

# It's an Energy Issue, Too:

Re-thinking How We Fund

America's Transportation Infrastructure

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June 2015

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Two critical components of the U.S. Department of Transportation (DOT) Highway Trust Fund—the accounts that fund road and bridge construction and support mass transit—are expected to run out of money in July 2015. Congressional approval of a new bill that would provide a long-term funding structure for investments in surface transportation infrastructure are unlikely to occur prior to that. By nearly all accounts, doing nothing will leave American roads, highways, bridges, and public transit systems significantly at risk.

The Highway Trust Fund has historically used a simple model for supporting vital national infrastructure with gasoline and diesel taxes from people who purchase gas and diesel. These purchasers have traditionally been viewed as the users of the system. However, we are *all* users of transportation infrastructure. Many of us are indeed drivers of traditional vehicles, but we are also walkers on sidewalks, bicyclists on roadways and bridges, mass-transit users, or drivers of electric vehicles. We all rely on a system to provide emergency services and for the delivery of goods that we consume. We use this infrastructure regardless of whether we ever purchase these fuels.

Changing the way we pay for roadways and bridges will require:

- A new kind of thinking about **who the real users** of the nation's transportation system are.
- Recognizing that funding improvements in transportation infrastructure is **an energy issue**, too.

**What is needed now is a new kind of thinking about who uses American transportation infrastructure, and how to think of it as not just a transportation issue, but an energy issue, too. To meet our daily needs, we will need to consider changes in both technology and taxes.**

The Obama Administration, for its part, has proposed a game-changing, 6-year transportation bill known as the GROW AMERICA Act, which proposes comprehensive support for the creation of—among other things—a wide variety of transportation infrastructure initiatives.<sup>1</sup>

### VEIC Position 1

VEIC does not believe the proposed solution in the GROW AMERICA Act, a reduced, 14 percent tax on overseas corporate earnings, is a solution unto itself. That reduced tax will bring in an estimated \$238 billion, but it is essentially a tax holiday from the 35 percent corporate marginal tax rate, and is intended only as a transition to a new tax structure.

Solutions that are directly related to carbon—the essential factor in all energy use, including transportation energy—will bring in stable, needed revenue, and reinforce to users the relationship of their transportation uses to the air we breathe and the carbon emissions we release into the atmosphere. Two such solutions are worth considering:

1. A state-level “weight distance” vehicle tax; owners, operators, and registrants of vehicles with a gross vehicle weight in excess of a limit set by each state.
2. A progressive, broad-based tax that recognizes we all benefit from the system that gets us to where we need to go.

## GROW AMERICA and Where We Are Now

The [GROW AMERICA Act](#) is a 6-year \$478 billion surface transportation modernization bill nested in the FY 2016 budget. The bill would increase transportation investment by 45 percent, funded in part by a one-time tax break on untaxed foreign earnings that U.S. companies have accumulated overseas. Members of both parties in Congress have expressed an interest in passing a long-term funding bill this year. However, it is still to be determined whether it will move forward. For the moment, a short-term patch for the Highway Trust Fund is in place.

The GROW AMERICA Act is a funding and policy proposal based in part on the findings of a comprehensive Department of Transportation (DOT) report, [Beyond Traffic 2045: Trends and Choices](#). The report looks at transportation trends and proposes transportation funding options. The report advances the idea that aging transportation infrastructure and constrained resources for fixing that infrastructure are beginning to slow down the U.S. economy and will continue to do so if we cannot identify a stable funding source that supports innovation and infrastructure repair and maintenance. In addition, *Beyond Traffic* identifies 18 policy options, which are presented as **Appendix A** at the end of this document.

As a think-and-do tank in the business of reducing the economic and environmental costs of energy use, VEIC **supports the recommendations in *Beyond Traffic* and the purposes of**

<sup>1</sup> This is an acronym for Generating Renewal, Opportunity, and Work with Accelerated Mobility, Efficiency, and Rebuilding of Infrastructure and Communities throughout America.  
<http://www.dot.gov/policy-initiatives/grow-america/grow-america-act-summary>.



