

BUILDING THE FOUNDATION FOR 50X50

A Policy Proposal for Infrastructure and
Surface Transportation Authorization

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x50
COMMISSION
ON U.S. TRANSPORTATION
SECTOR EFFICIENCY

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June 11, 2019

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ABOUT THESE RECOMMENDATIONS

This consensus document was developed by the Alliance to Save Energy and members of the Alliance to Save Energy's 50x50 Commission on U.S. Transportation Sector Efficiency, a diverse coalition of industry, business association, and public interest organizations that have affirmed an assertive and transformational vision to create a more efficient transportation sector. More on the "50x50 Commission" can be found at www.50x50transportation.org.

The infrastructure recommendations detailed here complement the policy recommendations from the 50x50 Commission's consensus report, **"50x50: Reinventing U.S. Mobility."** Its primary focus is to support and enable the development of a robust private market for key technologies and business models by exploring a range of opportunities, including:

- ✔ Policies to support highly efficient and advanced vehicles, including battery electric and hydrogen fuel cell and highly-efficient vehicles running on renewable natural gas;
- ✔ Emerging technologies, such as efficiently-deployed connected and autonomous vehicles and new optimization software platforms to better coordinate ridesharing, freight and transit routes;
- ✔ New business models that facilitate more efficient transportation options;
- ✔ Opportunities to better use infrastructure, such as technologies that reduce congestion (e.g. smart stoplights and dynamic lane assignments), which can extend the lifetime of roads, reduce maintenance costs, and provide a better mobility experience for all travelers.

PRINCIPLES OF INFRASTRUCTURE DEVELOPMENT

It is well established that the United States is in urgent need of significant infrastructure investment. It is also evident that financing and performing infrastructure development is historically challenging. Infrastructure investments are inherently capital-intensive, increasingly risky, and can take years to complete due to reasons ranging from financing to siting and permitting issues. Additionally, emerging technologies are poised to change how the transportation sector functions. From the deployment of fast-moving information and communication technologies (e.g. artificial intelligence, cloud computing, big data) to electrified, automated, and efficient vehicle technologies, we are facing unprecedented potential to optimize the transportation system. Doing it right would lead to enormous benefits across society, including greater efficiency, economic productivity and competitiveness, access to affordable mobility, improved public health and air quality, and reduced greenhouse gas emissions.

There is broad agreement on the need for infrastructure development, but in recent years development has been repeatedly delayed or pursued on a case-by-case basis in response to fiscal constraints. While understandable, this strategy is the significantly more expensive path, one that is neither neutral nor responsible. A far better option is to consider the sector's needs holistically, comprehensively, and focus on those investments that will deliver our future prosperity, environmental stewardship, and wellbeing.

The 50x50 Commission recommends the following high-level principles to guide Congress through infrastructure and/or surface transportation reauthorization legislation.

1. Identify a Sustainable Solution for the Highway Trust Fund

The Highway Trust Fund finances most federal spending on transportation infrastructure including highways and mass transit, and it has had budget shortfalls in the last several years. Reaching a long-term solution on the Highway Trust Fund is politically challenging but is paramount to achieve meaningful progress on improving U.S. infrastructure. While the 50x50 Commission does not have a specific recommendation on the structure of such a "fix," we urge policymakers to identify a solution that balances two main objectives:

- ✓ **Fiscal Sustainability:** It recognizes the need for robust contributions to the Highway Trust Fund from all vehicles impacting the infrastructure.
- ✓ **Mobility Sustainability:** It is designed to continue to support efficiency and produce positive societal benefits (e.g. reduced congestion, improved safety, reduced greenhouse gas emissions, improved air quality, improved access to transportation), and does not undermine the future growth of those emerging tools necessary for these benefits, such as energy-efficient vehicles and electric vehicle commercialization.

2. Enable Strong and Well-Designed System Solutions for Execution at the Local Level

Many of the opportunities identified under the 50x50 effort require the ability to perform system-wide assessment of the most efficient transportation options, such as optimizing mode choice among walking/biking, transit, rideshare, and truck to freight rail transfers. System-wide coordination is challenging and requires significant leadership and resources at the state, local, and regional levels. Where viable, policymakers should consider opportunities to enhance program flexibility and financial certainty in infrastructure programs to ensure local and regional viability.

