_Business%20Requirements%20Document_final_v1.4.pdf.

[155] *See* OR. DEPT. TRANSP., ROAD USER FEE TASK FORCE - MAY 20, 2015 MEETING MATERIALS, ITEM C-RUC SECURITY BRIEF, https://www.oregon.gov/ODOT/HWY/RUFPP/Pages/ruftf.aspx.

[156] *See id. ("Contractor at all times shall comply with Agency's security policies. Security Policies include but are not limited to: The federal Automobile Information Disclosure Act, ORS 319.915, ORS 802.179, and security requirements in the System Requirement Specifications document in the performance of this PA (Price Agreement).*") (emphasis in original).

[157] *See* ORe*GO* Commc'n., *Protecting Your Private Info with OReGO's GPS Options* (Jun. 5, 2015), http://www.community.myorego.org/blog/protecting-your-private-info-with-oregos-gps-options/.

[158] *See id.*

[159] *See id.* ("Many of the smart phone functions and apps we love are powered by GPS-enabled technology that improves the accuracy of the information we need and use.").

Department reasons that because people are so accustomed to providing their location information to websites or mapping applications, most should have no qualms providing the same information for a VMT tax. States must carefully control how long the data is stored and place stringent security requirements on third-party vendors. Similar tracking systems, such as automatic toll bridges, have been used for unanticipated means including divorce attorneys searching for evidence of an unfaithful spouse.[160] Finally, states must assume that these tracking systems could become targets for hackers. Aside from the personal identification information, such as names, contact information, and billing information, hackers would also have access to data tracking daily driving habits, a basic weekly schedule of participants. Fortunately, ORe*GO* deletes all travel history within thirty days of a billing cycle. Other states should develop methods that avoid creating a permanent record of participants' movements.

To summarize, while personal privacy is a valid concern with VMT programs, the technology employed does not differ significantly from other technologies the public uses on a daily basis. A basic VMT tax does not need to collect or store highly personal travel details to be an effective tax. However, the more generalized the data becomes in the interest of privacy, the less accurate the tax becomes. Legislatures, after consulting with their constituents through similar pilot programs, must determine what level of privacy invasion is reasonable to administer an effective VMT tax.

D. ORe*GO* and Rights Against Search and Seizure

Citizens have the right to their persons, houses, papers, and effects against unreasonable government searches and seizures unless a warrant is issued upon probable cause.[161] SB 810 addresses the issue of unreasonable searches and seizures by ensuring that police officers may only obtain documents and records produced by the recording

[160] *See* Rahim *supra* note 150.
[161] *See* U.S. CONST. amend. IV.

devices through court orders based on probable cause.[162] SB 810 limits the police officer to records that pertain to the individual being investigated for the criminal investigation. Despite these protections, if ORe*GO* becomes mandatory, there will be some serious questions as to the constitutionality of the tax and its application to Oregon's police work.

Under the *Katz* doctrine established in *Katz v. United States*, the Fourth Amendment protects citizens against warrantless searches that encroach on areas where there is a subjective expectation of privacy that is objectively reasonable.[163] The recording devices used in ORe*GO* are similar to a recording device at issue in *Smith v. Maryland.* In *Smith*, the Supreme Court held that police did not need to obtain a warrant in order to use a pen register[164] to obtain evidence.[165] The Court reasoned that there was no reasonable expectation of privacy because all telephone users know that the telephone numbers they dial are transmitted to telephone companies. Additionally, the Court reasoned that the telephone users were put on notice that the pen register would be used to detect fraud by the telephone companies.[166] Consequently, telephone users assumed the risk that the telephone numbers they dialed would be conveyed to another party by conveying the telephone numbers to the telephone company.[167]

Likewise, even if the ORe*GO* tax is made mandatory, there may be no reasonable expectation of privacy. Accordingly, if we are prepared to accept the reasoning of Supreme Court in *Smith*, then the provision in SB 810 would be unnecessary. Like the pen registers, the GPS information from ORe*GO* users is transmitted to a third party: the account managers. Furthermore, there is no question that ORe*GO* users know that this information is being transmitted to the third-party account managers because that is precisely the function of the account managers. Yet SB 810 ensures that the police will obtain a court order issued upon probable cause unlike the pen registers in *Smith.* Such