**the GROW AMERICA Act.** Perhaps the greatest benefits of securing long-term, consistent funding is the opportunity for investment in innovation, and its role in providing market and economic stability—and job growth. The GROW AMERICA Act proposes a balance between improving and maintaining infrastructure for existing surface transportation (highways, railroads, and bridges) and innovation in new opportunities for moving people and goods. That innovation will need to come from both the transportation and the energy sectors to power this movement of people and goods.

It should be noted that the energy infrastructure itself is also ready for transition. The U.S. Department of Energy's first installment of its [Quadrennial Energy Review](#) highlights the electric grid's growing vulnerability to extreme weather events and terrorist threats. It also advocated public and private partnerships—discussed further in this paper—in investing in modernizing the energy infrastructure. This connection between the transportation and energy sectors in the need to rebuild the infrastructure of each is well explored in a recent article by the Center for American Progress.<sup>2</sup>

The transportation sector is full of opportunities for innovation. New software has designed streamlined flight paths for better air traffic control. Research is strong in autonomous vehicles. In terms of surface transportation, the field is especially wide open, and ranges from new vehicle technology to inner-city bicycle programs, to mass-transit innovation.

Innovation in the energy sector is also expanding at a fast pace: new renewable energy technologies, integration of the smart grid, advances in energy storage, and the interconnection between the grid and electric vehicles are good examples of the range and pace of change. Even with many opportunities for growth and innovation, public funds can go only so far in exploring those opportunities. Private enterprise, of course, has its own role to play, too. None of these sources of funding offers a stand-alone solution.

How then do we make the most of what is out there, whether with public funds or private? How can policy be guided toward the greatest public benefit?

We are entering an era in which integration of new ways of addressing public essentials will become part of the national conversation. We will need to look at priorities as a function of public benefit, and something subject to simple solutions.

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<sup>2</sup> Kelly, Cathleen. State Future Funds: Jumpstarting Investments in Low-Carbon and Resilient Energy and Transportation Infrastructure. Washington, DC: Center for American Progress. June 23, 2015. <http://app.mx3.americanprogressaction.org/e/es.aspx?s=785&e=845022&elq=0a00105ca9804a929e094d89b2e874b1&elqaid=26016&elqat=1&elqTrackId=29938bde7ef4498484f92f21a4f69a2b>.



## VEIC Position 2

All of the policy options proposed in *Beyond Traffic* have merit, but three stand out as important for national advocacy in reducing the economic and environmental effects of energy use in surface transportation:

- 1 **Promote** public transit, biking, and walking
- 2 **Reduce** transportation emissions by improving fuel efficiency and increasing the use of alternative, cleaner fuels
- 3 **Ensure** adequate carbon-based revenue solutions to address critical needs through existing taxes, new excise taxes, user fees, tolls, congestion pricing, fees for vehicle miles traveled, or other funding mechanisms.

## Promote, Reduce, Ensure

### Changing Wasteful Practices: Promote Public Transit, Biking, and Walking

As a nation whose transportation sector accounts for 31 percent of U.S. GHG emissions, **investments in low-carbon infrastructure such as bike paths and sidewalks should be a prominent factor in policy decision making.** Such investments enhance the growing attention to community-scale solutions (such as promoting walkable neighborhoods), state-scale benefits (such as helping to alleviate income inequality), and national-scale objectives (such as improving health).



Single-occupant, internal-combustion engine vehicle use—when more fuel-efficient alternatives are available—contributes to resource waste and traffic congestion. Access to affordable, reliable transportation can be a major hurdle for people with low incomes in

seeking jobs and staying employed. After housing expenses, transportation is the second-largest expense for most U.S. households. Low-income populations, which already have a high energy burden (proportion of income going to supplying energy needs in housing and transportation), especially find it very difficult to afford transportation. This makes it all the more difficult for low-income people to obtain the benefits from all the economic opportunities that mobility provides. Reliance on public transportation for commuting, errands, and bringing children to and from school or childcare can easily double the amount of time it takes a vehicle driver to make those trips.<sup>3</sup>

<sup>3</sup> U.S. Department of Transportation, *Beyond Traffic 2045: Trends and Choices*, (Draft), March 20, 2015: 23. [http://www.dot.gov/sites/dot.gov/files/docs/Draft\\_Beyond\\_Traffic\\_Framework.pdf](http://www.dot.gov/sites/dot.gov/files/docs/Draft_Beyond_Traffic_Framework.pdf)



Supporting transportation efficiency and offering affordable housing near employment centers and other services are also critical. The GROW AMERICA Act proposes a 76 percent increase in public transit spending over 2015 enacted levels.<sup>4</sup> This increase will help improve or expand light rail, street cars, and rapid transit, not just in inner cities but also in suburbs, small towns, and rural communities.