3. Look Beyond New Builds

Infrastructure resources in the U.S. are disproportionately spent on building new infrastructure relative to maintaining existing infrastructure, resulting in a poor state of repair and slow adaptation of existing systems to new opportunities.^{1,2,3}

There also exist a suite of other opportunities that can optimize how we use infrastructure. For example, municipalities have dedicated vast amounts of their space to on-street parking; however, encouraging alternative strategies for existing infrastructure can unlock space for people and more efficient and productive land uses, such as new homes, apartments, schools, playgrounds, bike lanes, and parks. While building new lanes has been documented to induce travel and add to greater congestion,⁴ in some cases, smaller investments like smart traffic signals are more effective tools to reduce congestion. Furthermore, educating consumers to ensure they understand the opportunities afforded by new transportation modes, such as electrified transport, can change how they use infrastructure altogether.

4. Seek Better-Balanced Infrastructure Funding to Prioritize Efficiency

Federal funding should be prioritized for efficient modes of transportation. However, unintended or complex interactions between infrastructure programs can lead to an uneven playing field and should be addressed. For example, an imbalance exists between transit and traditional road and highway build-out. Local decision-making for new capacity is often skewed by disparate local match requirements: a typical federal share for highway projects is 80 percent (50 percent under some circumstances); however, the federal share for New Start Capital Investment Grant projects⁵ is 40 percent or less under current practice, leading to a natural bias against the more efficient transportation mode. It is critical to ensure that not only specific funding programs, but their overall structure, results in balanced infrastructure development.

5. Utilize Fair Labor Practices

Any federal investment in public infrastructure must prioritize labor standards that strengthen the construction workforce by providing career pathways through registered apprenticeship programs and the consistent application of the “Davis-Bacon Act (DBA).” The DBA is a law designed to protect the family-sustaining wages of blue-collar workers in the construction industry – one of the largest and most dangerous industries in the U.S. The law prohibits contractors on protected federal projects from paying workers less than the local prevailing wage, preventing competition for federal construction contracts from artificially depressing local labor standards. The buying power of the federal government should be used to uplift workers and communities, not facilitate a race to the bottom.

6. Plan for the Future

We cannot assume that 20th century infrastructure planning is sufficient for 21st century needs. There is great uncertainty ahead as to how particular advanced transportation technologies will evolve and which technologies will become a greater share of the market. Given that our infrastructure investments are often built to last decades, we must adapt long-term planning and deployment strategies to consider future transportation system needs, including our resilience needs for current and future climate conditions.

1 ASCE, 2017. “America’s Infrastructure Scores a D+.” Infrastructure Report Card. <https://www.infrastructurereportcard.org/>

2 Smart Growth America, 2014. “Repair priorities 2014: Transportation Strategies to Improve Road Conditions and State Fiscal Outlooks.” <https://smartgrowthamerica.org/resources/repair-priorities-2014-transportation-strategies-to-improve-road-conditions-and-state-fiscal-outlooks/>

3 Olson P., Wessel, D., 2017. “The case for spending more on infrastructure maintenance.” Brookings. <https://www.brookings.edu/blog/up-front/2017/01/31/the-case-for-spending-more-on-infrastructure-maintenance/>

4 Milam, R. Birnbaum, M., Ganson, C., Handy, S., Walters, J., 2017. Closing the Induced Vehicle Travel Gap Between Research and Practice. Transportation Research Board. <https://trid.trb.org/view/1437757>

5 One of the primary Federal Transit Administration’s discretionary grant programs for transit capital investments.

POLICY RECOMMENDATIONS

Ensure Key Grant Programs Have Resources and Flexibility to Support 50x50 Priorities

1. Better Utilizing Investments to Leverage Development (BUILD) (Formerly TIGER) Grants

The BUILD Grant program⁶ provides a unique opportunity for the “Department of Transportation (DOT)” to invest in road, rail, transit, and port projects that promise to achieve national objectives. BUILD grants provide an especially important tool to support rural community infrastructure. These grants are also extensively oversubscribed, with \$11 billion in BUILD funding requested and \$1.5 billion assigned.⁷