[162] *See* S.B. 810 77th Leg. 2013 Reg. Sess. (Or. 2013) ("A police officer pursuant to a valid court order based on probable cause and issued at the request of a federal, state or local law enforcement agency in an authorized criminal investigation involving a person to whom the requested information pertains.").
[163] *See* Katz v. United States, 389 U.S. 347 (1967).
[164] Pen registers records all numbers dialed by the telephone user.
[165] *See* Smith v. Maryland, 442 U.S. 735 (1979).
[166] *See id.* at 743-44.
[167] *See id.* at 744.

additional protection may be sufficient to ensure that the GPS information created by the data ports in ORe*GO* has a reasonable expectation of privacy that society is ready to accept. Accordingly, SB 810 provides even more protections for ORe*GO* and its volunteers. Any state considering implementing a VMT program should follow SB 810's example of requiring search warrants issued upon probable cause prior to the police obtaining the ORe*GO* GPS information. By doing so, the state will likely be providing even more privacy protection over the GPS information that its citizens will arguably not have otherwise.

E. Data Ports and Regulatory Takings

ORe*GO* currently requires a device to be plugged into the volunteer's vehicle, typically in a data port located below the steering wheel.[168] The device records how many miles were driven, and two of the three device options allow the use of GPS technology to distinguish miles driven in-state from those driven out-of-state.[169] Typically, vehicles only have one data port, though some electric vehicles are not required by law to have one because they emit no pollution.[170] The data port can be valuable to many parties. Insurance companies use the data port to track driving habits, mechanics use it for diagnosis or engine tuning, and vehicle fleet operators use it to monitor driver behavior.[171] If a state were to make the VMT mandatory, each vehicle's single data port would be occupied at all times by the government's device. Some participants in Oregon's most recent program dropped out, citing a desire or need to use the data port for other uses, such as insurance monitoring.[172]

[168] *See* OR. DEPT. TRANSP., *supra* note 96, at 19.
[169] *See* WASH. ST. TRANSP. COMM'N, *supra* note 111.
[170] *See* OR. DEPT. TRANSP., *supra* note 96, at 25.
[171] *Azuga's Solution to the "One Port Dilemma,"* AZUGA (Aug. 10, 2015), http://azuga.com/azugas-solution-to-the-one-port-dilemma/.
[172] *See* OR. DEPT. TRANSP., ROAD USER FEE TASK FORCE –MEETING MINUTES NOVEMBER 18, 2015, at 2 (2015), http://www.oregon.gov/ODOT/HWY/RUFPP/Jan%202016%20Meeting%20Materials/ItemA_DRAFT_RUFTFMins_Nov182015.pdf.

There are some ways to avoid data port sharing problems. One possible solution is to offer a flat fee option rather than a per mile fee. Rather than track each mile, users would estimate how many miles they drive on average (ex. one month, three months, or one year) and pay an upfront fee for that many miles. At the end of the period, the odometer could be inspected to determine whether more money needs to be paid or a refund issued. However, this requires a physical inspection or some manner of confirming the odometer reading, which will be more expensive. Another option is to develop a second method of tracking miles, such as a phone application.

ORe*GO* and other VMT taxes are unlikely to draw constitutional challenges under a claim of regulatory taking. ORe*GO*'s requirement that a device be plugged into the data port does not deprive a vehicle owner of all economically beneficial use of the vehicle.[173] Nor does ORe*GO* seem to fit into the *Penn Central* analysis as a single occupation of personal property.[174] Even under *Penn Central*, the requirement to use a recording device would not interfere with investment-backed expectations because car owners do not purchase vehicles solely for their data ports. The only potential challenge might come from a "permanent physical occupation" by a third party.[175] However, *Loretto* involved transmission lines over real property and a home, distinguishable from mobile personal property such as a car. Most importantly, this analysis will likely become obsolete as car manufactures continue to integrate tracking technologies into newer models.[176]

[173] *See* Lucas v. S. C. Coastal Council, 505 U.S. 1003 (1992).
[174] *See* Penn Central Transp. Co. v. New York City, 438 U.S. 104 (1978)
[175] *See* Loretto v. Teleprompter Manhattan CATV Corp., 458 U.S. 419 (1982)
[176] *See* I-95 Corridor Coalition, Concept of Operations for the Administration of Mileage-Based User Fees in a Multistate Environment 10 (2012), http://i95coalition.org/wp-content/uploads/2015/03/Transportation_Financing_Phase2-FR.pdf?dd650d/.

