

# Meeting the Infrastructure Imperative

An Affordable Plan to Put Americans Back to Work  
Rebuilding Our Nation's Infrastructure

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Donna Cooper February 2012



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*“Our unity as a nation is sustained by free communication of thought and by easy transportation of people and goods. The ceaseless flow of information throughout the Republic is matched by individual and commercial movement over a vast system of interconnected highways crisscrossing the country and joining at our national borders with friendly neighbors to the north and south. Together, the united forces of our communication and transportation systems are dynamic elements in the very name we bear—United States. Without them, we would be a mere alliance of many separate parts.”*

— President Dwight D. Eisenhower, February 22, 1955



# Contents

## **1 Introduction and summary**

## **13 The infrastructure investment landscape**

- 16 Estimated direct grants: Approximately \$82 billion in FY 2010
- 20 Loans and loan guarantees
- 26 Tax subsidies
- 30 Total federal infrastructure investment: Approximately \$92 billion in 2010

## **33 The infrastructure funding gap**

- 34 Transportation: Invest \$81.5 billion
- 41 Water: \$2.7 billion
- 43 Dams and levees: \$1 billion
- 45 Energy: \$4 billion leverages \$40 billion in investment

## **49 Our infrastructure funding proposal closing the gap**

- 50 Meeting the infrastructure imperative
- 50 Mobilizing private investment for upfront capital
- 58 Expand current federal tax strategies that mobilize private investment in energy infrastructure
- 65 Getting more out of every dollar invested

## **77 Conclusion**

## **79 Appendix: Methodology**

## **88 About the author and acknowledgements**

## **89 Endnotes**





## Introduction and summary

American families and communities are suffering from the consequences of anemic economic growth and high unemployment. Meanwhile, aging roads, bridges, water systems, and other key public assets are putting our public safety and national economic competitiveness at risk. The challenges present an obvious opportunity for bipartisan action: Boost infrastructure investments that build permanent public assets, generate business for small- and medium-sized companies, create jobs, and enhance our global competitiveness.

The need to repair our infrastructure is not in dispute. In a rare move, the U.S. Chamber of Commerce and the AFL-CIO issued a joint statement in January 2011 calling for Congress to focus on upgrading our national infrastructure: “With the U.S. Chamber of Commerce and the AFL-CIO standing together to support job creation, we hope that Democrats and Republicans in Congress will also join together to build America’s infrastructure.”<sup>1</sup>

Sadly, that hasn’t happened—yet.

Among the tools at the government's disposal to boost jobs, rebuilding our infrastructure is one of the options with the greatest impact. After President Barack Obama proposed the American Jobs Act, Mark Zandi, chief economist at Moody's Analytics, found in 2011 that new federal spending for infrastructure improvements to highways and public schools would generate \$1.44 of economic activity for each \$1 spent.<sup>2</sup> In reviewing the economic impact of the American Recovery and Reinvestment Act of 2009, the Congressional Budget Office found that infrastructure investments and purchases by the federal government for goods and services had the largest jobs multiplier impact of all the stimulus elements.<sup>3</sup>

We need to do something similar beginning this year. The plan presented in this paper proposes a reasonable level of new federal investment and how to pay for it, enabling significant progress in bringing our infrastructure up to par. In addition, this paper outlines a set of critical reforms to how the federal government funds, prioritizes, finances, and plans for infrastructure improvements. These reforms can stretch the impact of each dollar invested.

Together these policies will also stimulate sizable new private investment in public infrastructure projects to help close the gap between needs and the resources available. In our plan the proposed new level of federal investment is fully paid for by reasonable increases in specific sources of revenues, including a fee on imported oil, elimination of antiquated and expensive oil tax breaks, and modest increases to a limited number of infrastructure user fees.

Aside from the strong economic impact of elevated spending on infrastructure, the need to do so is indisputable. The state of disrepair of every element of transportation, drinking water and wastewater, and dams and levees systems is well documented, as this paper details in the pages ahead. To a great extent these basic public assets are decades past their useful life or are currently being used far beyond their expected or engineered capacity. Meanwhile our energy infrastructure is woefully outdated.

Before summarizing our proposal, however, let's first examine what's holding us back. In large part, the problem is a false perception that the cost of repairing America's infrastructure requires trillions of dollars in new federal spending. In fact, our plan shows that the most pressing needs of infrastructure can be addressed by improving our use of current funds, making reasonable changes in how users of infrastructure pay for it, and increasing federal spending by roughly \$48 billion a year, according to this new analysis by the Center for American Progress.<sup>4</sup>



This paper sets a spending target of the total level of investment needed by subcategory of infrastructure—roads, bridges, mass transit, rail, ports, airports, inland waterways, drinking water, wastewater, and energy—by comparing the detailed and credible needs assessments prepared by respected technical research institutes and federal agencies and comparing that level of needed spending against the amount of federal funds appropriated and funds leveraged by federal investment for the major infrastructure capital investment programs in 2010.

For the purpose of this federal infrastructure plan, we have not examined the need for federal investment in public school buildings. CAP points out in “Spurring Job Creation in the Private Sector” that federal investment in school rehabilitation offers a wise use of federal funds that both addresses a social good and stimulates the private sector.<sup>5</sup>

CAP’s analysis in this report finds that in sum, federal investments represented by federal appropriation levels, alongside federally mandated matching funds from state and local governments, and the estimated level of private investment in capital improvements to our infrastructure that was attracted by federal appropriations was approximately \$132.9 billion in 2010.<sup>6</sup> For this paper, to ensure consistency among all data sources, we use FY 2010 as the base year for our analysis. (See the Appendix on page 79 for a breakdown of the methodology used to make our calculations in this paper.)

To meet our country’s infrastructure capital repair and improvement needs, CAP analysis estimates that an additional \$129.2 billion a year in new capital investment is warranted over the next 10 years.<sup>7</sup> This research also indicates that investing at this level for each of the next 10 years will appropriately address the backlog in infrastructure repairs and fund needed capacity improvements.

Doing so would bring the total level of infrastructure investment up to \$262.1 billion annually, which our research indicates is the minimum required. This paper describes how we arrived at this figure and it recommends a specific set of proposals to generate the funds to pay for this increased level of federal spending and the essential policy changes needed to ensure that our existing and new investments are wisely spent.

If the policies we propose are adopted, CAP’s analysis indicates that private capital investment in infrastructure can be expected to increase to roughly \$60 billion per year.<sup>8</sup> The balance of the new investment must come from the public sector.

Our plan recommends that current federal requirements for state matching funds prescribed by the federal transportation and water infrastructure programs accompany new federal investments.<sup>9</sup> If this is the case, then the federal government will need to increase its direct spending on infrastructure by \$48 billion a year, which will trigger \$11 billion in new state matching investments. On top of direct federal expenditures, this plan proposes approximately \$10 billion in new federal loan authority annually. (The cost of the credit subsidies to support these loans is included in the proposed \$48 billion increase in federal investment.)

This increase in federal investment represents a 52 percent increase over the approximately \$92 billion in FY 2010 federal appropriations for capital infrastructure investments distributed as grants, credit subsidies, and tax expenditures for infrastructure. Although strenuous efforts must be taken to balance the federal budget, we believe they should be done in a manner that permits this increase to be achieved. Based on the 2010 budget, doing so would increase federal spending by less than 1.3 percent compared to the FY 2010 federal budget.<sup>10</sup> (see Figure 1)

**FIGURE 1**  
**How we pay for increased infrastructure spending**  
in billions

Sources of new investment capital	Amount
<b>Federal sources</b>	
Oil import fee	36.1
Ending oil subsidies	4.1
Updated user fees	8
Sub-total sources of revenues for direct federal spending	\$48.20
Expanded federal loan authority*	10
Total new federal investment	\$58.20
<b>Private investment</b>	
State match	11
<b>Total revenue</b>	<b>129.2</b>

\*Cost of loan capacity factored into the amount of additional federal revenues needed for infrastructure investments

Source: Center for American Progress calculations based on methodology detailed in the appendix

Under our plan, the federal government will shoulder less than 50 percent of the cost of this heightened investment, and we propose specific new sources of revenues and shifts in existing infrastructure spending to pay for the federal share.

To pay for the federal share, which we estimate should be \$48 billion, we propose the following three new sources of revenue:

- Impose an oil import fee set as a \$9.6 per-barrel tax on imported oil, which can generate approximately \$36 billion annually.<sup>11</sup>
- End oil tax breaks by eliminating the \$4.1 billion in oil production tax subsidies.<sup>12</sup>
- Update the structure of infrastructure user fees, which can generate \$8 billion annually.<sup>13</sup>

Further funding can come by modernizing how federal funds are made available for infrastructure improvements, thereby attracting more private funds to finance projects—and reducing the strain on federal, state, and local government treasuries for critical projects. Infrastructure projects offer private investors

the opportunity to make long-term investments that offer a predictable rate of return. For instance, if they finance the building of an airport and lease the airport to a regional authority, the terms of the lease will guarantee the investor regular payments that in turn cover their cost of the loan, its interest, and a rate of return or profit to the investors.

Private investors have partnered with state or local governments to build roads, expand highway systems, and build or repair bridges. Typically in this case the private investor pays the public entity upfront an estimated market value for the transportation asset, and then is required under an agreement to cover the cost of improving the asset. In addition, these agreements permit the investor to charge tolls or receive dedicated tax payments while also establishing clear maintenance requirements. Investors enter into these agreements where the tolls or dedicated taxes are projected to cover all costs and profits and are most attractive to investors when the level of earnings has the potential to exceed projections. Federal credit subsidies lower the overall project costs, which in turn reduces the pressure on tolls and/or dedicated taxes, which then has the positive results of making a project more politically and financially feasible.

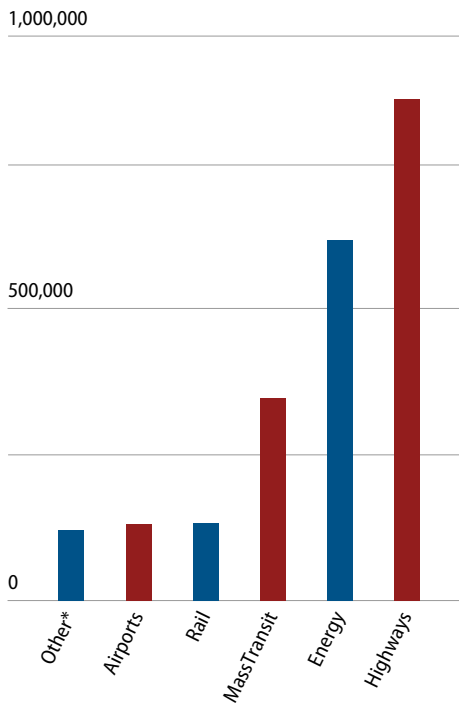
Private investment in energy infrastructure works very differently. In this sector, investors expect public funds to reduce the risk that their private market product cannot cover its costs in the short run. For instance, while a private investor may be confident that they can recoup their costs and earn a profit from the construction of a wind farm overtime, it can take several years before a wind farm is generating enough revenue to cover operating costs plus debt and profits. Public financing reduces overall project costs and thereby shortens the length of time that a private investor has to wait to begin to receive reasonable returns on an investment.

In each of these critical infrastructure sectors, increased federal resources made available in the form of credit subsidies or tax expenditures can increase the level of private-sector investment.

With this sort of federal support, private investors borrow funds to pay for needed repairs or construction and get paid back over time. Our plan estimates indicate that it's reasonable to expect \$60 billion a year in new privately financed improvements in infrastructure annually if the right federal policies and economic conditions make possible this level of investment.<sup>14</sup>

**FIGURE 2**  
**The employment power of infrastructure investments**

An estimated 2.4 million jobs created with \$129.2 billion more infrastructure spending, based on 2009 data



Source: Author's calculation that applies the CAP level of proposed investment by sector to the job-creation estimates for direct, indirect, and induced jobs developed by the University of Massachusetts Political Economic Research Institute as published in the 2009 report, "How Infrastructure Investments Support the U.S. Economy."<sup>18</sup>

Roy Kienitz, the former under secretary of transportation, points out, "It's important to note that most transportation infrastructure projects are not viable candidates for private investment and therefore must rely entirely on public funds backed by federal- or state-imposed user fees or general tax revenues."<sup>15</sup> Nick Debenedictus, CEO of Aqua America Inc., a New York Stock Exchange-listed water company with 3 million customers across 13 states, makes a similar point with respect to water infrastructure:

*With respect to water and energy infrastructure, the lion's share of investment is already privately financed, but even in these sectors there are infrastructure gaps, such as combined sewer overflows in many of our older cities, where private investors are not willing to invest because the payback is too risky or too far off in the future.<sup>16</sup>*

By ratcheting up infrastructure investment by \$129.2 billion per year, sizable job-creation gains will be realized. In 2009 the University of Massachusetts Political Economic Research Institute released an analysis of infrastructure spending increases.<sup>17</sup> The study offers the most recent sector-specific analysis of job creation through infrastructure investment. As such it can help us estimate what the sector-by-sector increases in investments would have been had this level of increased investment occurred in 2009.

Since the University of Massachusetts report was released, the United States has experienced encouraging job gains. The economy has grown since the beginning of 2010, adding 2.55 million jobs. We've also seen positive economic growth as measured by the nation's GDP, which as of the third quarter of 2011 was \$15.2 trillion compared to \$13.9 trillion at the start of 2009.<sup>19</sup> As the economy improves, the job creation and economic growth impact of infrastructure investments can be offset in reduced levels of investment or consumption elsewhere in the economy. Still, the University of Massachusetts study makes a persuasive case that after accounting for offsets in spending in other sectors, public investment in infrastructure contributes to significant GDP growth and jobs gains.

In preparing this report, CAP estimated the level of increased investment infrastructure needed within each subsector of infrastructure based on that analysis.

We recommend that the \$129.2 billion be distributed among the subsectors in infrastructure as detailed in Figure 3.

The American Recovery and Reinvestment Act included strong “Buy America” provisions that required, to the extent possible, that all materials used for infrastructure construction be manufactured and purchased in America. These provisions helped ensure that Stimulus infrastructure investments made the greatest possible impact on employment and business performance in the United States. The impressive number of jobs that can be generated by increased levels infrastructure spending are more likely to be achieved if similar Buy America provisions are built into each federal statute that allocates funds for surface transportation, aviation, water and energy capital improvements.