- ✔ **Recommendation 1.1** - Increase and extend funding. Appropriations for the BUILD Grant Program have fluctuated since its inception in 2009. Congress should increase funding for BUILD grants to \$2 billion annually and maintain that funding level for at least the next five fiscal years.
- ✔ **Recommendation 1.2** - Expand project eligibility. Increase program flexibility by expanding project eligibility to explicitly include projects that electrify transportation systems, including the installation of advanced vehicle fueling infrastructure (consumer, freight, and public transit).
- ✔ **Recommendation 1.3** - Establish a new \$300 million BUILD grant program to promote energy efficiency for FY2020-2025. Establish a specific grant that targets energy efficiency as a key objective (e.g. increased energy productivity, reduced vehicle miles traveled, higher-occupancy travel). This would provide greater flexibility when the objective requires coordination among multiple sectors (as in multimodal freight systems and transportation demand management) and greater incentive for grantees to consider opportunities to reduce transportation energy use and enhance transportation infrastructure.

2. Surface Transportation Block Grant Program

The Surface Transportation Block Grant program provides flexible funding that may be used by States and localities for projects to preserve and improve the conditions and performance on any Federal-aid highway, bridge and tunnel projects on any public road, pedestrian and bicycle infrastructure, and transit capital projects, including intercity bus terminals. It is a critical resource for state and local transportation system planning, a key aspect for achieving a more efficient sector.

- ✔ **Recommendation 2.1** - Reauthorize and allocate additional funds. Congress should reauthorize and increase available funding to states during the next five fiscal years of the program’s authorization by increasing the total Surface Transportation Block Grant authorization to \$20 billion per year (compared to ~\$12 billion in 2020).
- ✔ **Recommendation 2.2** - Reallocate funding set asides. Congress should increase the set aside for the Transportation Alternatives program, to 65 percent – an increase from 55 percent in 2020. This reallocation will help address the increase in transportation casualties by improving safety throughout our system especially for our most vulnerable including pedestrians and bicyclists.

6 Previously known as Transportation Investment Generating Economic Recovery, or TIGER Discretionary Grants.

7 <https://www.transportation.gov/briefing-room/us-transportation-secretary-elaine-l-chao-announces-15-billion-build-transportation>; <https://www.enotrans.org/article/dot-announces-1-5-billion-in-build-surface-transportation-grants/>

Leverage Programs to Accelerate a Transition to More Efficient Vehicles Where Emissions and Public Health Impacts are Critical

Several programs exist to ensure compliance with the Clean Air Act and address transportation-related air pollution. A number of technologies, including advanced fuel vehicles, as well as port electrification and optimization of energy use are key to meeting the statute's requirements.

3. Congestion Mitigation and Air Quality Improvement (CMAQ) Grant Program

CMAQ provides funding to areas in non-attainment or maintenance for ozone, carbon monoxide, and/or particulate matter. The increasing evidence of the negative public health effects in those designated areas highlights the need for CMAQ grants, particularly for priorities ranging from port electrification to alternative fueling infrastructure in non-attainment and maintenance areas.

- ✔ **Recommendation 3.1** - Reauthorize CMAQ and increase funding. Authorize CMAQ for five fiscal years (FY2021-26) and increase funding to \$5 billion per year.

4. The Diesel Emissions Reduction Act (DERA)

DERA provides grants to eligible entities that reduce emissions from existing diesel engines and has proven to be a highly successful method for improving air quality by supporting projects that phase out older, higher-polluting diesel engines with more efficient engines or engines that are powered by other fuels. Seventy percent of the DERA appropriation is to be used for national competitive grants and rebates to fund projects that use EPA or California Air Resources Board (CARB) verified or certified diesel emission reduction technologies. Thirty percent of the DERA appropriation is allocated to the states and territories to fund programs for clean diesel projects.

- ✔ **Recommendation 4.1** - Reauthorize DERA for five fiscal years and increase annual funding to \$150 million. The program was authorized at \$100 million per year for FY2012-FY2016, but appropriations have ranged from \$30-\$87 million over the previous five fiscal year.

Ensure Robust Access to Financing for Efficient Transportation

Given the scale of capital expenses for transportation, we should leverage financing resources to the maximum extent to enable infrastructure development – an important complement to the resources listed above. This includes increasing the size of key programs and reintroducing financing tools that have lapsed.

5. Transportation Infrastructure Finance and Innovation Act (TIFIA) program

TIFIA provides credit assistance for a diversity of large-scale qualified projects of regional and national significance, including highway, transit, railroad, intermodal freight, and port access. Eligible applicants include state and local governments, transit agencies, railroad companies, special authorities, special districts, and private entities. The TIFIA credit program is designed to fill market gaps and leverage substantial private co-investment by providing supplemental and subordinate capital.