### **Changing the Environmental Equation: Reduce Transportation Emissions**

Improving fuel efficiency in vehicles should persist as a priority, even as technological advances that might replace conventional internal combustion engines continue to emerge. According to *Beyond Traffic*, “Aggressive investment and innovation could reduce the use of conventional gas and diesel combustion engines to less than 10 percent of the passenger vehicle market by 2045.”<sup>5</sup> Instead of primarily addressing just fuel efficiency, the time has come to address fuel switching. Both are remedies already well known to the energy sector.

Several technologies for alternative transportation fuels are in competition with one another. The least expensive option, in terms of dollars per gallon of gasoline equivalent, is electricity.

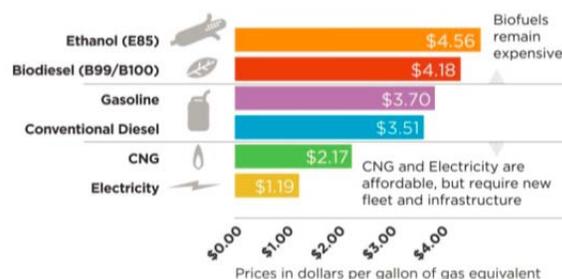
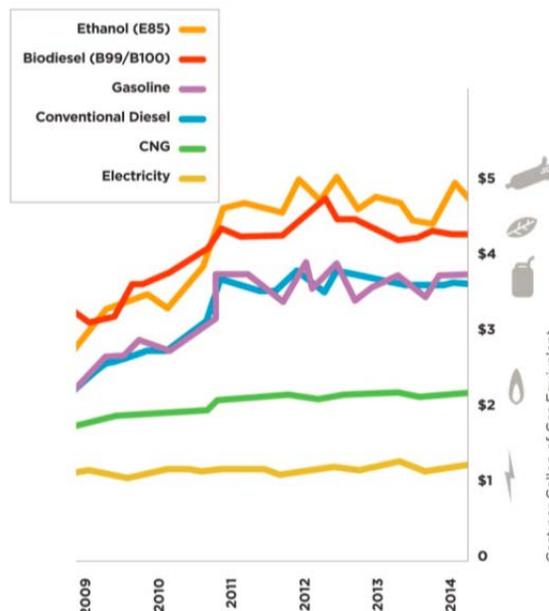
Depending on the fuel source of generated electricity, and especially when electricity is generated by renewables (solar and wind, in particular), electric vehicles can be exceptionally useful in reducing greenhouse gas (GHG) emissions. Switching transportation fuel from fossil fuels to electricity requires an approach that goes well beyond being a solution just to a transportation challenge. To maximize the benefits of electric vehicles, fuel switching as a nationwide practice should be accompanied by efforts to “green the grid.” Greening the grid can take the form of flattening daily electric loadshapes (that is, evening out the highs and lows in the distribution of electricity use and demand) through time-of-use (TOU) electricity rates, demand response programs, energy efficiency, and distributed renewable generation within the electricity sector.

Several states are considering the development of a more efficient, reliable, and resilient grid. These initiatives dovetail well with energy scenarios that assume the widespread adoption of electric vehicles. In the heavy-duty vehicle market, electricity might be feasible for some vehicles, whereas for very long-range travel (such as interstate trucking), other alternative fuels might initially be a better fit. **Figure 1** shows pricing effects of using alternative fuels, per gasoline gallon equivalent.

<sup>4</sup> U.S. Department of Transportation, *GROW AMERICA Act Fact Sheet* – Overview, updated April 2, 2015: 2. <http://www.dot.gov/grow-america/fact-sheets/overview>

<sup>5</sup> *Beyond Traffic*, 132. [http://www.dot.gov/sites/dot.gov/files/docs/Draft\\_Beyond\\_Traffic\\_Framework.pdf](http://www.dot.gov/sites/dot.gov/files/docs/Draft_Beyond_Traffic_Framework.pdf)



**Alternative Fuel Prices (July 2014)****U.S. Average Retail Fuel Prices**

Source: *Beyond Traffic*, 133.