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### Reforms are as essential as new funds

Improving how the government approaches planning for, paying for, and financing infrastructure can increase the impact of every dollar spent and result in higher levels of private investment. Given that so much of this plan relies on more private-sector investment, the reforms necessary to attract this level of investment are essential to achieving our goal. If the reforms we propose are adopted, CAP projects that nearly \$60 billion per year in private investments could materialize.<sup>20</sup>

We estimate that most of the new private-sector investment will be directed in the energy sector. With carefully calibrated federal incentives including loans, loan guarantees, grants, and tax credits, we estimate that as much as \$40 billion in new annual private investment will enable the build-out of the smart grid as well as expanded renewable energy generation and distribution capacity to desired levels.<sup>21</sup>

The balance of the private investment is likely to occur in the transportation sector.<sup>22</sup> In this sector, new private investment will most likely occur through the formation of new entities where the public sector and private sector join forces to undertake large-scale infrastructure improvements financed with private capital and where the projects generate revenues that can pay back private investors while the private investor and the government share the risk of the project being

**FIGURE 3**  
**Our infrastructure funding gap**

The amount of investment needed annually to bridge the gap between what the United States spends now and what it needs to spend on infrastructure

Sector	Level of new investment (in billions of dollars)
Highways	47.0
Mass transit	15.7
Rail	9.3
Ports	1.0
Airports	7.0
Inland waterways	0.2
Freight	1.4
Water	2.7
Energy generation	44.0
Dams and levees	1.0
<b>Total</b>	<b>129.2</b>

Source: The author calculated the estimate of the necessary increase in federal spending by comparing the current level of federal appropriations on infrastructure and the funds leveraged by these federal appropriations to rigorous independent or federal agency research detailing the level of needed investment. See Appendix for the description of the methodology and sources used for this calculation.

financially viable. The most likely candidates for this approach to financing are airports, ports, inland waterways, new tolled roads, some existing roads that might be tolled, and tolled bridges.

To reach the desired level of upfront private investment, the public must have a deeper understanding and trust that the government and private partners jointly share the risk and responsibility for a high-quality infrastructure. These models will need to rely on creative partnership structures that offer private investors the opportunity to earn a rate of return beyond interest on their investment. Likewise, partnership agreements need to ensure that the taxpayers are assured that high expectations of performance must be met and are enforceable, users are not exploited to cover costs and profits, risk is appropriately shared among all parties, and workers are not shortchanged in an effort to maximize profits.

In addition, increased private financing opportunities focused on transportation will also require the federal government to more rapidly and readily approve tolling on roads in the federal highway system so that investors can rely on predictable revenues for repayment and earnings. It also will require the creation of a national intermediary such as an Infrastructure Bank that can expertly and expeditiously package high-priority and multistate infrastructure financing projects together with private investors. Increased federal guidance can promote models that protect wages, collective bargaining rights, and the taxpayers and users who are at risk if private partners fail to manage the project responsibly.

In addition, it is not prudent to finance every infrastructure project. When using debt to stretch out the cost of improvements over time, the cost of a project is increased significantly to both account for the interest on the debt and, where necessary, a return on investment for private investors. As a result, financing of infrastructure should be a method employed to help complete meritorious and expensive projects that would be too burdensome to pay for upfront.

Increasing the degree to which infrastructure improvements are paid with either public or private investment or debt will permit us to complete more projects in the short term. It also means that projects must have sufficient direct user fee collections and public sources of revenue to pay back investors of the debt, interest, and a rate of return or profit. Other public improvements can be and should be paid for with federal and matching local government grants. Here, too, federal reforms are needed to stretch the impact of current and future public investments in infrastructure.

First we must adopt formulas for distributing federal infrastructure funds that guarantee that all funds are allocated based on objective measures of need. Current federal funding formulas meet far too many political goals instead of the true purpose of the appropriations. For instance, the current formulas that distribute federal Highway Trust Fund grants to states distribute nearly 10 times the amount of funding per capita to Alaska when compared to California. Meanwhile California has more than 52 times as many people as Alaska has; it is home to the nation's largest port, which means its infrastructure has to support the nation's largest highway freight traffic; and California has 13 times the number of miles of roadways as Alaska has.<sup>23</sup>

Similarly, federal, state, and local infrastructure planning needs to rely on standardized cost-benefit analysis tools so scarce public funds are invested in projects with the greatest public return. The illogical formula-based distribution of federal funds is often replicated at the state and local levels where funds are spread around so that most localities get a small bit of funding rather than making an objective decision on how best to spend the funds to meet the most compelling need for repair, congestion mitigation, or traveling efficiency.

A more rational approach to determining where and how infrastructure funds are spent should be matched with a solid funding system that provides a predictable flow of revenues. The current on-again, off-again spigot of infrastructure funding undermines efficiency and contributes to the erosion of our assets. Congress must enact a multiyear set of funding bills for all elements of our infrastructure with reliable and ongoing sources of money for investment to remedy this serious defect in our national infrastructure spending programs.

To successfully bring our infrastructure up to par with levels of investment, we propose more than just increasing the level of annual funding available for investment. We must also change how we allocate funds, hold administrators accountable, and engage private-sector partners. At a minimum we must:

- Update our user fee and tax code to index infrastructure-dedicated taxes and excise fees to inflation and ensure a predictable flow of revenues to support a consistent and more robust level of federal infrastructure investment.
- Enact federal infrastructure allocation formulas based on objective measures of costs, need, and benefits—and require states and localities to do the same.

Current formulas for the transportation funds, for instance, do not adequately take into account need for improvements needed to address congestion in spite of the fact that congestion is a leading cause of accidents and rising costs for commuters and goods movement.

- Use federal policy tools to attract more private investment in infrastructure projects so that new large-scale improvements can be privately financed and paid for by users.
- Create a National Infrastructure Bank to optimize the level of private investment in infrastructure, and ensure necessary large-scale and multistate infrastructure projects are undertaken.
- Create a national infrastructure planning council to integrate federal agency infrastructure planning across sectors and improve how we plan, procure, and manage the construction and repair of our public assets.
- Improve our federal and state infrastructure planning by employing a comprehensive, multisector approach based on objective metrics that allocate funds to projects that meet critical public safety, congestion, delays to goods movement, pollution, and other capacity challenges.
- Explore options to bring water infrastructure improvements under one roof and in an agency that can give priority focus to improvements needed to our water treatment, dams, levees, ports, and inland waterway systems.
- Increase the degree to which we are making progress repairing existing infrastructure.

These reforms can result in a better use of public funds and as a result can moderate the level of increased investment needed in the future.

This plan is a triple win for America. It will create jobs, increase the profitability of the small- and medium-sized companies that provide the construction materials for these projects, and leave to the next generation a full complement of safe, modern, and efficient public assets.

In the pages that follow, this paper describes our country's infrastructure spending needs by infrastructure category, details where the new investments should



be focused, and proposes a strategy to raise the necessary revenue. We take a comprehensive approach in addressing the infrastructure repair and capacity needs of our transportation system, energy system, drinking and wastewater treatment and distribution, as well as dams and levees. This blueprint is grounded in a rigorous review of our needs, a practical approach to raising federal funds, and the adoption of a set of commonsense reforms that will improve the impact of all public infrastructure spending. (see Figure 4)

While the level of new spending is substantial, it will have a significant impact on employment and demand, and we propose to pay for the increased level of public investment with taxes and fees that are aligned with our policy goals. The balance of this report describes the level of new investment needed by subsector of infrastructure, a limited set of taxes and fees that fully offset the increased level of federal expenditure, and reforms to increase the impact of each dollar invested.

**FIGURE 4**  
**Our national infrastructure financing gap**  
Estimated current level of federal, and federally leveraged investment in 2010

Current Federal and Federally-leveraged investment	<b>\$133 billion</b>
Estimated amount of needed investment	<b>\$262 billion</b>
Estimated annual gap	<b>\$129 billion</b>

Source: Author's calculation based on data from numerous sources including the Office of Management and Budget, U.S. Department of Transportation, Army Corps of Engineers, Environmental Protection Agency, U.S. Treasury, see Appendix for sources and methodology.



# The infrastructure investment landscape

The state of our infrastructure is not simply old—it's precarious. Consider that:

- Nearly one in four bridges in America is structurally deficient or functionally obsolete.<sup>24</sup> In 2007, for example, the I-35W Bridge in Minneapolis collapsed, killing 13 people and injuring 145. While that bridge collapsed due to a design flaw, it was also in need of significant repairs and as a result was listed on the nation's inventory of structurally deficient bridges. Any one of America's nearly 70,000 bridges that are structurally deficient and in need of repair could become the next I-35W Bridge.
- Four thousand U.S. dams need repair. Nearly half are near communities, putting tens of thousands of citizens at risk of a dam breach.<sup>25</sup> As we learned the hard way, after Hurricane Katrina hit, weak dams and levees endanger citizens; more than 1,400 deaths occurred in Louisiana alone in that flood.<sup>26</sup>



FIGURE 5

<p><b>Quality of railroad infrastructure</b></p> <p><b>20 United States</b></p> <p><b>Countries that rank ahead of the U.S.:</b> Switzerland, Japan, Hong Kong, France, Germany, Netherlands, Singapore, Korea, Spain, Finland, Denmark, Taiwan-China, Belgium, Austria, Canada, Luxembourg, Sweden, Malaysia, United Kingdom</p>	<p><b>Quality of roads</b></p> <p><b>20 United States</b></p> <p><b>Countries that rank ahead of the U.S.:</b> France, Singapore, Switzerland, Oman, Portugal, Denmark, United Arab Emirates, Austria, Hong Kong, Germany, Spain, Luxembourg, Saudi Arabia, Canada, Finland, Japan, Korea, Malaysia, Cyprus</p>
<p><b>Quality of port infrastructure</b></p> <p><b>23 United States</b></p> <p><b>Countries that rank ahead of the U.S.:</b> Singapore, Netherlands, Hong Kong, Belgium, Panama, UAE, Finland, Iceland, Denmark, Germany, Sweden, Bahrain, Spain, Canada, Malaysia, Malta, United Kingdom, Estonia, Barbados, France, Norway, Namibia</p>	<p><b>Quality of overall infrastructure</b></p> <p><b>24 United States</b></p> <p><b>Countries that rank ahead of the U.S.:</b> Switzerland, Singapore, France, Hong Kong, Denmark, Finland, Iceland, Austria, UAE, Germany, Sweden, Portugal, Japan, Netherlands, Canada, Luxembourg, Belgium, Korea, Bahrain, Oman, Barbados, Spain, Malaysia</p>
<p><b>Quality of air transportation infrastructure</b></p> <p><b>31 United States</b></p> <p><b>Countries that rank ahead of the U.S.:</b> Singapore, Hong Kong, Switzerland, UAE, Netherlands, Germany, France, Denmark, Norway, Barbados, Sweden, New Zealand, Iceland, Belgium, Panama, Finland, South Africa, Bahrain, Malta, Malaysia, Spain, Canada, Czech Republic, United Kingdom, Austria, Puerto Rico, Qatar, Korea, Australia, Luxembourg</p>	<p><b>Quality of electric supply</b></p> <p><b>32 United States</b></p> <p><b>Countries that rank ahead of the U.S.:</b> Denmark, Switzerland, Iceland, Singapore, Finland, Austria, Hong Kong, Netherlands, United Kingdom, Belgium, Germany, Sweden, France, Canada, Qatar, Norway, Japan, Czech Republic, Ireland, UAE, Luxembourg, Oman, Korea, Saudi Arabia, Taiwan-China, Barbados, Slovak Republic, Portugal, Bahrain, Cyprus, Slovenia</p>

Source: It's The Global Competitiveness Index Report 2-11-2012, World Economic Forum Charts 2.01-2.05 and 2.07

- Inadequate freight rail infrastructure forces passenger vehicles to share congested roads with 39,000 trucks from the Los Angeles port on a daily basis and account for 14 percent of the highway traffic and increase pollution. In the New York City metropolitan area, port container traffic results in 13,000 trucks flooding highways in and around New York City on a daily basis. This growing truck traffic is making already congested roadways more impassable.<sup>27</sup>
- Strains on the electrical grid contribute to blackouts, which undermine businesses and put citizens at risk. There were 156 outages of 100 megawatts or more between 2000 and 2004, increasing to 264 between 2005 and 2009, the last years for which complete data are available.<sup>28</sup>

The federal government budget authority for 2010 was \$3.48 trillion. In that year, we devoted a relatively small amount of federal appropriations toward maintaining and improving our critical public infrastructure assets. In fact, total federal infrastructure appropriations for direct grants, loans, and tax incentives were \$92 billion in 2010, a mere 2.6 percent of all federal expenditures.<sup>29</sup>

Moreover, overall U.S. investment in transportation and water infrastructure in 2010 was 6.2 percent less in real dollars (after accounting for inflation) than the federal government spent for infrastructure in 2000.<sup>30</sup>

This decline is impeding our economic competitiveness. The United States now ranks 24th on key global indicators for infrastructure quality among 142 nations, according to the World Economic Forum's Global Competitiveness Report for FY 2011-12, down from No. 8 in FY 2005-06.<sup>31</sup> Regarding overall competitiveness, the FY 2011-12

**FIGURE 6**  
**Federal government infrastructure spending**

Breakdown of estimated federal investment in infrastructure of approximately \$92 billion in Fiscal Year 2010

	Estimated grants	Estimated credit subsidies	Estimated tax subsidies	Total
Transportation	\$77.70	\$0.12	\$0.46	<b>\$78.28</b>
Water	\$3.50	\$0.57	\$0.27	<b>\$4.24</b>
Dams and levees	\$100			<b>\$1.01</b>
Energy		\$2.56	\$6.00	<b>\$8.56</b>
<b>Total</b>	<b>\$82.20</b>	<b>\$3.25</b>	<b>\$6.73</b>	<b>\$92.18</b>

Source, Author's calculation based on the sum of appropriations made for major grants programs available for infrastructure under the aegis of the U.S. Departments of Transportation, Defense (Army Corps), Energy and Environmental Protection. The 2010 appropriations for these grant programs were derived from agency budget documents. For the appropriations estimates for the appropriations for federal loan programs, the cost is derived from the OMB 2011 re-estimates for 2010 loan program costs. In the case of the cost of the tax subsidies, the 2010 level of projected tax expenditure cost was derived from data from the U.S. Treasury and The Bond Buyer. In addition, the tax subsidies for energy infrastructure are included as calculated by the U.S. Energy Information Agency. The specific sources and methodology for all of these numbers can be Appendix.

report finds that “the United States continues the decline that began three years ago, falling one more position to 5th place.”<sup>32</sup> (see Figure 5)

The American Society of Civil Engineers says that to repair our existing infrastructure so that it meets international standards for safety and efficiency, an additional \$2.2 trillion must be invested in repairs over the next five years.<sup>33</sup> Their sobering “Report Card for American Infrastructure,” however, doesn’t say where these trillions of dollars will come from.