- ✔ **Recommendation 5.1** - Congress should reauthorize TIFIA contract authority for an additional five fiscal years, increase loan authority, and adequately fund the Build America Bureau to improve and reform the application process. TIFIA credit assistance can be used to help finance a broad selection of transportation-related infrastructure. It was historically authorized at much higher levels (\$750 million FY2013 and \$1 billion for FY2014 and FY2015), but then significantly decreased by the FAST Act (ranging from \$275-300 million per fiscal year over FY2016-FY2020). On average, TIFIA's budget authority is a fraction of the total loan amount, only about seven percent of the face value of the loan. In simple dollar terms, \$1 of TIFIA program funds can support a loan of approximately \$14 and result in infrastructure investment of up to \$40. Historically, TIFIA has leveraged three to four times its loan amount. However,

investment and full funding of the Build America Bureau will improve the TIFIA application process by providing greater technical assistance and flexibility to support a variety of project sizes and types, and would enhance the effectiveness of the program.

6. Reinstate Build America Bonds (BAB)

BABs were taxable municipal bonds that featured tax credits and/or federal subsidies for bondholders and state and local government bond issuers. The Build America Bond program expired in 2010.

- ✔ **Recommendation 6.1** - Reinstate Build America Bonds for 10 years with a federal subsidy of the interest at 35 percent or a level comparable to incentives received by private developers. These bonds helped state and local governments finance capital projects for public infrastructure by having the federal government subsidize the interest payments. These bonds should also be exempt from future mandatory sequestration to ensure that the subsidies are predictable through the life of the bonds.
- ✔ **Recommendation 6.2** - Expand BAB eligibility. These bonds could be used for transportation infrastructure projects and, as part of reinstatement, provisions should be included to ensure that projects related to advanced fueling infrastructure, and other sustainable transportation projects are eligible.

7. Municipal Bonds

Approximately 75 percent of infrastructure in the U.S. is financed by municipal bonds. Reflecting their importance as a tool for local investment, municipal bond interest has been tax-exempt dating back to the 1800s, and approximately 42 percent of municipal securities are held by households.

- ✔ **Recommendation 7.1** - Preserve the tax exemption of municipal bonds and reinstate advance refunding. Advance refunding, which was eliminated by the tax reform bill in 2017, allows municipalities to refinance outstanding debt issuances before their maturity date, saving communities interest costs and expanding public organizations' borrowing capacity.

8. Private Activity Bonds

The federal tax code classifies state and local bonds as either governmental bonds or private activity bonds. Governmental bonds are intended for governmental projects, and private activity bonds are for projects that primarily benefit private entities. Typically, the interest earned by holders of governmental bonds is exempt from federal income taxes. The federal tax code allows state and local governments to use tax-exempt bonds ("Private Activity Bonds" or PABs) to finance certain projects that would be considered private activities. The private activities that can be financed with tax-exempt bonds are called "qualified private activities." Congress uses an annual state volume cap to limit the amount of tax-exempt bond financing generally and restricts the types of qualified private activities that would qualify for tax-exempt financing to selected projects defined in the tax code. These resources should be expanded, and eligibility should be amended to ensure uses for energy efficiency.

- ✔ **Recommendation 8.1** - Increase the total amount of Private Activity Bonds to \$20 billion. The current limit for PABs is \$15 billion, but issued bonds and approved allocations exceed \$10 billion, which means that more 66 percent of the total has already been used.
- ✔ **Recommendation 8.2** - Adjust the eligibility of PABs to support energy efficiency. The list of projects eligible to be financed by PABs is broad, but technically excludes projects that do not also have federal assistance under Title 23 (e.g. excluding transit, rail, and most charging stations), many of which are elements of high efficiency transportation. Congress could also encourage even greater energy efficiency by requiring consideration of the energy implications of the project and using that information as a point of emphasis during the review process.

9. Mobility on Demand (MOD) Sandbox Demonstration Program

The Federal Transit Administration (FTA) developed the MOD initiative to envision a multimodal, integrated, automated, accessible, and connected transportation system in which personalized mobility is a key feature. MOD allowed for the use of on-demand information, real-time data, and predictive analysis to provide travelers with transportation choices that best serve their needs and circumstances. In response to the MOD Sandbox Notice of Funding Opportunity, FTA received 78 eligible proposals requesting \$57,146,181 in federal funds; however, a total of only \$8 million was allocated in October 2016.