Figure 1. Alternative fuel pricing comparison for vehicles, and average retail fuel prices.

## Changing the Money Trail: Ensure Adequate Revenues to Address Critical Needs

The consequences of this large-scale and long-term deferral of transportation infrastructure maintenance are deteriorating roads and bridges, and diminished performance of the nation's transportation system. If a long-term funding structure were in place—a structure that does not solely rely on gasoline and diesel consumption taxes—and a commitment to long-term investments were also in place across even the next six years, the United States would be in a far different position from what it is in now.

Assuming gasoline and diesel taxes remain in place and are supplemented by other solutions, such as carbon-based initiatives, some of that revenue could eventually be used to support reductions in the use of fossil fuels in transportation, home heating, and other uses beyond just transportation. The integrated, whole energy sector powered by renewables and modulated by advanced dispatch services holds the promise of increased access with reduced costs—both specific and total costs.

The federal fuel tax rates on gasoline and diesel have not increased since 1993. Because it is not automatically adjusted for inflation, the value of these revenues has decreased from a net present value that might have been calculated at that time. The amount collected from the fuel taxes has also declined in total, primarily because vehicles are now more efficient, and the number of vehicle miles traveled per capita has been dropping since 2006.<sup>6</sup> These factors have

<sup>6</sup> *Beyond Traffic*, 21.



contributed to a reduction in the amount of federally available funds to support America's transportation system. In fact, revenue from inflation-adjusted federal gasoline and diesel taxes fell by 31 percent, from 2002 to 2012.<sup>7</sup>

Closing the gap between the expenses of upkeep for roadways, bridges, and mass transit and the level of available funding has fallen to states and localities. Typically, they have created or increased state gas taxes, directed a portion of sales taxes to surface transportation funding, created vehicle registration user fees, and / or established tolls for use of bridges and roads. State and locality solutions, however, can easily change as political winds change. They are patchwork solutions and often do not provide a long terms sustainable structure.

At press time, the U.S. Senate Environment and Public Works Committee approved a \$277.4 billion 6-year highway bill that has been seen as a meaningful step to a long-term, fully funded surface transportation solution. The chances for the success of this bill are in doubt, primarily because passage will require finding tens of billions of dollars to pay for future higher funding levels (designed to increase 3 percent annually over current levels).

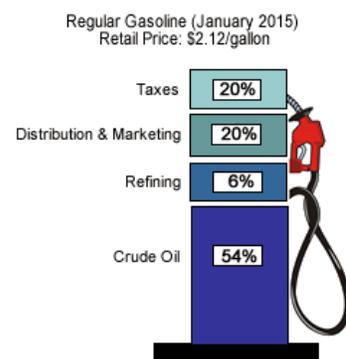
The bill is known as the Developing a Reliable and Innovative Vision for the Economy, or DRIVE, Act, on June 24. It cuts the TIFIA federal loan program (discussed to \$675 million a year, compared to the 2014 authorization for \$1 billion.<sup>8</sup>

## What Is Sustainable?

Despite the proposed 6-year horizon of the GROW AMERICA Act, it does not address transportation funding in the long term the way the Highway Trust Fund has. The unsustainability of the Highway Trust Fund model and the proposed 6-year, partial corporate tax holiday suggest more is needed to keep infrastructure from falling back into a deferred-maintenance practice in 2021 and beyond.

So what might *be* sustainable? **The obvious solution to a transportation funding shortfall from a gas tax is to raise it.** Transportation advocates frequently support this approach, but it is understandably a politically sensitive issue. Recent declines in world petroleum prices have added new intensity to this debate, as described by Columbia University economist Jeffrey Sachs:

World oil prices have declined by around \$60 per barrel, and by roughly \$1.40 per gallon in the U.S. since June 2014. By raising the gasoline tax 35 cents a gallon—bringing the total tax to 53.4 cents per gallon—consumers would still keep



Source: *Forbes*  
<http://www.forbes.com/sites/tonmzeller/2015/03/05/study-youre-really-paying-more-than-6-per-gallon-for-that-gas/>

<sup>7</sup> *Beyond Traffic*, 209.