This report takes a slightly different approach. We calculate our national infrastructure financing gap by accounting only for needs that are both critical and cost effective. We then define what portion of the overall gap should be paid for with federal resources. We also outline how increased federal investments can be structured to leverage private and other public investment to fully close the funding gap. This section breaks out each major infrastructure category and explains how the federal government currently supports investments through grants, credit programs, or tax incentives.

Although the federal government is a large investor in infrastructure, the private sector is by far the biggest investor in public infrastructure, covering the bulk of the capital costs of our energy supply and distribution infrastructure, freight rail systems, and ports, and making serious investments in our airports and water systems. CAP found that federal spending on public infrastructure capital investments in FY 2010 was approximately \$92 billion. (see Figure 6)

Within the Department of Transportation, more than 100 different programs share the responsibility for transportation investments.<sup>34</sup> An additional five federal agencies are responsible for oversight of significant infrastructure improvements and systems, including the Departments of Energy, Defense, Treasury, and Agriculture, alongside the Environmental Protection Agency. These agencies have three infrastructure funding and financing tools at their disposal:

- Direct grants
- Loans and loan guarantees
- Tax expenditures

Let's examine each of them in turn.

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### Estimated direct grants: Approximately \$82 billion in FY 2010

Most federal infrastructure investments are made as direct grants. In sum, CAP's analysis finds that approximately \$82 billion in federal infrastructure grants flow to states according to a variety of formulas that vary in efficacy. (see Chart 1 on page 20) Congress wisely ended the practice of loading up federal transportation authorization bills with earmarks in 2010. As a result, most of the federal infrastructure funds are allocated to states based on formulas or are distributed as competitive grants. In some cases, grant formulas do a good job of directing funds to where they are most needed. But most are either outdated or inappropriate for ensuring wise expenditures of federal funds.

For instance, a significant portion of federal transportation funds are allocated with little regard to the need to reduce oil consumption, which could be achieved by increasing the share of funds spent on rail and transit capacity. Similarly, federal transportation formulas are devoid of congestion measures even though reducing congestion can increase productivity and lower the costs of travel while having the added benefit of driving down carbon emissions.

Worse yet, \$9.6 billion of the federal grants for road, bridge, and highway projects in 2010 were distributed to states based on an arcane formula called the "Equity Bonus Program," which distributes funds on factors largely unrelated to the need for repair or increased capacity.<sup>35</sup> And approximately \$400 million was distributed

in the form of a minimum guarantee that ensures each state receives a small portion of the eight largest federal highway grant programs.<sup>36</sup> As a result, 28 percent of federal grants in highways and roads were distributed without regard to relative need or projected costs of repairs or capacity improvements. Water infrastructure programs suffer these same inefficiencies requiring grants to be allocated to states simply to ensure they receive the 1 percent minimum required by federal water revolving loan fund capitalization grants to states.

Similarly, grants distributed for inland waterways, ports, and airports also suffer from allocation formulas and processes that result in spending scarce resources on small, underused facilities in order to meet political goals rather than investing in heavily used facilities where each dollar invested can have a much more significant impact. The federal Essential Air Service Grant program is rife with examples of small airports, often less than a 90-minute drive from a major hub, receiving federal funds in spite of low passenger demand for the airport services. The Lake Cumberland Airport in Kentucky, located only 45 minutes from Nashville, received a \$3 million Airport Improvement grant for improvements in spite of the fact that the newly built airport sat mostly fallow for three years because no commercial airline carrier would serve the airport.<sup>37</sup> While the Federal Aviation Administration Reauthorization Bill passed on February 6, 2012, implements some reforms to this program, deeper reforms can ensure scarce federal resources meet our most urgent airport improvement needs.<sup>38</sup>

The following chart summarizes the roughly \$82 billion in federal infrastructure grants. Most of these grants typically recur based on long-term authorization bills. Yet \$11.1 billion in the grants available in FY 2010 were one-time grants for high-speed rail (\$10.5 billion) and approximately \$560 million for a variety of transportation projects enabled under appropriations for the TIGER competitive grant program for capital projects. (see Figure 7 on the next page)

FIGURE 7

## Major grants for infrastructure improvements in Fiscal Year 2010

\$82 billion in grant capacity

Type	Federal agency	Estimated cost to agency in 2010	Type of funding	Basis of allocation	Federally imposed user fee revenue source
<b>Highways, roads</b>	Department of Transportation	\$32.46 billion \$150 million in TIGER grants	Grant to states for capital, operating and maintenance	Formula based on factors that include miles of roads, miles traveled and gas taxes collected	18.4 cent gas/24.4 cent diesel and tire taxes, and \$12 billion in general fund revenues
<b>Bridges</b>	Department of Transportation	\$5.6 billion Many TIGER road grants also supported bridge repairs	Grant to states for capital, operating and maintenance	Distributed to states based on the relative cost to repair bridges classified as structurally deficient or functionally obsolete	18.4 cent gas/24.4 cent diesel and tire taxes, and \$12 billion in general fund revenues
<b>Mass transit</b>	Department of Transportation	\$10.3 billion \$131 million in TIGER grants	Grant to states for capital, operating and maintenance	Formula <ul style="list-style-type: none"> <li>• 33% population</li> <li>• 33% miles of roads</li> <li>• 33% value of user fee paid by commercial vehicles</li> </ul>	18.4 cent Gas/24.4 cent diesel and tire taxes, and \$12 billion in general fund revenues
<b>Passenger rail</b>	Department of Transportation	\$1.6 billion (\$738 million is for capital grants) \$134 million in light rail and other passenger rail grants	Capital grant to Amtrak	Statute directed grant	N/A
<b>High-speed rail</b>	Department of Transportation	\$10.5 billion	Grants	National competition	N/A
<b>Ports</b>	Department of Transportation and Army Corps of Engineers	\$953 million \$81 million in TIGER Grants	Capital and operation/maintenance	Projects Selected by Army Corps	0.125% tax on value of imports dedicated to the Harbor Maintenance Trust Fund



Type	Federal agency	Estimated cost to agency in 2010	Type of funding	Basis of allocation	Federally imposed user fee revenue source
<b>Airports</b>	Department of Transportation	\$15.5 billion <i>\$10 million in TIGER Grants</i>	Capital and maintenance	Combination of formula grants to airports and competitive grants	\$4.8 billion from the general fund, \$2.6 billion in Passenger Facility Fees and \$10 billion raised via - 7.5% ticket tax (exempt rural airports)  \$3.60 flight segment tax (exempt in rural airports)  6.25% on cargo bills  19.3 cents aviation gasoline (primarily private planes and small crafts)  21.8 cents on aviation jet fuel (primarily commercial airliners)  \$16.10 international arrival tax  7.5% frequent flyer award tax  7.5% ticket tack on rural airports, passenger facility fees capped at of \$4.50
<b>Rail Freight</b>	Department of Transportation	\$220 million in grants for safety and grade improvement <i>\$264 million in TIGER grants</i>	Grants to states as part of set aside in federal Highway Safety Apportionment	Formula <ul style="list-style-type: none"> <li>• 33% population</li> <li>• 33% miles of roads</li> <li>• 33% value of user fee paid by commercial vehicles</li> </ul>	N/A
<b>Inland Waterways</b>	Army Corps of Engineers	\$796 million	Army Corps selections projects based on recommendations of Users Board	Agency scoring and approval by Congress	20 cent diesel fuel tax for Barges dedicated to the Inland Waterways Trust Fund
<b>Drinking Water</b>	Environmental Protection Agency	\$1.4 billion (DWSRF)	Annual grants to state revolving loan fund entities	Formula allocation	N/A
<b>Waste Water</b>	Environmental Protection Agency	\$2.1 billion (CWSRF)	Annual grants to state revolving loan fund entities	Formula allocation	N/A
<b>Dams and Levees</b>	Army Corps of Engineers	\$1.01 billion.		Agency scoring and approval by Congress	N/A

Source: Author's calculations based on available public documents from the Department of Transportation, the Environmental Protection Agency, Joint Committee on Taxation of the U.S. Congress, and personal communications from staff at the federal agencies. All source data for this chart can be found of this chart in the Methodology Appendix. TIGER grant funds are shown in italics because in some cases a TIGER grant addressed the infrastructure needs in more than one sector. For example a bridge project might have also improved port access. As such the figures are shown for illustrative purposes. The total TIGER grant capital appropriations in 2010 was \$560 million and that is the figure used to generate the final estimate of federal appropriations for infrastructure grants in 2010.



ISTOCK PHOTO

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## Loans and loan guarantees

Approximately \$3.3 billion in federal funding enables at least \$145 billion in federal infrastructure loans

Federal loans and loan guarantees play a small but increasingly significant role in U.S. infrastructure improvements. CAP's review of the plethora of federal loan and loan guarantee programs concluded that in 2010 nine major federal government lending programs had approximately \$124 billion in credit capacity for core public infrastructure projects. For federal budgeting purposes, the cost of these programs is called the credit subsidy, which is determined by the Office of Management and Budget for each program after accounting for expected principal disbursement,

loan repayments, defaults, and interest or fees collected. Based on our analysis, this maximum capacity would cost the government an estimated \$3.25 billion.<sup>39</sup>

Of that total capacity, CAP's analysis found that roughly \$44 billion in loans and guarantees were actually disbursed in 2010, with an estimated total credit subsidy cost of \$1.8 billion.<sup>40</sup>

Most federal loan programs require that borrowers for infrastructure projects also find other investors or demonstrate other available investment capital when applying for a federal loan or loan guarantee. Based on the loan matching requirements established by Congress, at least \$20 billion in private, state, local, or public authority capital could be drawn into U.S. infrastructure projects if the full federal loan and loan-guarantee program were tapped. We describe those programs in this section. (see Figure 8)

These loans and loan guarantees go toward an array of infrastructure projects, which we examine briefly in turn.

FIGURE 8

### Infrastructure Federal loan capacity and costs in Fiscal Year 2010

\$3.25 billion in federal credit subsidies leverages \$144 billion in other investment

	Estimated sum of maximum credit subsidy amount 2010	Estimated sum of authorized principal amount 2010	Estimated sum of minimum private leverage	Sum of actual obligations in 2010	Sum of estimated actual credit subsidy in 2010
Energy	\$2,560,000,000	\$80,477,097,922	\$18,436,933,961	\$37,891,038,000	\$1,263,503,740
Highway	\$122,000,000	\$1,062,917,501	\$2,158,044,623	\$1,031,413,000	\$119,964,570
Other transportation	N/A	\$18,367,000	N/A	\$18,367,000	\$341,280
Railroad	N/A	\$35,000,000,000	N/A	\$700,000,000	\$29,000
Water	\$568,730,000	\$7,545,840,520	\$0	\$5,296,000,000	\$392,892,370
<b>Total</b>	<b>\$3,250,730,000</b>	<b>\$124,104,222,943</b>	<b>\$20,594,978,584</b>	<b>\$44,936,818,000</b>	<b>\$1,776,730,960</b>

Sources: \*The sum of the maximum credit subsidy is an estimate of the total cost of government at full lending capacity for each program, based on author's analysis of OMB data, program rules, authorities, and appropriations (see Appendix for a more detailed summary of this calculation).

\*\*The sum of the authorized principal is an estimate of the total amount the agencies are authorized to lend, based on author's analysis of program rules, authorities, and appropriations (see Appendix XX for a more detailed summary of this calculation).

\*\*\*The sum of the minimum private leverage is the value that a private or non-federal public project sponsor must invest from non-federal sources to qualify for receipt of the federal loan, based on author's analysis of program rules, authorities, and appropriations (see Appendix for a more detailed summary of this calculation). The matching requirements vary by federal loan program.

\*\*\*\*The sum of actual obligations and estimated actual credit subsidy are based on author's analysis of data in the Federal Credit Supplement of the 2011 budget (Tables 1 and 2), available at: [http://www.gpoaccess.gov/usbudget/fy11/cr\\_supp.html](http://www.gpoaccess.gov/usbudget/fy11/cr_supp.html).

## Transportation loans and loan guarantees

There are two major loan and loan guarantee programs within the Department of Transportation aimed at boosting infrastructure improvements. In total these loan programs were authorized at slightly more than \$36 billion in 2010, of which \$1.7 billion was disbursed in 2010.<sup>41</sup> Chief among these loan programs are the Transportation Infrastructure Financing and Innovation Act and the Railroad Improvement and Financing Act loan programs.

### *Loans and loan guarantees for innovative surface transportation projects*

The 1998 Transportation Infrastructure Financing and Innovation Act, or TIFIA, authorized federal credit programs to support publicly funded transportation infrastructure. Through the TIFIA program, infrastructure projects that cost at least \$50 million are competitively selected for federally subsidized loans and loan guarantees to state and local governments, public and private transportation authorities such as turnpikes and airports, and private sponsors of new projects. These loans are backed by an annual appropriation of credit assistance for lines of credit and loans issued. TIFIA loans are capped at 33 percent of overall project costs and offer low-interest, long-term loans with a two-year grace period before principal and interest payments begin.

The cost to the U.S. Treasury for these loans and loan guarantees are estimated to be 10 percent of the overall value of the federal loan or guarantee for accounting purposes, figuring in the cost of an interest subsidy and the risk of possible losses on the loans and loan guarantees. The TIFIA program's \$122 million FY 2010 appropriation enables the Department of Transportation to lend or guarantee slightly more than \$1 billion per year toward public, private, and public-private partnership infrastructure projects.