IV. ENVISIONING A REGIONAL OR NATIONAL VMT TAX

A VMT tax will not be effective in isolation because states have open borders and receive visitors on a daily basis.[177] Visitors may be from another state or even another country. Currently, states capture revenue from these visitors through fuel taxes. However, under a VMT system, unless the visitor is registered with the same administrator the state uses, the visitor will avoid the VMT tax. Thus, if a state decides to adopt a VMT tax, it must either look at regional approaches to revenue collection, or develop a system to capture revenue from visitors.

Several reports discuss the challenges of implementing a multistate VMT tax, including a comprehensive report from the I-95 Corridor Coalition in 2012.[178] The report established several basic requirements for a multistate approach. First, all vehicles would need equipment capable of recording and aggregating mileage "by date, time of day, state, jurisdiction and facility."[179] Second, VMT processing organizations would need to collect and organize the data from each vehicle, generating billing statements.[180] Each state could establish or choose a processing organization. Other key duties of the processing organization would include compiling and tracking all VMT tax rates by state, county, or possibly even city.[181] Third, financial clearinghouses would be necessary to collect payments and distribute revenues to respective jurisdictions.[182]

The I-95 Corridor Coalition implemented a case study in Delaware, Maryland, and Pennsylvania in December 2010.[183] Unlike ORe*GO*, this study only established a framework for a system between the three states, but did not run a pilot program.[184] The purpose of the study was to identify potential legal and logistical hurdles in a multistate

[177] Hawaii being a possible exception to the rule.
[178] *See, e.g.*, I-95 Corridor Coalition, *supra* note 176; Hanley & Kuhl, *supra* note 97.
[179] I-95 Corridor Coalition, *supra* note 176, at 7.
[180] *See id.*
[181] The report presents a long list of duties a processing organization would be responsible for, above what was mentioned in this Article. *See id.* at 7-8.
[182] *See id.* at 8.
[183] *See id*. at 19.
[184] *See* I-95 Corridor Coalition, *supra* note 176.

system.[185] The University of Iowa conducted the only multistate pilot program from 2008 to 2010.[186] The pilot program involved around 2,650 volunteers from twelve states.[187] Overall, the results of the pilot program were positive. The equipment functioned well,[188] and those who participated in the program generally left with more favorable views of a VMT tax.[189] However, researchers noted that installation costs and GPS accuracy, though minimal in a small pilot program, would cause major setbacks in a nationwide system.[190]

In the West, several states formed a regional consortium to establish a framework for a regional VMT tax system.[191] The coalition is in the planning phase and has not carried out any pilot programs for a VMT system. In a 2014 report, the consortium found that a multi-jurisdictional VMT tax system was feasible.[192] However, the report also stressed that any multistate system would need to be flexible to accommodate differing policies and state-specific enforcement issues.[193] The report presented several alternatives to a multi-jurisdictional tracking system that could be viable, especially in the formative years of a VMT tax.[194]

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[185] *See id.*
[186] *See* Hanley & Kuhl, *supra* note 97.
[187] *See id.*
[188] However, some vehicles did have compatibility issues and were excluded from the program. Additionally, about 6.7% of the miles were not tracked by GPS due to connectivity issues and were assigned to a specific jurisdiction from interpolation. *See id.* at 18.
[189] At the beginning of the pilot program, "the majority of the participants (more than 60%) expressed a neutral or negative view. After their experience, in the study, the view of the system was rated as favorable by 70% of the participants." *Id.*
[190] Each equipment installation required about ninety minutes to complete by a qualified professional, which would add large administrative burdens if the program went nationwide. *See id.* The device used in ORe*GO* is much more simple, requiring no professional installation to plug into the vehicle's data port. *See supra* Part III(C). However, as noted earlier, car manufacturers may soon be installing compatible equipment, reducing the long-term need to install devices. *See* I-95 Corridor Coalition, *supra* note 176.
[191] Known as the Western Road Usage Charge Consortium, the coalition's membership includes, as of January 13, 2016, Arizona, California, Colorado, Idaho, Hawaii, Montana, Nevada, New Mexico, North Dakota, Oklahoma, Oregon, Texas, Utah, and Washington. *See* OR. DEPT. TRANSP., *supra* note 93. (follow "Item E – Western Road Usage Charge Consortium Update" hyperlink).
[192] *See* D'Artagnan Consulting, Project 2A: Study of Inter-Jurisdictional Road Usage Charge Issues 40 (2014), http://www.wstc.wa.gov/StudiesSurveys/RoadUsage/RUC2013/documents/2015_0227_WRUCC_Intrjuris_Rept.pdf.
[193] *See id.*
[194] Alternatives include not charging out-of-state visitors, maintaining the gas tax for visitors, and charging for the time spent in the state (flat fee for a day or week in the state). *See id.* at 13-20.