<sup>8</sup> For more information on this bill, see

[http://www.epw.senate.gov/public/index.cfm?FuseAction=Majority.PressReleases&ContentRecord\\_id=49c86e27-9160-a20e-00e1-64fa0351a330](http://www.epw.senate.gov/public/index.cfm?FuseAction=Majority.PressReleases&ContentRecord_id=49c86e27-9160-a20e-00e1-64fa0351a330).



three-fourths of the recent windfall savings, while the U.S. government would recoup around \$50 billion per year, or \$500 billion over a decade, enough to close the financing gap on the Trust Fund, while also making a down payment on the huge arrears on maintenance of the federal transportation system.<sup>9</sup>

This additional gas tax would not only provide a consistent source of transportation funding in the near future, but it would also bring gasoline and diesel prices more in line with their true societal costs. Drew Shindell, an ozone specialist at Duke University, has put a price on the environmental toll:

Within the transportation sector, the environmental damages per unit of fuel consumption are \$3.80 (-1.80 / +2.10) per gallon of gasoline using a 3% discount rate, far larger than the current federal tax of \$0.184 per gallon and more than 7x greater than the typical combined local, state and federal gasoline tax (additional negative externalities associated with gasoline use should be part of an optimal fuel tax).<sup>10</sup>

So, with economic and environmental (including health) arguments for an increase in the federal gas tax, what are the other benefits? For one thing, it would not only provide more accurate accounting for the cost of gasoline, but it would also provide a market incentive for more efficient transportation options: walking, biking, public transit, more efficient vehicles (including carpools and vanpools), and technologies such as electric vehicles.

### **If We Don't Raise the Gas Tax, What Else Would Sustain the Highway Trust Fund?**

Another revenue source for the Highway Trust Fund could be a **per-barrel oil tax** charged to oil companies to fund federal transportation projects, rather than have drivers pay directly at the pump. However, there would be nothing stopping the oil companies from passing on that tax to those same drivers at the pump. A **sales tax** on gas and diesel is another alternative. Rather than taxing the gallon of gas, the sale would be taxed. Annual **federal vehicle registration fees** could also be developed to generate additional revenue.

The current **fuel tax** structure could be **modified** in several ways. For example, to minimize the financial burden on drivers, a **price-dependent tax increase** would take effect only when fuel prices fall below certain levels.<sup>11</sup> Another option would be to **index the gas tax to inflation**, with or without an adjustment from 1993 levels.

<sup>9</sup> Sachs, Jeffrey D., "Why It's time to Raise the Federal Tax on Gasoline." January 19, 2015. <http://www.politico.com/magazine/story/2015/01/why-its-time-to-raise-the-federal-tax-on-gasoline-114380.html#.VUttVknD-00>

<sup>10</sup> Shindell, Drew T. The Social Cost of Atmospheric Release, *Climactic Change*, February 25, 2015. <http://link.springer.com/article/10.1007/s10584-015-1343-0/fulltext.html>

<sup>11</sup> Kirk, Robert S. and William J. Mallett, *Funding and Financing Highways and Public Transportation*, Congressional Research Service, September 23, 2013: 8. The idea of a tax-related floor on gasoline prices is not new; see also Sperling, Daniel, and Deborah Gordon, "How High Gas :Prices Can Save the Car Industry." *The New York Times*, Opinion, November 16, 2008. [http://www.nytimes.com/2008/11/16/opinion/16sperling.html?\\_r=2&](http://www.nytimes.com/2008/11/16/opinion/16sperling.html?_r=2&)



## What about Main Street Americans?

Those opposed to any type of tax increase understandably allude to inevitable hardships from an increased use tax on “Main Street” Americans. But their solutions to date have tended to avoid long-term societal factors; they usually do not cite statistics showing the disproportionate number of low-income people living close to sources of airborne pollutants from highway use and fuel extraction and refining.