Over the past 12 years, the TIFIA program has entered into 25 loan agreements totaling \$8.7 billion. In some cases, the public and private sponsors of projects found enough capital to exceed the program's matching requirements. As a result, for well less than \$10 billion, TIFIA loans enabled \$33 billion in public and private capital improvements to public highways, airports, mass transit systems, and large intermodal centers.<sup>42</sup>

The federal government has been making loans and loan guarantees for transportation infrastructure projects for nearly a decade with negligible defaults. The exception that proves the rule: One of the earliest TIFIA loans made in 2003 was a \$172

million loan to a private company to finance the expansion and tolling of a nine-mile stretch of the South Bay Expressway in California. The loan went into default in 2010. While the company was able to cover operating expenses, toll revenues could not generate enough funds to pay back investors. The federal government was identified as a primary creditor, as were the large bank investors who backed the project. The bankruptcy court's restructuring of the debt reduced the TIFIA loan repayment to \$99 million in debt and \$6 million in equity ownership of the company.<sup>43</sup>

The upshot: Debt and equity payments to repay this one failed investment are reliable under the restructured financial structure. The balance of the funds owed to the Department of Transportation will be generated by earnings on toll revenues above the court-approved operating expenses (including debt and equity payments to creditors). Thirty-two cents on each dollar of these earnings beyond those needed for operations will be made to the federal government to meet the obligation of the \$73 million in unsecured debt. Over the life of the project, the federal government expects to be repaid at least 90 percent of the federal loan's principal and interest charges.<sup>44</sup> This loan represents the only TIFIA project to date where federal funds were at risk of not being repaid.

### *Railroads*

The 1998 Railroad Improvement and Financing Act authorizes 35-year federal loans or loan guarantees to privately operated freight rail companies under essentially the same lending guidelines as the TIFIA program. This enables repayment requirements to more closely align with the cash flow and earnings associated with large-scale infrastructure projects.

Unlike the TIFIA program, however, these railroad loans are not accompanied by a federal credit subsidy.<sup>45</sup> This means that these loans are issued with an interest rate set at the sum of the U.S. Treasury lending rate plus the government's cost for program administration and the estimated cost of the risk of loan default. This in turn means that freight companies borrowing from the federal government receive a very small financial benefit from this loan program.

The program was authorized in 1998, and as part of the multiyear surface transportation authorization act, the Transportation Equity Act for the 21st Century, the program's initial lending authority was set at \$3.5 billion. With the passage of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users, or SAFETEA-LU, the program's lending capacity was set at \$35 billion in loan authority. Since then a total of \$1.6 billion in loans has been awarded. The

largest single loan, \$562 million, was made to Amtrak in June 2010 to finance the purchase of 70 new railcars.<sup>46</sup>

## Energy loans and loan guarantees

The Department of Energy had the authority to make \$47 billion in loans and loan guarantees in 2010 under Section 1703 of the Energy Independence Act of 2005 and Section 1705 of the Energy Policy Act of 2007.

The older program, 1703, has funds specifically targeted for renewable energy, nuclear power, and advanced vehicle manufacturing. This program provides guarantees for up to 80 percent of the value of the project's costs. The program is permitted to make \$18.5 billion in loan guarantees for nuclear energy projects with no credit subsidy provided by the federal government.

In addition, this program had \$10 billion in loan guarantee authority for renewable energy projects. Since 2005 the Section 1703 loan program has made four loan commitments: two loans with a combined value of \$10.3 billion for two nuclear projects, and \$317 million in two loans to companies investing in energy-efficiency technologies.<sup>47</sup> Of the \$25 billion in Section 1705 loans, approximately \$14.7 billion was lent to 26 projects building alternative energy infrastructure and resources for electricity generation, and \$8.3 billion was lent to five advanced technology vehicle manufacturing projects. (see Figure 8)

The track record of the 1705 program shows that it mobilized substantial private investment in the clean energy generation sector, approximately \$16 billion of private capital matching \$25 billion in federal loan support. That means in total the program mobilized as much as \$41 billion in new clean energy investments.<sup>48</sup>

The Section 1705 energy loan program recently suffered two loan defaults. In 2009 the agency made a \$536 million loan to Solyndra, Inc., to build a solar manufacturing facility in California. In addition to the federal investment, the company also attracted \$961 million in private investment.<sup>49</sup> The company recently filed for bankruptcy and unfortunately the federal government subordinated its credit position to that of other creditors when loan agreements were renegotiated in an effort to keep the company afloat and attract additional private investment. The courts will decide if and how much the federal government will be paid back from the company's assets once it emerges from bankruptcy court or its assets are sold at auction.

Beacon Power Corp., also a recipient of a Section 1705 loan, declared bankruptcy in November 2011.<sup>50</sup> The Energy Department's loan commitment was \$43 million, although the company had tapped only \$39 million of its full loan award. In this loan the government is in a primary position and so is likely to recoup most if not all of the loan since the company continues to generate income from the utility, which has assets valued at \$72 million and debt of \$47 million. Therefore a strong portion if not all of the \$39 million federal loan is likely to be repaid.

These projects represent 2 of the 28 projects to default on a total of \$575 million of the \$25 billion invested by the Department of Energy in alternative-energy-generation projects under Section 1705 of the Recovery Act.

The energy and transportation loan defaults demonstrate that federal loan programs must continually improve due diligence standards to ensure scarce federal investment is directed to only the most viable projects. They also demonstrate the need to carefully construct loan terms and legal protections so that taxpayers' investments are repaid in the rare case that a private project supported with public funds declares bankruptcy.

In addition to the DOE programs, the Department of Agriculture administers a series of loan programs. CAP's analysis found three of the loan programs were significantly focused on infrastructure investments:

- The Rural Business/Cooperative Service's Renewable Energy Loan Guarantee Program
- The Rural Utilities Service's Rural Electrification and Telephone Program Electric Hardship and FFB Loans
- The Rural Utility Services, Water and Waste Disposal Loans and Loan Guarantees

These three programs were authorized to offer up to \$7 billion in 2010 in loans to rural energy cooperatives and other energy infrastructure at a cost of \$60 million.<sup>51</sup>

CAP's analysis found nearly all the loan capacity available in 2010 was utilized. These loans are part of the longstanding federal investment in rural electricity access and capacity and they do not leverage private-sector match but they are repaid by utility ratepayers overtime. Our analysis of the level of new investment needed assumes these loans continue to address the capacity needs in most rural sections of our country.

The energy and transportation loan defaults demonstrate that federal loan programs must continually improve due diligence standards to ensure scarce federal investment is directed to only the most viable projects.

## Clean water loans

Although public investment in water infrastructure is overwhelmingly in the form of debt financing, the federal government makes grants to states so they can operate revolving loan funds for water improvements. As such, from the federal perspective, water infrastructure funding is primarily dependent on grants and are included in CAP's grants analysis.

A sizable amount of direct federal lending for water and sewer systems, however, is administered by the Department of Agriculture, which had the authority to enter into \$7.5 billion in loan agreements for rural water projects, at a cost of under \$570 million, in fiscal year 2010. Approximately \$5 billion in these loans were disbursed in 2010.<sup>52</sup> These water loans are intended to address irrigation and agriculture-related uses for water and as such are not included in our projections for the gap in the level of public drinking and wastewater investment.

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## Tax subsidies

The federal government uses two tax code tools to incentivize infrastructure investment. One tool is the subsidy of infrastructure finance made possible by exempting from federal taxes the interest earnings from bonds issued by state and local governments for this purpose. State and local governments issue these tax-exempt bonds to finance capital improvements to roads, transit, public works, and schools. The tax-free stream of income attracts private investors because they are willing to accept lower returns than if the bonds were taxable.

In 2009 and 2010 the government made available another class of subsidized bonds. The earnings on these bonds, known as Build America Bonds, were taxable, but the federal government lowered the cost of infrastructure projects for state and local governments by paying part of an issuer's interest cost, which means that the federal subsidy was given directly to the state or local government rather than the investors.

The second tax tool is the tax credits made available to companies who generate or distribute clean energy. The tax code includes two tax credits for this purpose: the production tax credit and the investment tax credit.



Briefly, let's start by examining each of these types of tax-free infrastructure financings in turn.

### Tax-exempt bonds

This report estimates that of \$275 billion in tax-exempt debt issued by state and local governments in 2010, \$37 billion in new money issuances were targeted for core public infrastructure projects.<sup>53</sup> This figure excludes debt issued for hospitals, schools, and government buildings; refinancing of previously issued tax-exempt infrastructure debt; or infrastructure debt that may have been issued via general obligation bonds, for which detailed data are not available.<sup>54</sup>

This report estimates that the 2010 tax exemption for the \$37 billion for bonds for new infrastructure projects will cost the U.S. Treasury an estimated \$5.9 billion in net present value, based on data available from the Office of Management and Budget and The Bond Buyer.<sup>55</sup> This cost calculation differs somewhat from the method used by OMB, which for budgeting purposes accounts for the cost of foregone revenue in each year until the subsidized bond is paid off. As such, using OMB's data, we estimate the 2010 cost of these particular bond issuances to be \$354 million. (see Figure 9)

**FIGURE 9**  
**Tax subsidies for infrastructure investments**

Estimates of various tax expenditures in 2010 for infrastructure spending (billions)

Infrastructure sector	Estimated total issuances of new tax exempt bonds for infrastructure, 2010	Estimated total issuances of new Build America Bonds for infrastructure, 2010	Estimated total new tax-exempt and BAB bonds for new infrastructure, 2010	Estimated net present value cost to Treasury for tax-exempt bonds for infrastructure, 2010	Estimated net present value cost to Treasury for Build America bonds for infrastructure, 2010	Estimated net present value cost of all bonds issued for infrastructure, 2010	Estimated FY 2010 budget cost of all new bonds issued in 2010 for infrastructure
Water	\$9.6	\$18.0	\$27.7	\$1.5	\$2.8	\$4.4	\$0.27
Transportation	\$21.2	\$25.2	\$46.4	\$3.4	\$4.0	\$7.3	\$0.46
Energy	\$6.5	\$12.2	\$18.7	\$1.0	\$1.9	\$3.0	\$0.19
<b>Total</b>	<b>\$37.4</b>	<b>\$55.5</b>	<b>\$92.9</b>	<b>\$5.9</b>	<b>\$8.8</b>	<b>\$14.7</b>	<b>\$0.92</b>

Source: Author's calculation based on data available from the Office of Management and Budget and data catalogued by the Bond Buyer for bond issuances in 2010. The sources and methodology used to arrive at these figures can be found in the Appendix.

### *Build America Bonds*

In 2009 Congress created the Build America Bonds program, a taxable alternative to tax-exempt bonds. Build America Bonds were taxable state- and-local government bonds that had the same investment restrictions as tax-exempt bonds but could only be used for new projects. And they differed from tax-exempt bonds because the federal government paid a subsidy equal to 35 percent of the interest to the issuer. By making direct subsidy payments to state and local issuers, the federal government was able to ensure the entire subsidy accrued to issuers, rather than partially to high-income bondholders.

The recent Center for American Progress report “Bring Back BABs: A Proposal to Strengthen the Municipal Bond Market with Build America Bonds” points out these bonds were a more efficient way of subsidizing state and local infrastructure finance.<sup>56</sup> And because these bonds were taxable, they expanded the market for municipal bonds to traditional taxable bond investors and international investors. This type of long-term and nationally attractive bond increased the demand for municipal securities and helped drive down borrowing costs for state and local governments, providing much-needed support to long-overdue infrastructure investment.

In 2010, of the estimated \$117 billion in Build America Bonds issued, this report estimates that \$55.5 billion was for core infrastructure projects and the remainder for other public-purpose projects such as improvements to, or new, government facilities, hospitals, higher education, or school construction.<sup>57</sup> The lifetime cost of this subsidy for these bonds issued in 2010 for core infrastructure projects was approximately \$8.8 billion.

The estimated net present value of costs to the Treasury for roughly \$93 billion in combined Build America Bonds and tax-exempt bonds floated for new infrastructure projects in 2010 was nearly \$15 billion.<sup>58</sup> The costs are booked by the Treasury each year over the life of the loan. The cost to the federal cost for these bonds in 2010 was slightly less than \$1 billion, at \$920 million.<sup>59</sup>

### *Clean Renewable Energy Bonds*

Clean Renewable Energy Bonds were created by the Energy Independence and Security Act of 2007. These bonds provide investors with a 70 percent tax credit for dividends paid from bonds issued for wind, biomass, solar, geothermal, certain hydro plants, and other qualified energy generation projects. Solar, wind, and

hydropower generation facilities accounted for 90 percent of the \$2.2 billion in Clean Renewable Energy Bonds issued in 2009. In 2010 the cost to the Treasury of paying the tax credit to investors is estimated to be \$80 million.<sup>60</sup>

### Tax credits

The tax code also includes tax credits aimed at boosting energy infrastructure investment—\$16 billion worth in 2010 alone. The most robust of the tax credits aimed at electricity generation are the energy production tax credit, which in 2010 cost the Treasury \$1.5 billion in foregone revenue, and the investment tax credit, which cost \$130 million.<sup>61</sup>

The most powerful of the two credits, the production tax credit, was calculated at a rate of 2.2 cents per kilowatt-hour to promote investment in large-scale energy production. This credit was primarily used by wind energy producers but is also available for solar, geothermal, biomass, and other new energy systems. The investment tax credit is generally equal to 30 percent of the value of the investment in new generation facilities that rely on solar, geothermal, wind, and combined heat and power systems. The credit is capped at lower levels for investments in micro-turbine and fuel cell energy production facilities. Energy producers can take advantage of only one tax credit at a time.

As part of the American Recovery and Reinvestment Act, entities claiming the energy production or investment tax credits could accept a grant of up to 30 percent of the value of the credit instead of the tax credit, under Section 1603 of the tax credit. The value of these grants claimed in 2010 was \$4.2 billion.<sup>62</sup> The legislation that permitted these tax credit grants makes them available only to energy production or generation projects that were under construction as of December 31, 2011.