- ✔ **Recommendation 9.1** - Authorize an extended MOD Sandbox Demonstration Program with increased annual funding. Congress should authorize a five-year MOD program that allocates \$20 million per year for new technologies and approaches to integrated MOD with transit. The increase in authorization will expand the number or amount of grants available, thereby increasing the beneficial impacts of the program.

Enhance Energy Efficiency at Ports and Airports

Ports and airports serve as a microcosm of the transportation system: they require high-precision integration of multiple transportation modes to move goods and people efficiently. Ensuring ports and airports can leverage funding for efficient movement of goods and people will support American competitiveness, job growth, reduce carbon, and lower particulate emissions, which disproportionately affect public health in those localized areas.

10. The Airport Improvement Program (AIP)

The AIP provides grants to public agencies — and, in some cases, to private owners and entities — for the planning and development of public-use airports that are included in the National Plan of Integrated Airport Systems. Eligible projects include those improvements related to enhancing airport safety, capacity, security, and environmental concerns.

- ✔ **Recommendation 10.1** - Increase authorization of AIP to \$5 billion. The increase in authorization will expand the number or amount of grants available. Within that amount, \$300 million should be set aside for specific projects that would increase the energy efficiency of airports (e.g., building energy efficiency, transportation and transit energy efficiency).
- ✔ **Recommendation 10.2** - Emphasize energy efficiency at airports. Current eligibility requirements generally allow for improvements related to environmental concerns, but when those projects are forced to compete with other airport priorities such as runways, it is unlikely that grants will target environmental concerns. Congress should amend eligibility requirements to include projects that will improve the energy efficiency of the airport, specifically including items such as the purchase of electric maintenance vehicles (and associated support equipment) or equipment to provide gate power, heating and air-conditioning to airport terminals, along with other similar projects.

11. Incentivize the Modernization of Port Infrastructure

Such modernization efforts, including full or partial electrification, ship-to-shore technology, or other process improvement technologies that enhance energy efficiency carry enormous energy efficiency potential. However, the topic is often overlooked and underfunded.

- ✔ **Recommendation 11.1** - House airport/port modernization efforts in a specific location in the Congressional Transportation Committee(s). Currently, port modernization efforts are not the jurisdiction of any Congressional committee, undermining its consideration as a topic in transportation and infrastructure discussions.
- ✔ **Recommendation 11.2** - Incentivize port modernization, including electrification. Ensure sufficient funds are available for port modernization efforts, and where federal funds are allocated to port infrastructure modernization, recipients should be required to consider full or partial electrification; if they decide against it, they should report their reasoning.

Strengthen Transit and Rail Systems

Public transportation and rail systems are often the most efficient technologies to move people and goods to their destinations. Ensuring these systems are strong, effective, and adaptable to new development and needs will be critical to enable a more efficient transportation system.

12. Maximize the quality and impact of highly-efficient transit systems through the federal transit program.

The federal transit program in its entirety needs to be augmented to support more and better public transportation choices, by increasing the rate of authorization increases each year from FY2021-2026. Such choices should support an intent to shift to more energy-efficient modes of travel, establish a foundation for energy-efficient land use, and eliminate the estimated \$100 billion backlog in bringing public transit systems to a state of good repair.

- ✔ **Recommendation 12.1** - Congress should increase funding for the Urbanized Area Formula program (Sections 5307 and 5336) to \$7 billion per year, authorized for at least five years.
- ✔ **Recommendation 12.2** - Increase funding for the Section 5337 State of Good Repair Program to \$4 billion per year, authorized for at least five years.
- ✔ **Recommendation 12.3** - Increase funding for the Section 5339 Bus and Bus Facilities program, to a total appropriation of \$2 billion per year, authorized for at least five years. This includes raising funds to \$1 billion for Bus and Bus Facilities Formula, \$840 million for Bus and Bus Facilities Competitive Grants, and \$200 million for Low or No Emissions Grants per year.
- ✔ **Recommendation 12.4** - Allow partnerships with bus manufacturers for Low or No Emissions Grants. The Low and No Emission Grant program provides funding to state and local government authorities for the purchase or lease of zero-emission/low-emission transit buses and acquisition, construction, and leasing of required supporting facilities. This year, the Federal Transit Administration changed its policy to indicate that agencies could no longer partner with bus manufacturers for grant applications, a prohibition that increases the sales cycle by up to 12 months and causes an unnecessary barrier.