Collectively, the solutions that do not allow for tax increases tend to be framed in terms of governmental decentralization or devolution of transportation infrastructure funding. The various forms of proposed decentralization and subsequent fragmentation of approaches for funding transportation infrastructure would, according to one active exponent of no federal tax increases, encourage “state governments to pursue their own innovative solutions for highways and transit, such as new types of user charges, public-private partnerships, and privatization.”<sup>12</sup>

This sounds fresh and hopeful, and the solutions even echo some of the language in the GROW AMERICA Act: Innovation, user fees, partnerships. Against a backdrop of decentralization of transportation infrastructure project funding, the argument goes, we would see a lower incidence of cost overruns, especially if we eliminate “costly” requirements such as adherence to federal fair-wage laws; and we would avoid project mismanagement, because of assumed tighter, local controls on infrastructure building and repairs.

These arguments keep the discussion focused on the machinery and economics of government size, whether local, state, or federal. Their blind spot is the socioeconomic, energy, and environmental consequences of decentralization. Those consequences are real, and they deserve attention.

## Thinking about Main Street Differently

If we look at the socioeconomic argument briefly, it is important to note that Main Street includes those who have little choice about living away from airborne pollutants from highway use and sources of fossil fuel extraction, refining, and processing. The Centers for Disease Control and Prevention have found that:

In the United States, it is widely accepted that economically disadvantaged and minority populations share a disproportionate burden of air pollution exposure and risk... A growing body of evidence demonstrates that minority populations and persons of lower socioeconomic status experience higher residential exposure to traffic and traffic-related air pollution than nonminorities and persons of higher socioeconomic status... Two recent studies have confirmed

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<sup>12</sup> Edwards, Chris. “Rethinking Federal Highway and Transit Funding.” Testimony before the U.S. Senate Finance Committee. Washington, DC: Cato Institute. May 6, 2014.

<http://www.cato.org/publications/testimony/rethinking-federal-highway-transit-funding>.



that these racial / ethnic and socioeconomic disparities also exist on a national scale.<sup>13</sup>

From the perspective of energy and the environment, it might be useful to look at what's emerging in the transportation marketplace right now (more efficient vehicles and EVs). How high would a new federal tax have to go to bring in the revenue lost from the efficiencies obtained from increasing use of EVs and other low- or no-fossil-fuel modes of transportation—and pay for externalities?<sup>14</sup>

*Beyond Traffic* cites a significant issue with increasing the gas tax. The combination of a reduction in per-capita vehicle miles traveled (VMT), the increase in vehicle fuel efficiency, and the sales growth in plug-in electric vehicles will continue to erode the value of any gas tax.<sup>15</sup> This is not an insurmountable hurdle. The combination of a gas tax and another funding source (such as a carbon tax or an electricity system benefits charge for electric vehicles) could create a future situation in which one tax phases out, as another phases in.

## What Other Federal-Level Alternatives Are out There?

**Tolls.** States have been increasing their reliance on toll collections to support transportation infrastructure, and federal laws prohibit tolls on federal interstate highways. If this ban were lifted, tolling—for all its inconvenience—could help fund repairs and maintenance on interstate highways, tunnels, and bridges. They are a very direct form of user fees. Even with prepaid electronic fast passes, collecting the toll is much more costly than collecting a gas tax.<sup>16</sup>

**Mileage-based user fees** tax all road users, which will become increasingly important as more drivers switch to EVs and alternative fuels. If such fees were coupled with GPS technology, use of more congested roads and transportation corridors could be billed at a higher rate. Conversely, price signals could minimize rush-hour travel. A federally funded pilot is looking now at mileage-based user fees in Oregon and 12 cities.<sup>17</sup>

**A federal carbon tax** would involve both the transportation sector and the energy sector in lowering GHG emissions. However, a carbon tax is regressive, disproportionately affecting low-income populations. If revenues from a carbon tax were used to offset this inequity, it

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<sup>13</sup> Boehmer, Tegan K., Stephanie Foster, Jeffrey Henry, et al. *Residential Proximity to Major Highways—United States, 2010*. Morbidity and Mortality Weekly Report. November 22, 2013. <http://www.cdc.gov/mmwr/preview/mmwrhtml/su6203a8.htm>.

<sup>14</sup> A comprehensive view of the real externalities would include commercial factors such as protection of shipping lanes, as well as geopolitical factors—including wars. Calculating these costs is, of course, possible.

<sup>15</sup> For more on the limited future of the gas tax read: <http://www.veic.org/media-room/insights/insights/2014/08/28/fixing-our-broken-transportation-funding-system>

<sup>16</sup> *Beyond Traffic* 178.