U.S. Treasury reports indicate that, on average, each federal grant in lieu of one tax dollar was matched with two dollars of private investment. For the purpose of this analysis, the sum of tax credits and grants in lieu of tax credits are considered tax subsidies. In 2010 these tax subsidies are estimated to have been \$5.83 billion.<sup>63</sup> When factoring in the estimated tax subsidies available for bonds that CAP estimates were issued for energy purposes in 2010, the full value of tax benefits estimated to support energy infrastructure investments in 2020 is estimated to be approximately \$6 billion.

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Total federal infrastructure investment:  
Approximately \$92 billion in 2010

The federal investment in infrastructure is the sum total of appropriations of grants, the federal credit subsidies of loans, and estimated lost revenues from tax expenditures intended to stimulate infrastructure investment. Across all federal programs and vehicles, the government invested just more than \$92 billion in infrastructure improvements in 2010.

Sadly, this figure falls woefully short of what we need to spend to ensure our national economic competitiveness and to put millions of Americans back to work. In the next section we'll examine just how big an infrastructure-funding gap we face.







## The infrastructure funding gap

In spite of approximately \$92 billion in federal investment, every component of our public infrastructure suffers from a significant backlog of repairs, and in nearly every sector the capacity of our infrastructure is insufficient to meet current and projected demand. We recognize that on top of the federal expenditures, states and localities are also investing in infrastructure repairs and improvements. And in some cases they are teaming up with private partners to tap capital and expertise to support projects financed with private investment, publicly supported and private loans, or taxable or nontaxable bond instruments.

In the previous section, we presented the details on the amount of federal funds, loans, grants, and tax subsidies appropriated for infrastructure investments in FY 2010 and how much private capital was pledged as part of loan commitment packages, and we presented the value of bonds issued for infrastructure. Unfortunately publicly available data do not permit a reliable accounting of the allocation of that investment to FY 2010. Moreover, available data are not robust enough to resolve the double counting of investments that would occur if the value of loans was simply added with the value of bonds.

For these reasons, it's not possible to accurately state the value of private funds spent on infrastructure projects in 2010. For the purposes of this analysis, then, we do not assume any significant changes will occur in the levels of private investment, except where we propose specific reforms to trigger higher levels of investment. In those cases, the elevated level of private investment is factored into our analysis.

Our plan adopts an ambitious—yet achievable—level of public and private investment in each key element of our infrastructure, of \$129 billion a year for the next 10 years.

Our plan adopts an ambitious—yet achievable—level of public and private investment in each key element of our infrastructure, of \$129 billion a year for the next 10 years.

**FIGURE 10**  
**Our infrastructure funding gap**

The amount of investment needed annually to bridge the gap between what the United States spends now and what it needs to spend on infrastructure

Sector	Level of new investment (in billions of dollars)
Highways	47.0
Mass transit	15.7
Rail	9.3
Ports	1.0
Airports	7.0
Inland waterways	0.2
Freight	1.4
Water	2.7
Energy generation	44.0
Dams and levees	1.0
<b>Total</b>	<b>129.2</b>

Source: The author calculated the estimate of the necessary increase in federal spending by comparing the current level of federal appropriations on infrastructure and the funds leveraged by these federal appropriations to rigorous independent or federal agency research detailing the level of needed investment. See Appendix for the description of the methodology and sources used for this calculation.

### Transportation: Invest \$81.5 billion

An additional \$81.5 billion in investment is needed to meet our most urgent immediate and long-term transportation infrastructure needs. Some of this investment can be met with private-sector investments in financed projects. Here's how we arrived at the investment level proposed for each major component.

### Highways, roads, and bridges: \$47 billion

Highway, road, and bridge improvements are funded by the Federal Highway Trust Fund, which distributed \$41 billion in FY 2010 for the purpose of maintaining and improving highways, roads, and bridges. SAFETEA-LU, the federal enabling statute for these surface transportation grants, requires that states provide a 20 percent match to federal spending. In FY 2010, states matched



the federal funds at a higher rate and spent \$27 billion on roads in their federal highway system bringing the total of combined state and federal funds for road and bridge improvements on the national highway system to \$63.7 billion. (States spent considerably more than \$27 billion in 2010 on road construction and improvements on roads not considered part of the federal highway system and in many cases are spending more than the required match to improve federal funds for roads in the federal highway systems.)

To improve safety and provide for needed capacity expansion, total public investment in the national highway system needed to reach \$104 billion, according to our analysis of a 2008 study from the Federal Highway Administration.<sup>64</sup> Adjusted for 2010 dollars, requires that annual federal spending, together with state and local funds, must reach at least \$113 billion annually.<sup>65</sup>

That means that approximately \$50 billion more must be spent by the federal government, alongside current levels of required state matching funds, to bring our roads and bridges up to a state of good repair. Given that CAP is also proposing increases in passenger rail and mass transit, which can be expected to modestly reduce the need for increased road capacity, we recommend an additional \$47 billion per year in combined state, federal, and local investment.

This level of increased investment is essential to improve mobility and increase public safety, but it will not significantly reduce congestion because our urban population centers are growing dramatically. As Tom Donahue, president and CEO of the U.S. Chamber of Commerce, noted in testimony before the Senate Committee on Environment and Public Works:

*The 100 largest metropolitan regions in the U.S. account for just 12 percent of the land, but contain 65 of the population, 69 percent of all jobs and 70 percent of the nation's GDP. The largest 100 metropolitan areas also serve the majority of our transportation activity, handling 72 percent of all foreign seaport tonnage, 79 percent of all U.S. air cargo tonnage, 92 percent of all air passenger boarding and 95 percent of all public transit passenger miles.<sup>66</sup>*

These nation's largest 20 urban regions may grow by at least 60 million people between now and 2040.<sup>67</sup> That means we need to proceed with a smart infrastructure improvement plan to expand transit, regional rail and commuter rail options, and safeguard the economic vitality of these business centers.

We propose a significant and sufficient new level of investment in road and bridge investments to ensure safer and more efficient travel. But the most systemic way to dramatically reduce congestion and address the inevitable growth in large mega-regions is to ensure we expand the reach of competitively priced transit and passenger rail options, and sufficient freight rail capacity.

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#### Mass transit: \$15.7 billion

To ensure our current mass transit systems can operate in safe and efficient working order, the Federal Transit Administration estimated in 2008 that somewhere between \$16.7 billion and \$27.2 billion per year in capital improvements are needed to improve the safety and efficiency of the existing mass transit systems.<sup>68</sup> The low end of this range accounts for improvements needed to maintain current mass transit lines. Adjusting these estimates to 2010 dollars indicates that to meet these needs, spending would need to grow to \$18.2 billion annually while the upper range includes the capital costs for economically justified capacity expansion would require spending to rise to \$29.6 billion. The CAP plan adopts the upper bound estimate because that level of investment has the potential to reduce congestion in large population centers.

Like road improvements, funds for capital improvements to mass transit are derived from the Federal Highway Trust Fund and concurrent state and local matches. In FY 2010 the sum of federal, state, and local capital investment in transit was approximately \$13.9 billion.<sup>69</sup> That means that the upper limit of economically justified investment would require \$15.7 billion more than what is currently being spent.<sup>70</sup>

#### Passenger rail: \$10 billion

Federal general fund resources provided \$736 million in capital funds for Amtrak in FY 2010. These funds are not sufficient to meet the current backlog of more than \$8.8 billion in capital improvements needed on Amtrak corridors, let alone the costs of shifting any rail corridor in the nation to high-speed rail. The first federal foray into funding high-speed rail made \$12.5 billion in special high-speed rail grants available in 2009 and 2010 through the Recovery Act.

Even this level of funding is insufficient. The cost of building true high-speed rail permitting speeds of 150 mph to 200 mph is complicated because in addition to

laying new rail, excavating new tunnels, electrifying rail lines, and expanding stations, new rail engines and cars have to be purchased. In the Northeast Corridor, for instance, Amtrak estimates the cost of putting these basic components of high-speed rail in place to be \$117 billion over 25 years or slightly less than \$5 billion per year in capital costs.<sup>71</sup>

In addition to the Northeast Corridor, in response to state or regional interest, 10 other corridors are designated as potential high-speed rail corridors by the Department of Transportation. This paper is not proposing high-speed rail funding reach the level necessary to enable all of these corridors to proceed as high-speed rail corridors. Instead, we urge that a rigorous, federally directed planning process commence to evaluate the costs, benefits, and financial feasibility for additional corridors beyond the Northeast line between Boston and Washington, D.C.

This research is likely to conclude that incremental measures to increase speeds approaching 110 mph to 150 mph on some of the corridors can be justified, while other corridors, such as the Northeast Corridor, as well as sections of the California and Florida rail corridor, or the rail line between Chicago and St. Louis may warrant the most intensive level of capital improvements to permit much higher-speed travel. Without reliable estimates on the costs for rail corridors that should be high speed or “higher speed,” we suggest that at a minimum an amount comparable to what we know is necessary for the Northeast Corridor be available for other passenger rail corridor improvements.

As such we suggest that \$10 billion annually can permit significant progress to be made in improving rail speeds, which would ensure funding for the improvements to the Northeast Corridor with the balance of funds available for meritorious improvements to other rail corridors.

### Airports: \$7 billion

Through the Federal Aviation Administration’s Airport and Airway Trust Fund, the federal government invested \$15.5 billion in airport improvements in FY 2010. Trust revenues come from a basket of federal taxes and fees levied on passenger and airlines. In 2010, \$5.3 billion in supplemental general fund revenues were added to the Trust Fund in order to meet congressionally authorized expenditures of \$15.5 billion.<sup>72</sup>

## NextGen funding

In addition to the traditional capacity and expansion needs of our airports, the Federal Aviation Administration expects to spend approximately \$20 billion to build a state-of-the-art air traffic control system known as “NextGen” by 2025.<sup>74</sup> NextGen provides critical new infrastructure capacity to our airport safety systems. The FY 2010 appropriations for NextGen were \$868 million.<sup>75</sup> Although this basic technology upgrade of our air traffic system could be reasonably considered as a critical element of our air travel infrastructure, we have not factored these capital costs into our infrastructure funding proposal because, to date, these facility improvements are paid for with general revenues.

That’s not enough. The FAA estimates that the capital funding distributed via the Airport Improvement Fund needs to grow by \$7 billion on top of the \$15 billion that was appropriated for 2010 for a total of \$21.5 billion annually for at least the next five years.<sup>73</sup> (also see accompanying box about NextGen funding)

### Freight rail: \$1.4 billion

In FY 2009 and 2010, the Transportation Department released \$473 million in one-time freight rail improvement grants in the Transportation Investment Generating Economic Recovery, or TIGER grant program.<sup>76</sup> These competitive grants enable freight operators to repair and expand their rail lines, address barriers to speedy rail service such as limited tunnel heights and width and problematic road crossings, and construct intermodal connections with ports and key warehousing locations. These one-time grants were a good start to what is needed to improve the efficiency and expand the use of freight for goods movement.

In addition, on an annual basis the SAFETEA-LU act includes an annual appropriation of \$220 million for rail crossing grade improvements.<sup>77</sup> And in 2010 the Railroad Rehabilitation Financing Improvement loan program awarded one loan of \$17 million for freight rail improvements.<sup>78</sup>

To put those investments in context, consider that our national freight rail infrastructure needs an infusion of somewhere between \$175 billion to \$195 billion over the next 20 years to meet its expansion and repair needs, and at least maintain the current share of goods movement via freight rail, according to the American Association of State Highway Officials.<sup>79</sup> Larger freight operators with annual revenues of more than \$250 million and the smaller operators (known as Class 1 railroads<sup>80</sup>) predict that they can fund all but approximately \$53 billion of these improvements from their own resources.<sup>81</sup>

A separate study released by the American Association of Railroads, “National Rail Freight Infrastructure Capacity,” found that the cost of addressing existing needed improvements to smaller branch lines—clearance improvements such as elevating bridges and widening tunnels, so that double-stacked rail cars can pass

safely—is approximately \$34 billion over 20 years. These two studies suggest that public investment should be at least \$34 billion in the next 20 years of the needed freight rail improvements to optimize the use of freight rail for goods movement.

Where there are clear local economic development benefits beyond those which accrue to the operators, such as rail freight connections to growing warehousing centers, or evidence that clearance improvements associated with other infrastructure such as raising bridges and widening tunnels will increase goods shipped by freight rail, then we believe the federal government has an additional investment role to play.

As such, we propose an increase in public investment of \$1.4 billion per year to address clearance and branch line issues and invest in warehousing and special spurs where such investments will promote economic development for communities.

#### Ports: \$1 billion

Capital improvements to our ports are primarily paid for by port operators. From 1988 to 1998 port investments totaled \$10.9 billion, rising from \$500 million during 1988 to \$1.4 billion in 1998.<sup>82</sup> The 55 port authorities indicate that they plan to spend a total of \$9.1 billion over the next five years, an average of \$1.8 billion per annum.<sup>83</sup> These anticipated port investments will be a mixture of private, state, and local funds. The investments are used to pay for warehousing, offloading equipment, as well as intermodal improvements to connect to rail and roadways. In addition, nonfederal funds must cover a portion of the contribution toward channel deepening, when needed.

The federal role in maintaining ports' channel depth is assigned to the Army Corps of Engineers. To pay for the Corps' port dredging, import taxes are collected on goods that flow into the United States via the ports. These taxes are deposited in the Harbor Maintenance Fund. In 2010 the fund dispersed \$852 million, of which slightly more than \$700 million was used for capital improvements. It ended the year with a balance exceeding \$6 billion.<sup>84</sup>

U.S. ports face a \$2 billion backlog in needed capital improvements, according to the Army Corps of Engineers.<sup>85</sup> There are two reasons for this backlog. First, insufficient funds are available to maintain existing port depth. The top 59

ports with tonnage greater than 10 million tons a year can use 50 percent of their channel capacity 95 percent of the time. Of that, the United States sets \$832 million aside for coastal navigation—only \$706 million is going toward maintaining the channel depths of more than 929 coastal ports. Of the 446 ports that requested maintenance funding, we will only be able to fund 154.<sup>86</sup>

Second, more than 15 major ports are seeking to deepen their channel depth to at least 45 feet to handle modern cargo vessel traffic over the next 20 years. Some of these projects are authorized and programmed for construction; others are in various stages of planning, engineering, or design.<sup>87</sup>

Of these ports are East Coast ports that are relying on the Army Corps of Engineers to cover a portion of their dredging costs in order to prepare for the large cargo vessels that will begin traversing the Panama Canal after the deepening to 60 feet is completed in 2014. Yet no federal agency or independent entity has evaluated the projected demand at East Coast ports following the Panama Canal expansion. Once such analysis is complete, the level of funding to the Corps for dredging the targeted ports may require that the user fee schedule for the Harbor Maintenance Fund be adjusted to generate revenues sufficient to meet user needs on both coasts.