13. Capital Investment Grants Program

The FTA's primary grant program for funding major transit capital investments, including heavy rail, commuter rail, light rail, streetcars, and bus rapid transit, is the Capital Investment Grants Program. It is a discretionary grant program that serves as one of the most flexible mechanisms to improve public transit across the country.

- ✔ **Recommendation 13.1** - Reauthorize Capital Investment Grants for five fiscal years. The Capital Investment Grants Program was authorized by the FAST Act through FY2020, at \$2.3 billion per year. With that authorization ending next year, Congress should reauthorize the program for an additional five fiscal years to ensure this source of funding, as the primary source of federal assistance for transit projects, remains available to support improvements nationwide.
- ✔ **Recommendation 13.2** - Increase Capital Investment Grant funding. Congress should increase the annual authorization levels and appropriations for Capital Investment Grants to \$5 billion per year (from \$2.3 billion in FY2019 to ensure sufficient funding to enable the development of strong transit systems).
- ✔ **Recommendation 13.3** - Direct the Federal Transit Administration to address statutory provisions. A GAO report from May 2018 (GAO-18-462) completed a study of the Capital Investment Grants program and identified several statutory provisions within the program that the Federal Transit Administration has not addressed, such as:

- 1) the need to issue regulations regarding the evaluation and rating process for Core Capacity Improvement projects;
- 2) establishing a program of interrelated projects designed to allow for simultaneous development of more than one transit project in the program; and 3) implementing a pilot program to create a fast-track for approvals. These issues should be addressed as required to enhance the efficiency of the program.

14. Railroad Rehabilitation and Improvement Financing (RRIF) Program

RRIF offers long-term, low-interest loans to railroad operators for improving rail infrastructure. It does not receive an annual appropriation, and is intended to operate without cost to the government. Congress has authorized \$35 billion in loan authority for the program, however, only four loans have been approved since 2016.

- ✓ **Recommendation 14.1** - Address barriers to enable greater use of RRIF. Congress has identified several issues that reduce the effectiveness of this financing source, including long review times and high costs to the applicant. Sufficient funding of the Build America Bureau and greater coordination with the TIFIA program should be made to address these ongoing concerns to make RRIF loans more accessible.⁸
- ✓ **Recommendation 14.2** - To increase the effectiveness of the program, Congress should increase the existing loan authority to \$50 billion to enable more widespread use of available loans.

Develop Charging Infrastructure to Support Electrification

Electrified transportation is significantly more efficient than diesel or gasoline-fueled transportation. A primary barrier to greater deployments of battery electric vehicles is the availability of public Electric Vehicle Supply Equipment (EVSE) or charging stations.

15. Section 30C – Alternative Fuel Vehicle Refueling Property Credit

A 30 percent tax credit is provided for the cost of any qualified alternative fuel vehicle refueling property installed by a business or at a taxpayer's principal residence. The credit is limited to \$30,000 for businesses at each separate location and \$1,000 for residences. The tax credit was introduced under the Energy Policy Act of 2005 but expired on December 31, 2017.

- ✓ **Recommendation 15.1** - Reinstate and make permanent the Section 30C tax credit. The market for vehicles powered by electricity or other advanced fuel is growing and supporting methods to expand the associated fueling infrastructure is necessary to foster further growth. The 30C tax credit achieves this goal by aiding businesses and homeowners with the cost of installing advanced vehicle fueling infrastructure. According to the Congressional Budget Office, a permanent extension of the 30C tax credit would cost \$1.4 billion (10-year budget window).
- ✓ **Recommendation 15.2** - Change definition of caps. Currently, the 30C tax credit is capped per charging station, not per charger, a challenge for charging providers as stations become larger. The cap should be specifically indicated on a "per charger" basis.
- ✓ **Recommendation 15.3** - Make the 30C Tax Credit Refundable. To ensure the tax credit goes the extra mile in incenting the installation of advanced vehicle fueling infrastructure, the tax credit should be made refundable.

16. Create New Grant Programs to Invest in Charging/Fueling Equipment for Electric Vehicles (battery electric and hydrogen fuel cell)

While existing programs can be deployed for EVSE development, few have been used to full capacity, in part due to competition among different uses of funds. Establishing a standalone program would provide greater incentive to pursue this priority.