<sup>17</sup> *Beyond Traffic*, 176



could be a good fit as a companion to the gas tax. California has put into place several programs to address the regressive nature of the gas tax:<sup>18</sup>

- Electric vehicle sharing in disadvantaged communities
- Free transit passes in disadvantaged communities
- An enhanced fleet modernization program (“car scrap”; providing eligible low-income consumers with \$1,500 for their old cars)

As gas tax revenues decrease, carbon tax revenue from other sources could compensate for the funding shortfall.

**Value capture** involves tax increment financing, special assessments, development impact fees, negotiated exactions, or joint development to cover at least part of the cost of transportation improvements. Landowners, for example, might commit a portion of the increased value of their property that would result from improved transportation infrastructure to fund that transportation project. In Los Angeles, a special assessment of commercial properties in or near subway stations linked to the MTA red line yielded 9% of the \$1.5 billion needed to build the red line. The increase in property value associated with the benefits of transportation improvements were directly used to support the expansion.<sup>19</sup>

**Public-private partnerships** combine government funding with private investment. The Transportation Infrastructure and Finance and Innovation Act (TIFIA) leverages federal dollars by partnering with private firms to finance the completion of transportation projects.

In addition, **State Future Funds** are a relatively new form of public-private partnerships that are worth exploring. They are designed to combine federal funds with dollars from state and local governments, and from private sources. Together, the funds:

... expand investments in low-carbon and resilient energy and transportation infrastructure, including in low-income and tribal communities. State Future Funds would offer a host of benefits, including improving public health and air quality, reducing traffic congestion and climate change risks, and increasing community access to good jobs, schools, and other valuable outcomes. In addition, State Future Funds would help states comply with the U.S. Environmental Protection Agency’s, or EPA’s, proposed Clean Power Plan, which calls on states to reduce reliance on fossil fuels and increase their use of clean energy.<sup>20</sup>

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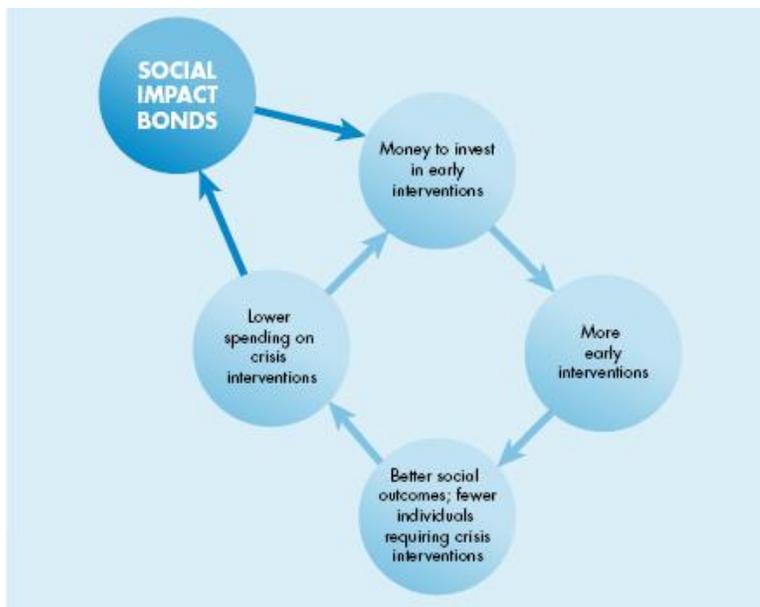
<sup>18</sup> The California Air Resources Board has established several transportation programs targeting disadvantaged communities, within the context of that state’s Air Quality Improvement Program and Low Carbon Transportation Project Solicitations. <http://www.arb.ca.gov/msprog/aqip/solicitations.htm>.

<sup>19</sup> National Surface Transportation Policy and Revenue Study Commission. 2007. *Evaluation of Impact Fees and Value Capture Techniques*. January. ([http://transportationfortomorrow.com/final\\_report/pdf/volume\\_3/technical\\_issue\\_papers/paper5a\\_11.pdf](http://transportationfortomorrow.com/final_report/pdf/volume_3/technical_issue_papers/paper5a_11.pdf))

<sup>20</sup> Kelly, State Future Funds.