As states begin considering whether to implement a mandatory VMT tax, it may be best to skip the intrastate pilot program phase and start testing an interstate system. Many states, especially in the West, are at least open to a multi-jurisdictional system. Rather than developing eleven different tracking systems, states would be wise to adopt one or two systems and test them across a wide geographical distribution. One reoccurring theme in both pilot program reports and framework reports is the need to spend sufficient time educating the public about the purpose of a VMT tax.[195] Each pilot program reports significant increases in positive perception of the program as participants become familiar with the system.[196]

V. ALTERNATIVES TO VMT TAXES

A VMT tax is not the only possible solution to replace the fuel tax. This section analyzes two alternative solutions to the road funding crisis: a sales tax model and raising the fuel tax. A sales tax funding model would be easy to implement, but would move away from the popular "user pays" principle. Unlike a VMT tax, which will require years of preparation, experimentation, and coordination with other states, higher fuel taxes are at best a temporary solution. If states wish to find a sustainable source of funding, while still applying the "user pays" principle, the best solution is a VMT tax.

A. Sales Tax

One alternative solution is to increase sales taxes and dedicate a portion of the revenue to the state's road fund. Much like the fuel tax, sales taxes are easy to administer. Sales taxes are also typically a percentage of the total sale, which means the tax rises with

[195] *See, e.g.*, Trey Baker, Ginger Goodin & Chris Porteau, "Is Texas Ready for Mileage Fees?" 6-7 (2011), http://d2dtl5nnlpfr0r.cloudfront.net/tti.tamu.edu/documents/0-6660-P1.pdf; James M. Whitty, Oregon's Mileage Fee Concept and Road User Fee Pilot Program Final Report 50-52, 59 (2007).
[196] *See, e.g.*, Rephlo, *supra* note 97, at 124 (noting that by the end of the program, when participants were asked which revenue collection approach they would prefer, 15% were undecided, 37% preferred the fuel tax, and the remaining 48% preferred a VMT tax); Hanley & Kuhl, *supra* note 97 at 18 (noting an increase from 40% in favor of the VMT tax to 70% by the end of the pilot program).

inflation. Local jurisdictions such as counties and cities are more likely to use a sales tax to fund their road projects. Recently, voters in large cities like Phoenix and Colorado Springs approved a sales tax increase for road repairs.[197] At the state level, Michigan voters soundly rejected a ballot measure to increase a sales tax to fund roads, with 80% voting no.[198] However, in Virginia, the state legislature eliminated the excise gas tax in 2013 and replaced it with a percentage-based gas tax, solving the inflation problem.[199]

Nonetheless, the portion of the tax dedicated to road repairs is less noticeable to consumers, which violates the traditional "user pay" principle. Additionally, a sales tax shifts some of the costs to people who do not drive or directly use the road systems.[200] Variations of this proposal, such as Michigan's "Pot for Potholes" campaign, fall even further from the "user pays" principle.[201] Why is the "user pays" principle so important? The long history of the gas tax demonstrates that the public expects three principles out of any road fund tax. First, the tax must be distributed fairly among those who use the road, in proportion to the damage caused by the vehicle. Second, the revenue must be dedicated to building roads. Third, the tax must be easy to pay. A sales tax, or any other variation of a sales tax, can meet the second and third principles, but it cannot be distributed in proportion to road use. Without the public's support, a sales tax increase will often fail, as it did in Michigan.

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[197] *See* Goth, *supra* note 92; *Colorado Springs Increases Sales Tax to Fund Road*, Denver Post (Dec. 30, 2015, 2:23 PM), http://www.denverpost.com/news/ci_29325496/colorado-springs-increases-sales-tax-fund-road-repairs/.

[198] *See* Fleming & Heinlein, *supra* note 91.

[199] *See* Peter Bacqué, *Virginia's Gasoline Tax Drops Today*, *Richmond Times-Dispatch* (July 1, 2013, 12:00 AM), http://www.richmond.com/business/auto/virginia-s-gasoline-tax-drops-today/article_2be28baa-ccc5-51c9-b64a-76ba39a967af.html.

[200] However, because the economy relies on the road system to transport goods, even those who do not directly drive on the roads still benefit from others using the road.