In addition to waterside improvements, significant landside improvements can make our ports operate more efficiently and enable greater throughput. Unfortunately, existing federal law restricts the use of the Harbor Maintenance Fund to waterside improvements only. Testifying before the House Infrastructure and Transportation Committee, Paul Anderson, chief executive officer of the Jacksonville Port Authority, stressed:

*Faced with diminishing budget opportunities and great needs, I believe it is time for a shift in our federal business model with regard to investments in new port terminals and intermodal facilities. I cannot overstate the importance of integrating ports into the U.S. transportation system. Our nation must develop efficient, modern intermodal connections, so that direct port-rail and port-highway corridors can increase the flow of goods to and from our nation's gateways. Congress can assist with this effort by including maritime title in transportation reauthorization legislation, which will recognize the importance of inter-modalism to our nation's transportation network.<sup>88</sup>*

## Inland waterways: \$150 million

The Army Corps of Engineers is charged with maintaining our inland waterways and they do so with funds derived from operator fees that are deposited into the Inland Waterways Trust Fund. In FY 2010, \$176 million of those funds were allocated for capital improvements. Of all elements of our infrastructure, inland waterways have the greatest reliance on federal general fund revenues to meet operation, maintenance, and capital improvement costs, with 80 percent to 85 percent of all spending on waterways derived from the federal government.<sup>89</sup> To cover their share of costs, inland waterway users pay a 20-cent gasoline tax that is deposited into the Inland Waterway Trust Fund.

Although Army Corps data show that traffic on the waterways has remained flat in recent years, the Department of Transportation estimates that cargo traffic on inland waterways is likely to grow by 75 percent in the next 28 years.<sup>90</sup> To ensure efficient movement of goods on inland waterways, the Army Corps of Engineers estimate that the aging lock system requires approximately \$150 million more a year than is currently being spent.<sup>91</sup> We recommend that these funds be made available on an annual basis.

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## Water: \$2.7 billion

The Environmental Protection Agency estimates that \$642 billion—\$32 billion per year—needs to be invested to improve our drinking and clean water systems over the next 20 years to protect public health and the quality of our waterways<sup>92</sup>

Meanwhile, in 2007, total federal, state, and local government investments in capital improvements for water infrastructure were \$38 billion (this the latest year for which this comparison is available).<sup>93</sup> It's not possible to determine if the nation's recession reduced state and local water investments. But the 2007 data indicate a capacity for federal, state, and local government to invest at a rate that would appear to be larger than what is needed to close our infrastructure-funding gap. That isn't the case. The EPA survey demonstrates that a substantial portion of current capital expenditures are spent to meet water capacity expansion needs rather than the urgent system upgrades or repairs needed to guarantee the quality of our water.

Most water-related infrastructure improvements are paid for by building the capital costs into the water rates charged to local water system customers. But federal and state direct grants make it possible for water companies to invest in repairs and improvements needed to guarantee drinking and wastewater quality while shielding customers from covering the full cost of these projects. These grants totaled approximately \$3.4 billion in 2010, with the states providing 20 percent of the projects' funds.<sup>94</sup>

Although significant private capital is being spent to expand and upgrade water systems, older water systems that need the most expensive upgrades tend to have high concentrations of customers who cannot afford the rate increases necessary to cover the full cost of the repairs and improvements. Even in localities where customers can afford to absorb rate increases, the political obstacles associated with rate increases imposed by public water authorities makes it especially hard for these water companies to finance long-needed repairs and improvements.

Absent more public funding, there is little that can be done to resolve the affordability or the political challenges that make it difficult for older water systems to do what is necessary to ensure their water systems deliver clean safe drinking water and operate wastewater systems that meet national safety standards. The states demonstrated the capacity to expand lending to accommodate the \$6 billion in additional funding (over two years) under the American Recovery and Reinvestment Act.<sup>95</sup> For this reason, we recommend a more calibrated annual increase of \$2 billion or a 60 percent increase in annual federal funding.

This increase should continue to trigger the 20 percent matching requirement, which will bring the total annual new investment to \$2.4 billion. Later in this paper we will outline additional reforms that will boost lending capacity of state revolving loan funds. These reforms, if adopted, are projected to reap about \$300 million in additional annual investment capacity.

In sum, a total of \$2.7 billion will be leveraged by the annual federal funding increase, including the match and the reforms we propose. We recommend this increase in investment be targeted to meet the needs of older water systems where the burden of paying for improvements is shared with water users and the federal government to the degree that the customers can afford to contribute to cover the cost of these improvements.





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## Dams and levees: \$1 billion

At least 4,000 federal, state, and local government dams are in a state of disrepair.<sup>96</sup> Those that are in need of the most urgent repairs are categorized as “high-hazard” dams because a breach in these dams poses a threat to human life; there are slightly more than 2,000 of dams that need repair in this category.<sup>97</sup> The Army Corps of Engineers estimates that the cost of repairing all high-hazard dams is \$16 billion, which accounts for \$8.7 billion in needed repairs for publicly owned dams and the balance for dams held in private ownership.<sup>98</sup>

Although it may be obvious, it’s important to point out that the failure to appropriately maintain levees creates enormous financial exposure for the federal government. For instance, the Corps had to spend \$8 billion in levee and related repairs to address damage caused by Hurricane Katrina. In sum, the total cost of

the economic damage caused by the failed levees in Louisiana is estimated to be approximately \$800 billion on top of the incalculable cost of the 1,800 lives lost in the Katrina-related floods.<sup>99</sup>

Hurricane Katrina illustrated the risk to the nation presented by weak levees. Our nation's levees are estimated to traverse 100,000 miles.<sup>102</sup> Most of these levee systems were built and are maintained by state or local governments. Approximately 14,000 miles of levees are enrolled in the Army Corps of Engineers Levee Safety program.<sup>103</sup> According to the Army Corps of Engineers:

*The USACE Levee Safety Program includes levee systems operated and maintained by USACE; levee systems typically constructed by USACE but operated and maintained by a local sponsor; and levee systems constructed, operated and maintained by non-federal agencies and accepted into the USACE Rehabilitation and Inspection Program.*<sup>104</sup>

To gain a concrete understanding of the levee problems, in 2007, Congress created the National Committee on Levee Safety, which in 2009 proposed appropriations of nearly \$700 million annually to support levee repairs and a one-time inspection effort estimated to cost \$125 million. This recommendation was not acted on.

The 2010 appropriations for Army Corps of Engineers dam and levee improvements were slightly more than \$1 billion.<sup>100</sup> In addition, the Federal Emergency Management Agency made \$7.3 million available to states to support state dam safety efforts.<sup>101</sup>

Based on current spending levels and the available public data on the repairs needed for our dams and levees, this paper proposes that total public spending grow by at least \$1 billion a year to bring these critical infrastructure elements into good repair. Of these funds, we suggest \$250 million be spent for a one-time cost of an inventory of the need for repair with the balance of funds used to repair the levee systems.

Another \$500 million should be granted to states annually, which they must match at a rate of 50 cents to each federal dollar, for state and local public high-hazard dam repairs or breaching, and another \$250 million should be directed to repair federally owned high-hazard dam repairs or breaching.

Because more than a third of all dams were constructed for recreational purposes, where the recreational use has diminished, it may make more sense to breach a dam

than repair it. There may be compelling environmental reasons to breach some existing dams as well. The Federal Emergency Management Agency and the U.S. Army Corps of Engineers should be required to undertake a review of where breaching is advisable. Likewise, federal funds allocated to states for high-hazard dam repairs should require breaching where economic or environmental factors warrant it.

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## Energy: \$4 billion leverages \$40 billion in investment

In order to reduce carbon dioxide pollution, reduce energy costs, and strengthen our national security, significant investments must be directed to creating a modern energy infrastructure that can generate renewable energy, transmit the full menu of renewable energy to homes and workplaces, and rely on a smart grid to deliver power efficiently. This is a daunting challenge. It took more than a century to build our fossil-fuel-based electrical grid. And we completed the build out of that grid more than 40 years ago.

Maintaining the existing system and making modest changes to this aging and outmoded grid will require at least \$1.5 trillion in improvements by 2030. These costs will be financed by the private sector and passed along to ratepayers in their electricity bills. These upgrades include:

- \$505 billion for new generation, assuming no changes in a national carbon policy or forecasted energy-efficiency improvements
- \$298 billion for the nation's transmission system
- \$582 billion for distribution systems
- \$85 billion for advanced metering infrastructure and energy-efficiency/demand-response programs<sup>105</sup>

But we need to invest much more to fund the shift in the sources of energy used to power our communities that will enable us to avoid the most catastrophic effects of climate change. We estimate that an additional \$2.5 trillion is needed for this purpose over the next 30 years. This level of investment will permit us to reach acceptable levels of CO<sub>2</sub> emissions by 2040.

In 2010 federal investments aimed at accelerating the ability to generate electricity from alternative energy sources, distribute and transmit alternative energy, and build out the smart grid totaled \$8.5 billion. Included in these federal expenditures were \$1.8 billion in tax expenditures, \$4.2 billion for grants in lieu of tax

breaks, and of the \$1.2 billion in credit subsidy costs for energy found in this report's analysis, as well as \$523 million in credit subsidy costs for loan guarantees specifically aimed at solar, wind, geothermal, and transmission infrastructure.<sup>106</sup>

This high level of federal spending was due in large measure to the short window in which investors could exchange the value of production and investment tax credits for direct grants. The other federal programs that made 2010 a banner year for clean energy investment come with expiration dates. The production tax credit expires in December 2012, the investment tax credit in 2016, and the most valuable elements of the Energy Department's loan guarantee program expired on September 30, 2011.

To meet the ambitious energy infrastructure goals, CAP estimates that the federal government needs to mobilize \$15 billion in investment in our clean energy generation sector each year through 2040.<sup>107</sup> Federal loans or loan guarantees for financially viable projects would put the least pressure on the deficit, requiring only \$1.5 billion in federal credit subsidy costs.

In addition, CAP estimates that nearly \$25 billion annually is needed in new investment in the energy transmission, distribution, and smart grid capital investments. Here too, the use of loans is an approach that can be employed to reduce the need for substantial federal outlays.

The menu of loans, loan guarantees, grants, and tax expenditures that were in place in 2010 offers a useful template for how to continue to stimulate nearly this level of investment. Other configurations of loans, grants, and tax expenditures may be workable as long as the sum of federal investment (loans, grants, and tax expenditures) is \$4 billion per year to leverage at least \$40 billion in private investment.<sup>108</sup>

Included in this mix of federal incentives should be tax credits. Given the pressing need to ensure predictability in this new energy sector, tax credits for production or investment should be provided with at least a 10-year window to optimize private-sector activity.

Furthermore, the federal government may be able to offset some direct costs by establishing a national clean energy portfolio standard for electric utilities.<sup>109</sup> Twenty-nine states and the District of Columbia already have a mandate that sets forth the percentage of energy distributed from renewable energy sources. In

these states, utilities are permitted to recover some costs from their rate base and customer surcharges. Over time, a federal clean energy standard would establish the predictable demand needed to drive investment into building our renewable energy infrastructure.





## Our infrastructure funding proposal closing the gap

In sum, our analysis indicates that to bring America's infrastructure platform up to 21st century safety and use standards and meet our nation's economic needs, well-founded research points to the need for an additional \$129.2 billion in investment in the nation's public infrastructure annually. This level of investment has the potential to generate more than 2 million jobs, spur strong small business growth, and significantly improve our international standing as a nation that offers an efficient platform for goods movement and business operations.

We recognize that the increases in investment we propose cannot and should not happen overnight. To ensure the wise expenditure of these new investments, assuming that this increased level of investment is made possible for at least 10 years, we suggest that we achieve our desired level of federal appropriations over a three-year scale-up period. While the level of investment could grow 33 percent annually over the three-year period, it may make sense for some increases to be rolled out more quickly and others more slowly depending on the system capacity issues within each sector.

For instance, to estimate a schedule for annual demand for new resources, federal agencies can work with states to complete a survey of ready projects, labor shortages, and planning hurdles so that a carefully crafted funds release schedule can be created to ensure all federal funds are spent and not sitting idle.

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## Meeting the infrastructure imperative

**FIGURE 11**  
**Bridging the infrastructure gap with additional public and private resources**  
 \$129.2 billion in new sources of financing and funding for infrastructure

Sources of new investment capital	Amount
<b>Federal sources</b>	
Oil import fee	36.1
Ending oil subsidies	4.1
Updated user fees	8
Sub-total sources of revenues for direct federal spending	\$48.20
Expanded federal loan authority*	10
Total new federal investment	\$58.20
<b>Private investment</b>	
State match	11
<b>Total revenue</b>	<b>129.2</b>

\*Cost of loan capacity factored into the amount of additional federal revenues needed for infrastructure investments

Source: Center for American Progress calculations based on methodology detailed in the appendix

To meet reasonable infrastructure investment goals, we need to invest \$129.2 billion more than we currently do for each of the next 10 years. Reaching this level of investment will require reforms to the ways in which the federal government partners with private investors as well as the collection of new taxes and fees that maintain the strong reliance we have on a user pay system to fund our infrastructure. In this section we outline our proposal for bridging the infrastructure funding gap. (see Figure 11)

In this section we review CAP’s proposal for how to pay for an increase of \$129.2 billion in annual infrastructure spending. We begin our review with the federal actions necessary to trigger the private financing that is essential to this plan because it accounts for nearly 50 percent of the annual increase in capacity for investment. We then discuss the specifics of our tax increase, tax break sunset, and user fee increases necessary to fund this plan.