**Innovation in financing.** Innovation plays a predominant role in funding transportation projects and infrastructure. Examples of innovative financing mechanisms are **social impact bonds** (which capitalize on better social outcomes with less intervention spending), the development of a **national infrastructure bank** or **state infrastructure bank**, and **private investment bonds**. See **Figure 2**.



Source:

[http://en.wikipedia.org/wiki/Social\\_impact\\_bond#/media/File:Social\\_Impact\\_Bond\\_diagram.JPG](http://en.wikipedia.org/wiki/Social_impact_bond#/media/File:Social_Impact_Bond_diagram.JPG)

Figure 2. Social impact bonds, and their effects and outcomes.

Finally, **social impact bonds**—also known as “pay for success” bonds—have begun to emerge. They are a financial agreement that allows the government to pay for programs only when they live up to a previously agreed set of outcomes. The outcomes have to be specific and measurable. Payment goes to an external organization (also known as an *intermediary*) if it has met the objectives and outcomes.<sup>21</sup>

## Conclusions

Finding adequate ways to keep American roadways, bridges, and mass transit systems in good repair and well maintained requires an approach that integrates innovation, a perspective that considers public benefits nationwide, and a creative approach to making infrastructure investments sustainable across the long term. The GROW AMERICA Act sets forth a comprehensive attempt to do just that.

The Act deserves political support, as much as it demands a change in the way we not only fund surface transportation infrastructure improvements but also view the future of how we get around our communities, our states, our country, and our world. Connecting our choices for transportation to public benefits necessarily involves the energy sector, too. This is an important game changer, if we are to reduce the economic and environmental costs—including health costs—of energy and transportation use.

<sup>21</sup> For more information about social impact bonds, see Costa, Kristina. Social Impact Bonds in the United States. Fact Sheet. February 12, 2014. Washington, DC: Center for American Progress. <https://www.americanprogress.org/issues/economy/report/2014/02/12/84003/fact-sheet-social-impact-bonds-in-the-united-states/>.



## Appendix A

### Policy Options Outlined by *Beyond Traffic*<sup>22</sup>

#### *How We Move*

##### Key Policy Options:

- *Increase* infrastructure capacity: build new roads, bridges, and other facilities; maintain existing facilities more effectively; use existing facilities more effectively by implementing better designs and technologies; or use some combination of these methods
- *Reduce congestion* through land use, telework and flex-time work schedules, smaller and automated vehicles, and pricing
- *Promote* public transit, biking, and walking

#### *How We Move Things*

##### Key Policy Options:

- *Improve freight planning* and coordination at national, regional and local levels
- *Target policies and investments* aimed at resolving freight congestion
- *Encourage innovative strategies* to address first and last-mile freight issues

#### *How We Move Better*

##### Key Policy Options:

- *Address regulatory barriers* to deployment of new technology or procedures; develop infrastructure and standards to support emerging technologies
- *Collect and manage data* and transition to a data-driven investment system, while protecting individual privacy
- *Support research* on technological developments and deployment
- *Maintain* a paramount focus on safety

#### *How We Adapt*

##### Key Policy Options:

- *Reduce transportation emissions* by improving fuel efficiency and increasing the use of alternative, cleaner fuels
- *Align costs and incentives* to encourage development patterns, and research into new technologies, that can aid in reducing greenhouse-gas emissions and energy use
- *Design and build better infrastructure* that is more resilient to anticipated climate-change effects, such as severe storms, rising sea-levels, and flooding
- *Avoid developments* in vulnerable locations

#### *How We Align Decisions and Dollars*

##### Key Policy Options:

- *Ensure adequate revenues* to address critical needs, through existing taxes, new excise taxes, user fees, tolls, congestion pricing, VMT fees, or other funding mechanisms
- *Reduce spending* to match revenues
- *Prioritize investments* based on performance outcomes

<sup>22</sup> Summary of Key Policy Options outlined in *Beyond Traffic* 284, 292, 299, 305, 310.



- *Ensure clear roles* of the public and private sectors: clarify authorities (greater federal role, the devolution of more functions to non-federal entities, privatization); improve investment coordination between states, Metropolitan Planning Organizations (MPOs), and private investors.