[201] When Michigan proposed raising the sales tax, some in Michigan proposed an alternative to the sales tax, "Pot for Potholes," which would legalize marijuana and then dedicate the sales tax from marijuana to the road fund. *See* Anthony Sabella, *Is 'Pot for Potholes' the Roads Fix Michigan Needs?*, ABC 12 (updated May 21, 2015, 3:03 PM), http://www.abc12.com/home/headlines/Is-Pot-for-Potholes-the-roads-fix-Michigan-needs-304513371.html. The proposal never became a formal ballot measure, but the idea has been supported in other jurisdictions. *See, e.g.*, Chhun Sun, *Mayoral Candidate Still Favors Recreational Marijuana Sales in Colorado Springs*, GAZETTE (updated April 28, 2015 at 4:15 AM), http://gazette.com/mayoral-candidate-still-favors-recreational-marijuana-sales-in-colorado-springs/article/1550450/.

B. Fuel Tax Increases

Simply increasing fuel taxes is another solution to road fund deficits. In the short-term, this solution may be both the most practical and environmentally friendly solution.[202] Hybrid and electric vehicles represent a small but growing percentage of the U.S. fleet. Distributing the lost revenue from hybrid vehicles throughout the gas-powered fleet leads to insignificant increases for each driver. However, transferring the lost revenue directly to the owners of hybrid and electric vehicles creates significant disincentives to purchase these vehicles. In a few years, as the price of electric vehicles lowers, government subsidies may no longer be necessary to promote the environmental and health benefits of emission-free vehicles. Therefore, raising the gas tax may buy states a few years to develop a long-term solution, such as the VMT tax.

As discussed in Part I, many states increased their fuel taxes from 2014 to 2016 in the face of budget deficits. For example, in March 2015, Utah's Governor, Gary Herbert, signed a law that raised the fuel tax by five cents.[203] In April 2015, Iowa approved a fuel tax increase, and multiple proposals in various states have continued to consider legislation increasing the fuel tax.[204] "[This] movement is a breakthrough for many states that have gone more than 20 years without touching the levy on gasoline . . ."[205] Increasing the fuel tax is one of the easier solutions to road funding because it can be applied instantly to the consumers with little need to invest in new technology and resources. Until states develop a new, sustainable source of funding, raising the gas tax can provide temporary relief to road fund deficits. However, raising the gas tax cannot be considered a long-term solution. Additionally, as hybrid and electric vehicles gain

[202] Alan Jenn, Inês Lima Azevedo & Paul Fischbeck, *How Will We Fund Our Roads? A Case of Decreasing Revenue from Electric Vehicles*, 74 TRANSP. RES. PART A 136, 143-145 (2015) ("[F]or EV owners, bearing the cost of the fee increases can result in relatively large increases to their existing registration fees (or electricity bills). However, disaggregating the fees among the general population of drivers leads to a negligible increase in gasoline fees paid by drivers: less than a penny per gallon.").
[203] *See* Berman, *supra* note 90.
[204] *See id.*; *See also* Rachel La Corte, *Gas Tax Increases by 7 Cents in Washington State,* AP(Aug. 1, 2015 at 10:33 AM, last update Aug. 1, 2015 at 12:34 PM), http://www.seattletimes.com/seattle-news/gas-tax-increases-by-7-cents-in-washington-state/ (Washington was considering an increase to the fuel tax in August 2015).
[205] Berman, *supra* note 90.

prominence, the gas tax will also fail the "user pays" principle that dominates road funding regimes.

CONCLUSION

Time is running out for the fuel tax. As electric and hybrid vehicles increase in popularity, states will need to transition away from the fuel tax or find other funding sources to maintain their precious road systems. States that determine that the VMT tax is a viable replacement will then prepare for a transition to a mandatory VMT tax. ORe*GO* has been invaluable as a feasibility test for the VMT tax, but it is not suitable for a mandatory tax in its current form. Fortunately, with some improvements to Oregon's model, a VMT tax can be a sustainable source of revenue without causing undue environmental harms or infringing on citizens' privacy rights. As neighboring states begin implementing mandatory VMT taxes, they will likely need to coordinate those tax programs at a regional or national level. States would be wise to begin coordinating now to avoid duplication or wasted resources. A century ago, a group of bicyclists urged America to rise from the mire and build good roads. Now, it is time for states to rise from the outdated gas tax and develop a fair, sustainable source of funding to maintain our invaluable roads.