8 Peterman, D.R., 2018. The Railroad Rehabilitation and improvement Financing (RRIF) Program. Congressional Research Service, 7-5700. <https://fas.org/sgp/crs/misc/R44028.pdf>.

- ✔ **Recommendation 16.1** - Establish a \$300 million grant program (for FY2019-2028) for the installation of electric vehicle fueling/charging infrastructure (including electricity and hydrogen) along the National Highway System. The National Highway System is a key target to provide charging and fueling infrastructure and reduce range anxiety in electric vehicles. (Example: the Clean Corridors Act of 2018, S.674)
- ✔ **Recommendation 16.2** - Establish a \$250 million EVSE program (for FY2021-2026) to invest in electric charging stations in local communities, including public and private workplace charging, and urban DC fast charging hubs. Such a program could be structured in multiple ways; one option would be to establish an EVSE “Community Block Grant” program, focusing investment at local levels, in which public grant recipients would be encouraged to work with private entities to deploy EVSE. The benefit of creating a new dedicated block grant program for EVSE is that it would allow for a faster deployment and build out of the necessary infrastructure to support the growth of EV vehicles. It would also support the installation of EVSE in areas where the benefits would be significant for society, but the market development may be delayed, such as in low-income or disadvantaged communities.
- ✔ **Recommendation 16.3** - Establish a National Park Charging program. To increase the availability of electric vehicle chargers in a variety of less-connected locations, establish a new federal program to fund EV charging at parking installations at viable national parks and memorials across the U.S.

Explore New Approaches to Infrastructure Investment

The recommendations provided above focus on opportunities to ensure existing programs are used to their maximum effectiveness. However, if Congress seeks to support the transformational opportunities that require larger, and more-integrated approaches, it would be helpful to provide resources that are not siloed between different subsectors. For example, integrated transportation optimization in cities would optimally consider opportunities for road build and design, fueling/charging infrastructure, transit, bike lanes, rail, and changes in land use.

17. Create a National Green Infrastructure Bank

The creation of a National Green Infrastructure Bank would provide the necessary structure to coordinate ongoing efforts to expand the deployment of clean and resilient technologies, including energy, transportation, water, and other infrastructure. The general framework would allow the Green Infrastructure Bank to leverage public funding for projects such as electrification, energy efficiency, renewable energy and alternatively fueled vehicle infrastructure. The Green Infrastructure Bank could be informed by legislation from the 115th Congress (S. 1406 and H.R. 2995) which would direct the Department of the Treasury to issue green bonds to provide the bank with an initial capitalization and establish a revolving Green Bank Establishment Fund, which should work in close coordination with existing loan programs including the Department of Energy 1703 program, TIFIA and RRIF.

18. Initiate Pilot Projects/Studies to Consider the Impact of Performance-Based Criteria on Transportation Projects

While there have been advancements in the consideration of performance-based criteria for investments in transportation infrastructure, Congress should direct the Department of Transportation to develop additional pilot projects or studies to expand the list of current performance-based criteria to include factors such as energy efficiency, reduced greenhouse gas emissions, reduced vehicle miles traveled, improvements to public health, and economic development.

BEYOND INFRASTRUCTURE

There are many legislative opportunities that go beyond specific infrastructure or surface transportation reauthorization priorities, but which would support the same objectives identified by infrastructure asks cited above. For example:

Pursue Strong Support for Innovation through Coordinated Federal RDD&D

Research, Development, Demonstration and Deployment (RDD&D) programs at the Department of Energy and the Department of Transportation are critical to ensure that innovation thrives and leverages public-private partnerships.

19. Department of Energy - Vehicle Technologies Office (R&D)

- ✔ **Recommendation 19.1** - Increase funding to \$380 million for FY2020. The Vehicle Technologies Office (VTO) at the DOE conducts research and development of advanced efficiency technologies for light- and heavy-duty vehicles and transportation system efficiency. Innovative programs such as the SuperTruck II, Energy Efficient Mobility Systems, and Advanced Combustion Systems and Fuels play a crucial role in achieving U.S. leadership in the rapidly emerging areas of advanced clean vehicles and sustainable mobility.
- ✔ **Recommendation 19.2** - Increase funding to promote research and development (R&D) in battery technologies. Within VTO, DOE's Vehicle Technologies Office's Advanced Battery and Electrification Research R&D programs have helped drive electric vehicle costs down faster than anticipated. Additional innovation in battery technology will be critical to achieve longer ranges, lower costs, and greater deployments of EVs. To support this effort, we should increase the R&D investment in emerging battery cell technologies (cobalt-lean or cobalt-free, lithium metal solid state, and silicon-dominant negative electrode, etc.) to \$60 million, and provide an additional \$200 million in grants for public/private battery cell learning laboratories. These efforts should support greater U.S.-based battery cell and battery pack manufacturing capacity.