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## Mobilizing private investment for upfront capital

Financing projects with private capital requires that the federal government change how it operates. In the following section



we review the key components that taken together can tap greater levels of private investment than are currently being invested in U.S. infrastructure projects. In addition, these components will ensure infrastructure projects that are suitable for debt financing can more readily pay back these investors over time.

### Remove obstacles to private financing of large-scale projects by forming a flexible federal investment intermediary: A National Infrastructure Bank

Policymakers are increasingly looking to the private sector to help finance large-scale infrastructure projects. The formation of a National Infrastructure Bank is essential to making a rational, efficient, and more transparent environment for private investors to participate in rebuilding our public assets. Large infrastructure investors are putting their capital to work in other countries where regional, publicly chartered investment banks such as the European Investment Bank make the process of identifying and investing large-scale financially viable projects routinized, predictable, and clearer than in the United States.

For instance, in 2010 the European Investment Bank invested more than \$5 billion in high-speed rail projects; \$3 billion in road and bridge improvements; \$12 billion in sustainable urban transit including light rail, buses, and subways; and \$134 million in inland waterway improvements. It's a major investor in energy infrastructure lending more than \$13 billion for alternative energy generation and transmission projects. These European Investment Bank investments are on top of the investments made individually by the individual nation states in the European Union.<sup>110</sup>

President Obama; Sens. John Kerry (D-MA), Kay Hutchinson (R-TX), and Mark Warner (D-VA); and Rep. Rosa DeLauro (D-CT) are champions for different approaches to forming a National Infrastructure Bank.<sup>111</sup> The key attribute of the Kerry/Hutchinson/Warner Bill is that it provides the largest pool of financing capital, proposing to enable \$30 billion in federal loans or loan guarantees over 10 years. These funds are expected to leverage \$130 billion in private or nonfederal investment. Their proposal requires that 95 percent of the value of projects financed must be made in the form of loans with 5 percent reserved for subsidizing projects that are important but not able to fully repay their loan obligation without some modest federal assistance. Rep. DeLauro's proposal has the broadest scope permitting investments in water, energy transportation, and telecommunication infrastructure.

Ultimately if Congress has an interest in funding large-scale infrastructure improvements with limited federal support, there needs to be a financial intermediary that can carefully review the merits and financial feasibility of large-scale projects. This is especially true where integrated infrastructure projects are undertaken, such as new road projects that are built in tandem with rail, new freight projects that are built in tandem with port expansions, or new water projects that generate or conserve energy. Projects of this sort need a more robust federal “home” so that private financiers and state and local agencies will not have to make redundant pitches to federal agencies seeking support. A National Infrastructure Bank would be an ideal venue for those more cutting-edge and efficient ways of building our infrastructure.

This bank could identify the most critical multistate efforts and forge partnerships that leverage federal, state, and private funds to build the projects where the need is the greatest and the financial return is clear. A National Infrastructure Bank, however, needs to be accountable to Congress and the executive branch; its investment strategy must be aligned with the goals and strategies as set by Congress, and the implementation of that strategy must be closely coordinated with the executive branch and its relevant infrastructure agencies.

If this is not created, then CAP recommends the creation of a “green bank.” This entity would be charged with creating a coordinated approach to energy technology innovations, employing a full menu of financial tools to enable private-sector investors to partner with the government and leverage \$40 billion in private investment in financially viable energy infrastructure improvements.

### Increase federal lending capacity for infrastructure

Ideally within the structure of a National Infrastructure Bank, the federal government will expand the transportation and energy loan capacity by providing at least \$5 billion in credit subsidies annually. In the short term while the benefits of a bank are being debated, Congress should expand the Department of Transportation’s TIFIA loan program to at least \$1 billion so that it can support \$10 billion in federal loans annually that will leverage \$20 billion in privately financed matching funds.

Likewise, at a minimum the Department of Energy’s Section 1705 loan program should be able to support \$4 billion in lending authority and annually lever-

age \$40 billion in private investment in clean energy infrastructure. If Congress approves the creation of a National Infrastructure Bank, then these tested loan programs and their current levels of funding should fall into its ambit.

By expanding the capacity for federal infrastructure lending, CAP's analysis suggests that we can tap an additional \$70 billion in joint public/private-sector-financed infrastructure projects. Here is how we come to that conclusion.

With respect to transportation loans, the TIFIA loan program received applications that exceed the program's loan capacity by at least \$10 billion in the FY 2009, 2010, and 2011 loan solicitation cycles. While each of these projects may not be feasible, the annual demand for more than \$10 billion in federal loans indicates that there is at least \$20 billion worth of large-scale transportation projects with ready private investors who are finding the necessary \$2 investment match for every \$1 of federal loan investment.<sup>112</sup>

To achieve the desired level of private infrastructure financing proposed in this plan, we recommend that the TIFIA credit subsidy be increased to approximately \$1 billion annually. Doing so will enable approximately \$10 billion in federal loans for transportation projects annually. With that level of federal lending authority, assuming the TIFIA matching requirements stay in place, at least \$30 billion annually in publicly and privately financed large-scale transportation projects can proceed.

The Department of Energy's two-year-old 1705 loan program expired on September 30, 2011. Federal loans and loan guarantees play a critical role in boosting private-investor confidence and participation in clean energy markets by mobilizing \$36 billion in investment in less than two years. Although the program has suffered two defaults with improved oversight and due diligence, a federal clean energy loan program is a much less expensive option for building out our energy infrastructure than a direct federal grant program.

The energy infrastructure investment landscape is where limited federal investments can leverage sizable private investment. As such, this program should be extended for at least 10 years. CAP's analysis indicates that with \$4 billion annually in federal loan supports to tax benefits that offer the same benefit to investors, \$40 billion in private investment in clean energy infrastructure can be mobilized annually.<sup>113</sup>

## Make user fees more available

Private investors will not pay for projects the way federal grants do where funds are put out without an expectation of repayment. Therefore, a federal commitment to attract private investors must be linked with evidence of the will to impose the user fees or taxes to pay back investors over time. In addition to making it easier for private investors to work with the federal government, there are several other essential ingredients for increasing the role of private capital to finance more transportation improvements.

A federal  
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These changes include an overhaul of the federal tolling policy. If the federal government were to uncap the number of federal highways that could be tolled, states and localities could work with private investors and the federal government to finance road improvements and pay back the investors with dedicated toll revenues.

The imposition of tolls is complicated from a policy and implementation perspective. Credible estimates, however, suggest that expanded use of tolling could generate at least \$100 billion in new revenues annually.<sup>114</sup> To be sure, it's unlikely that tolls will be applied to every highway that has the potential to generate large toll receipts.<sup>115</sup>

A recent report from the Heritage Foundation points out that:

*... policymakers should recognize that public private partnerships are not the solution to the transportation infrastructure investment gap that threatens to undermine commerce in the United States. There are too few financially viable projects to meet the national need for new highway capacity and to modernize existing roads. No amount of enabling legislation will bring private investors into projects that are not financeable, and very few highways could support themselves on tolls alone.<sup>116</sup>*

Nevertheless, expanding the use of toll revenues available to pay back debt-financed projects is one critical element of a well-funded and highly functional surface transportation system.

As such, federal loan and credit enhancement programs should be scaled up to support new debt-financed projects that are able to cover the bulk of their costs with dedicated toll revenues. In addition, some states and localities are looking to non-roadway revenues to support financing costs including dedicated sales tax revenues

or committing to what are known as “availability payments,” which are long-term agreements that pledge the use of general revenues for annual loan repayments.

### Create bonds that are long term and attractive to international and domestic investors

Tax-exempt municipal bonds are the primary way that state and local governments finance infrastructure investments with private capital. Because the interest on these bonds is exempt from federal income taxes, private investors are willing to purchase them at reduced interest rates, lowering the cost of borrowing for state and local government issuers. In this sense, the tax exemption is an implicit federal subsidy for state and local government infrastructure projects. Although these bonds are widely used to finance infrastructure improvements, their short maturity term of typically less than 10 years makes it difficult and cumbersome to use them to finance large-scale projects that require maturity horizons of 20 to 30 years.

Moreover, these bonds are only attractive to purchasers who have state tax liability; otherwise the tax exemption is of little value to the investor. In addition, tax-exempt bonds are an inefficient and costly federal subsidy because 10 percent to 20 percent of the subsidy intended for issuers unintentionally leaks to individual bond buyers in upper income tax brackets.<sup>117</sup> This means the cost of the subsidy to the federal government exceeds its benefit to state and local governments.<sup>118</sup> It would be more efficient to make direct subsidy payments to issuers to spend on infrastructure projects.

Given these problems, we propose strengthening the municipal bond market and expanding the capital available for infrastructure investment by making Build America Bonds permanent and by creating private activity tax-credit bonds. We present each of these recommendations in turn.

#### *American infrastructure bonds*

Created by the American Recovery and Reinvestment Act of 2009, direct-subsidy Build America Bonds were taxable bonds for which the federal government directly subsidized a portion of the issuer’s interest costs. The Treasury Department estimates that state and local issuers saved \$20 billion in net present value by issuing Build America Bonds, lowering the cost of capital for important infrastructure projects.<sup>119</sup>

What's more, Build America Bonds opened up our domestic infrastructure financing sector to more investors. The historic reliance on tax-exempt debt for infrastructure projects meant that only a small pool of individual investors, to whom a state income tax exemption was valuable, would purchase the bonds. Build America Bonds offered a uniform benefit to institutional investors whether they were in state or out of state, bringing new bond buyers into the infrastructure market. The benefit of a larger pool of bond buyers is simple supply and demand. The more purchasers there are, the lower the interest rate necessary to attract investors, driving down the overall cost of borrowing for infrastructure projects.

In 2010 Build America Bonds mobilized \$55 billion in private investment to new infrastructure projects. Yet the expiration of the program at the end of 2010 is one reason that the level of bond-financed infrastructure investment declined significantly. In the first quarter of 2011, total bond issuance was down 54 percent from the previous year and in the second quarter total issuance was down 31 percent from the same period for 2010.

More importantly, long-term bond issuance is was down 42.9 percent in the first six months of 2011, compared to the first six months of 2010. Specifically, transportation was down 51.6 percent, electric power was down 71.9 percent, environmental facilities were down 78 percent, and utilities were down 39.7 percent.<sup>120</sup> While the weak economy was also a factor in the reduced level of bond-financed transactions, the termination of the Build America Bonds also played a significant factor in the decline in long-term issuances.

Creating a new American infrastructure bond program with the attributes of the Build America Bond would provide crucial support for infrastructure investment by growing the municipal bond market and resolving the inefficiencies of the tax-exempt market.

#### *Establish infrastructure private activity tax credit bonds*

Currently state and local governments can issue tax-exempt private activity bonds to finance private projects such as airports, privately controlled transportation projects. These bonds are subject to the alternative minimum tax. Congress restricts private activity bonds by implementing an annual state-by-state volume cap on new issuances. Private developers, municipal and state authorities, and some public officials have called for the removal of the private activity cap for select infrastructure projects.<sup>121</sup>

But simply allowing the supply of private activity tax-exempt bonds to grow unrestrained will result in the same inefficiencies that exist in the broader tax-exempt infrastructure finance bond market. Moreover, only \$4.5 billion of the current federal allocation of \$15 billion in Transportation Private Activity Bond capacity has been tapped after three years.<sup>122</sup> Of course, the newness of this federal allocation contributes to its underutilization, but it may also suggest that traditional private activity bonds are not powerful enough to drive infrastructure investment.

A better approach would be to establish a new limited class of private activity tax-credit bonds that pays institutional investors interest plus a tradable federal tax credit. These bonds could be used to attract investors in airports, ports, toll roads, private water projects, and freight rail improvements. With a tradable tax credit, investors who don't have a tax liability, including international investors, could purchase the bonds and sell their credits.<sup>123</sup>

The low-income housing tax credit is a tradable credit that has successfully attracted corporate investors to invest in the low-income housing development market. Over a 20-year period, from the program's first transaction in 1987 to 2007, the estimated cost to the U.S. Treasury for this credit has gradually increased to \$4 billion annually. The average tax credit is equal to 30 percent of the total investment. That means that at least \$12 billion in private investment is mobilized for each year that \$4 billion in tax credits were claimed. Due to the tradable nature of the credits, in 2007, nearly 90 percent of the credits were claimed by corporations who purchased the credits to lower their federal tax liability.<sup>124</sup> Since the historic tax credit program was launched in 1976, \$33 billion in private investment made it possible to preserve 32,000 historic building units while ensuring their productive reuse, including the creation of 180,000 housing units.<sup>125</sup>

Sens. Ron Wyden (D-OR) and John Hoeven (R-ND) in July 2011 proposed a novel tax credit bond approach that uses federal resources to cover the cost of state issuance of tax credit bonds. The Transportation and Regional Infrastructure Project Bonds, known as TRIP Bonds, would provide each state with up to \$1 billion in bond-financing authority over a six-year period.<sup>126</sup>

The money raised by these bonds could be directed by a state to any new surface transportation project, but investors will be repaid through approximately \$900 million from existing federally collected customs duties (duties applied to valuable items brought into the country). This money would be redirected to a

newly created federal TRIP Bond Trust Account and invested for the life of the bonds (30 years). The customs duties and the annual interest deposited by the TRIP Bond Trust Account would be used to pay back the \$50 billion of principal payments on the bonds. Instead of paying interest on the bonds, the federal government would provide a tax credit in lieu of interest to investors.

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## Expand current federal tax strategies that mobilize private investment in energy infrastructure

When it comes to energy, the private sector historically shoulders the cost of building our infrastructure and should continue to do so. But because of perceived market risks in the alternative energy sector, the federal government can increase the confidence of investors and spur their investment by offering tax credits and direct lending at subsidized interest rates.

Unfortunately, in this sector, federal incentives are generally temporary, which makes some private investors skittish. The production tax credit is due to expire in December 2012 and the investment tax credit expires in 2016. For this reason, both tax credits need to be extended for at least 10 years.

Increasing the degree to which infrastructure improvements are paid for over time will permit us to complete more projects in the short term. It also means that we must have sufficient direct user fee collections and public sources of revenue to pay back the financing or debt used to build the project.