20. Department of Transportation – Office of Research and Technology (R&D)

- ✔ **Recommendation 20.1** - Increase funding to \$20 million for FY2020. The Office of Research, Development and Technology at the Department of Transportation coordinates all research efforts with an emphasis on promoting safety, improving mobility, improving infrastructure, and preserving the environment. Funding for this office has decreased in recent years and, given the radical changes occurring in the transportation sector, the research conducted by this office is critically important and needs to be emphasized by increasing funding.

21. Create an Interagency Task Force on Advanced Transportation Systems and Technologies

- ✔ **Recommendation 21.1** - Create an Interagency Task Force. Federal funding should be allocated to support the creation of an interagency (DOE, DOT, EPA, FERC) task force to promote collaboration across the federal government and in collaboration with industry stakeholders, public utility commissions, and public interest organizations regarding key opportunities in efficiency mobility. The task force should explore topics such as the coordination of policies to advance electrification (including EV charging infrastructure, battery research and supply chains, barriers to vehicle to grid integration, and next steps for regional transmission systems), consumer incentives and education, and the elimination of barriers to key efficiency opportunities, such as lightweighting, infrastructure expansion, raw material procurement, and other advanced vehicle technologies.

Pursue Strong Support for Innovation through Coordinated Federal RDD&D

22. Support the Deployment of Electric Vehicles

- ✔ **Recommendation 22.1** - Adjust the Section 30D Plug-in Electric Vehicle Tax Credit to support greater access to electric vehicles and remain a critical enabler of EV markets until they reach viability. Provided it can be consistently implemented without risk of disruption, Congress should also modify the existing tax incentive in two key ways: 1) by converting the tax credit to a point-of-sale incentive (e.g., a rebate) to make it more accessible for all customers; and 2) by developing a point-of-sale incentive for the purchase of used PEVs.
- ✔ **Recommendation 22.2** - Reinstatement of the Alternative Fuels Tax Credit and amendment to include electricity as an alternative fuel. The Alternative Fuels Tax Credit expired on December 31, 2017, and should be reinstated and extended for five years. To expand the impact of the credit, the definition of “alternative fuel” should be amended to include electricity, which would allow electric vehicles to qualify for the credit, making the credit fuel-neutral.

23. Renewable Fuel Standard

The Renewable Fuel Standard, which was created under the Energy Policy Act of 2005, and amended by the Clean Air Act and the Energy Independence and Security Act, requires transportation fuels contain a minimum volume of renewable fuel.

- ✔ **Recommendation 23.1** - Ensure the EPA acts on applications for renewable electricity under the Renewable Fuel Standard. Though a fuel pathway for certain categories of biomass-derived electricity was approved in 2014, the EPA has not to date processed any applications. Modeling by Oak Ridge National Laboratory estimated that if the full value of the credit were passed onto the consumer, it may lead to an additional 3.5 million battery electric vehicles in 2025.⁹

24. Support Active Modes

- ✔ **Recommendation 24.1** - Reinstatement of the Bicycle Commuter Tax Benefit. Offering commuters who ride their bike to work pre-tax benefits is a critical step in embracing a sustainable future of transportation. Bikes are reliable and affordable methods of transportation and are accessible to commuters who may have previously faced geographic or financial barriers. Encouraging biking as a commuting option, by extending the tax benefits already afforded to parking and driving, promotes healthy living, reduces congestion in cities, and helps protect the environment.

9 Podkaminer, K, Xie, F., Lin, Z., 2017. Analyzing the impacts of a biogas-to-electricity purchase incentive on electric vehicle deployment with the MA3T vehicle choice model.” Oak Ridge National Laboratory Report. <https://www.ornl.gov/content/analyzing-impacts-biogas-electricity-purchase-incentive-electric-vehicle-deployment-ma3t>

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