In addition, it is not prudent to finance every infrastructure project. When using debt to stretch out the cost of improvements over time, the cost of a project is increased significantly to both account for the interest on the debt and, where necessary, a return on investment for private investors. As a result, financing of infrastructure should be a method employed to help complete expensive needed projects that would be too burdensome to pay for upfront.

Other public improvements can be and should be paid for with federal and matching local government grants. The following section reviews the sources of funds we propose be tapped to support grants as well as to pay back investors for necessary projects that are financed and for which user fees cannot support the full cost of repayment.





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### New sources of federal revenues for infrastructure

In order to pay for \$129.2 billion in new infrastructure projects on an annual basis, this plan assumes that the federal government will need to make \$5 billion in credit subsidies or equally powerful tax benefits, and \$10 billion in new federal loan or loan guarantee authority. Doing so will attract at least \$60 billion annually in private-sector financing for infrastructure improvements.

The balance of the needed investments will need to be funded directly by federal and state matching resources. Federal funds account for \$48.1 billion per year in new infrastructure spending. To generate those new revenues we propose:

- An oil import fee: \$36 billion
- An end to oil industry tax breaks: \$4.1 billion
- An increase in user fees: \$8 billion

We suggest this approach because this approach to taxes is more aligned with our nation's energy goals. Moreover, this approach continues the strong user pay model for funding our infrastructure capital investments. So let's now consider each of these revenue components in turn.

*Impose a \$9.6 per-barrel fee on imported oil: \$36 billion*

Since 2008 federal gas tax revenues deposited in the Federal Highway Trust Fund have failed to keep pace with congressional authorizations for road, bridge, and transit projects. In large measure, the shortfall is due to three factors:

- Failure to index the gas tax to the rate of inflation
- Reduced driving due to high fuel prices
- Increased vehicle fuel efficiency

That resulting shortage required Congress to enable four consecutive general fund contributions totaling \$35 billion to cover the difference between dedicated Federal Highway Trust Fund revenues and appropriations from FY 2008 through FY 2011.<sup>127</sup> The Congressional Budget Office now estimates that just to maintain current levels of spending through 2020, at least \$12 billion more in dedicated revenues must be found to keep the Federal Highway Trust Fund in balance.<sup>128</sup>

But even if existing funds can be identified, the current level of spending is not sufficient to meet the needed level of infrastructure investment. We must consider new revenue sources. One way would be to raise the federal gas tax rate. This rate was set at 18.4 cents per gallon in 1993. Had the tax rate been indexed to inflation since 1993, the rate in 2011 would be 25 cents per gallon and the Highway Trust Fund would have nearly \$10 billion more revenue available.<sup>129</sup> But it would be exceedingly difficult to garner political support for a gas tax increase.

Another way to raise new revenue would be through a carbon tax. In CAP's plan for balancing the federal budget, "Budgeting for Growth and Prosperity," we proposed the establishment of a price on carbon instead of continuing to rely on a gas tax.<sup>130</sup> A carbon tax would promote energy conservation, increase demand for cleaner fuel and sources of electricity, and generate new revenue to support infrastructure improvements that further the nation's environmental and energy independence goals. These are sound reasons for shifting from a gas tax to a carbon tax as a means of funding energy generation and other infrastructure projects.

But waiting for Congress to adopt a carbon tax is untenable in today's political climate.

So we propose the imposition of a \$9.6 per-barrel fee on imported oil. President Gerald Ford first proposed this type of tax in 1975 when he informed Congress of his intent to impose a \$3 per barrel tax on all imported oil.<sup>131</sup>In today's dollars, that rate would significantly eclipse the reasonable fee of \$9.6 per barrel we propose. This fee will generate an average of \$36 billion per year.<sup>132</sup>

In addition to generating needed revenue, this approach will help align our federal tax and fee structure with our national goals. Political leaders from both parties have called for decreasing our reliance on foreign fuel.

#### *End tax breaks for oil exploration*

In the early 20th century, oil exploration was expensive and uncertain, which is why the federal government added special subsidies to the tax code to encourage companies to explore and develop for new sources of petroleum. CAP's early 2011 report, "Cut Spending in the Tax Code," points out that "two of the major subsidies in the tax code—expensing of intangible drilling costs and percentage depletion—were enacted in 1916 and 1926, respectively, at a time when oil exploration was a fledgling industry. Today, the oil and gas industry is a mature, extremely profitable industry enjoying windfall profits from oil prices exceeding \$100 per barrel" in 2011.<sup>133</sup>

Indeed, the federal Treasury loses \$4.1 billion a year due to the special tax treatment awarded 100 years ago to drilling activities.<sup>134</sup>Now the oil companies are earning record profits—nearly \$1 trillion in the last decade alone.

The combined value of ending tax breaks for oil exploration and taxing imported oil can generate approximately \$40 billion annually to invest in infrastructure. We recommend the creation of an infrastructure trust fund to receive and expend new revenues on our most pressing transportation, water, energy, dam, and levee needs. In authorizing this fund, Congress should set minimum annual allocations to the existing federal programs that already invest in these critical improvements.

The current system of two-year, annual, and unpredictable funding levels and authorizations makes it very difficult for states and private investors to prime the pump with qualified projects. For this reason we recommend that to achieve the employment and capital investment goals of this plan, this fund should be established with 6 to 10 years of budget authority.

### *Update our approach to user fees and excise taxes*

Updating and streamlining our system of infrastructure taxes and user fees is vitally important to financing major infrastructure improvements. These user fees are collected at airports, ports, and inland waterways. Let's look at each in turn.

**Airports:** The Airport and Airway Trust Fund receives money from passenger fees on airline tickets, cargo fees, and fuel taxes paid by commercial airlines and private plane operators (see chart on page 18). Currently the tax rate applied to airplane fuel varies by the type of craft and vehicle and the fuel it uses. In all cases the rate of the tax is lower than the diesel tax rate imposed on cars and trucks of 24.4 cents per gallon.<sup>135</sup>

In addition to the fuel tax, there are a series of taxes already imposed on commercial jets or their passengers so there may be some argument for a reduced fuel tax rate. But it is useful to note that commercial airline operators pay the full menu of taxes and fees; private jets operators do not, while also benefiting from a low fuel tax rate. Therefore, to spread the burden for maintaining and improving our airports and air traffic control and safety systems, at a minimum, these private operators should be paying a fuel tax rate consistent with the rate charged for road vehicles, which is 24.4 cents.

To generate sufficient revenue to meet our proposed increase in capital investment of \$7 billion per year, we suggest two changes to the current approach to generating these trust fund revenues. First we recommend increasing the international flight tax from \$16.30 per flight to \$30 per flight. This increase will generate approximately \$2 billion in needed revenues.

Next, in addition to collecting revenues based on the number of passengers, a takeoff and landing fee, which can be called an "operations fee," is another useful proxy for the cost of wear and tear on an airport. To be sure, commercial jets require larger runways, hangars, and passenger facilities than do small private planes, making the cost of building and maintaining an airport for commercial passenger use significantly higher than for private plane service.

As such we suggest the establishment of an operations fee that is graduated by the class of planes (private, small commuter, commercial) with a high-end rate of \$155 per flight per take offs or landings at an FAA-supported airport. Applying an operations fee in this range to the more than 48 million commercial, private- and corporate-plane takeoffs and landings in 2010, can generate as much as \$5 billion

a year.<sup>136</sup> Together these changes would raise sufficient resources to meet the \$16.5 billion in infrastructure improvements put forth by the FAA. Some of CAP's proposed federally imposed user fees could be reduced by permitting airports to charge higher passenger facility charges pledged as the revenue source for debt floated for capital improvements.

It's useful to point out that higher increases in an operations fee could also be used to address the shortfall in the Airport and Airway Trust Fund. For instance, the FAA relies on transfers of federal general fund revenues to meet its capital and operating expenses—to the tune of \$5.7 billion in 2010.<sup>137</sup>

Although the February 6, 2012, passage of the reauthorization of the Federal Aviation Administration included some reforms to the Essential Air Service program, additional resources could be redirected to meet the most urgent airport improvement needs by more substantive federal efforts to right-size and reform the program.<sup>138</sup> And it is important to note that the \$20 billion "NextGen" technology upgrade to our air traffic control is being paid for by revenue from the general fund. In 2010, \$876 million in federal general revenues were spent on the build-out of the NextGen system.<sup>139</sup> To relieve the general fund of both of these costs of paying for airport infrastructure would require at least \$7 billion more in air travel related user fee increases.

**Inland waterways:** Inland waterways rely more heavily on revenues from the general fund than any other type of transportation infrastructure. In general, at least \$500 million in operation and maintenance costs, or 100 percent of these costs, and half of capital costs are paid by the general fund every year, according to the Congressional Research Service.<sup>140</sup> The other 50 percent of capital costs come from fuel taxes imposed on barges and other vessels that use the waterways. The current 20-cent-per-gallon diesel fuel tax paid by barge and other vessel operators to the Inland Waterways Trust Fund generates nearly \$80 million a year.<sup>141</sup>

At a minimum, the rate of the tax charged on diesel fuel for barges and other vessels should be consistent with the diesel fuel tax rate paid by surface road vehicles. That would mean increasing the tax to 24.4 cents per gallon, which would raise \$20 million more annually.<sup>142</sup>

The Inland Waterway Users Board indicated their willingness to accept a six- to nine-cent increase in the fuel tax they pay toward the Inland Waterways Trust Fund, but only if the cost-sharing requirements for all dam repairs as well as lock rehabilitation projects under \$100 million are borne by the federal government.<sup>143</sup>

The Congressional Research Service estimates that the industry's proposal would shift the current federal share for large-scale improvement projects from 80 percent to 85 percent of all costs to at least 90 percent.<sup>144</sup> Given that private operators using our inland waterways depend on more federal capital support than any other mode of shipping, increasing the federal share of capital costs for the waterways is not wise.

The Obama administration has proposed a healthier cost-sharing arrangement where operators pay for at least 50 percent of all capital improvement costs via fees collected for lock usage along the most highly used waterways, which are anticipated to generate \$1 billion for waterway improvements annually. Another option for increasing inland waterway investment would be to shift to methods of private financing of improvements that are paid for with increased user fees.

This approach and the Obama administration's proposal both more appropriately share the burden of maintenance and capital improvements of this infrastructure with the users than the current funding approach. At a minimum new revenue options that increase the share paid by users need to generate \$150 million a year for additional improvements.

**Ports:** With respect to ports, the Harbor Maintenance Trust Fund was created in 1986 to collect excise tax revenues from shippers. Since the beginning of the decade, this trust fund collected more revenue than Congress appropriated for port infrastructure improvements. As a result, the fund's 2010 year-end balance exceeded \$1 billion annually for more than 10 years. The 2010 year-end cumulative balance was nearly \$6 billion.<sup>145</sup> This balance and projected future revenues are likely to be sufficient to meet most of the cost of projects intended to maintain and increase channel depth as well as conduct other water-based improvements.

In meeting our port challenges, federal attention must also advance progress on landside improvements. Options for funding these improvements could include permitting harbor maintenance funds to be spent on landside improvements undertaken by Port Authorities, making available special-purpose tax credit bonds to attract more private investment for these improvements, or adding funds and legal authority to a reauthorized surface transportation bill to improve road and rail connections at growing or heavily used ports.

Our plan does not propose any additional revenue be raised to pay for needed port improvements. Instead we recommend that at least \$1 billion more be spent for port improvements until the cumulative fund balance is reduced to \$1 billion or less.

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## Getting more out of every dollar invested

Improving our infrastructure will take more than raising revenue and encouraging private investment. We need to also modernize project finance, project selection, and federal fund allocation. We must optimize existing and new funds and ensure we maximize private investment where possible. The most critical reforms include:

- Integrating infrastructure planning
- Consolidating water improvement oversight in a highly accountable environment
- Distributing federal funds based on objective measures of need
- Helping states get more bang for the buck out of federal funds
- Adopting a fix-it-first approach

Let's consider each in turn.

### Integrate infrastructure planning by creating a national infrastructure planning council

The Department of Transportation's TIFIA loan program and TIGER grant program are useful examples of integrated transportation funding. Both of these programs make funds available across numerous transportation sectors and as a result cause the program staff to consider the relative importance of investments and their sequencing as well. Yet integrated transportation funding accounts for approximately 2 percent of the department's transportation investment.<sup>146</sup>

As a result, infrastructure planning is conducted in a siloed fashion with a limited amount of interprogram or interdepartmental planning.<sup>147</sup> For instance, the Transportation Department does not fully consider how increased transit, passenger, or freight rail investments might alleviate the need for road and highway expenditures. Similarly, freight rail improvements along the Mississippi River are not considered by the Army Corps of Engineers when allocating funds to improve goods movement on inland waterways. And the reverse is true; Army Corps improvements on the waterways are not factored into the DOT investments in rail. Similarly Army Corps port investments are not coordinated with the landside port improvements funded by DOT.

Alternative energy infrastructure investments that help reduce the cost of water services can help our water infrastructure funding go further, yet we lack the

needed federal efforts to align these resources. Our changing communications infrastructure may drive down the need to build out the transportation infrastructure built to enable commuting. Yet the implications of the broadband and wireless revolutions are not factored into transportation planning.

The absence of a clear interagency and interdepartmental table where agencies can think together and optimally plan together is likely to mean that we are missing opportunities to improve the impact of federal infrastructure investments. Moreover, as Roy Kienitz, the former under secretary of transportation, points out, “these agencies are fundamentally reactive.”<sup>148</sup> That means that what is considered for investment comes from members of Congress, states, localities, or authorities.

The creation of a federal interagency infrastructure planning council can help ensure departments and agencies have a fuller understanding of how each agency is approaching and funding infrastructure investments with the goal of ensuring better use of scarce federal infrastructure resources. It can also provide an environment to think strategically about where limited federal funds should be invested.

We recommend that the White House form a national infrastructure planning council comprised, at a minimum, of the secretaries or their designees of each of the following departments, commissioners of the agencies, and the directors of the following federal offices:

- Department of Agriculture, Office Rural Development
- Department of Agriculture, Natural Resources Conservation Service
- Department of Defense, Army Corps of Engineers
- Department of Energy, Office of Electricity Delivery and Reliability
- Department of the Interior, Bureau of Reclamation
- Department of Transportation, Federal Aviation Administration
- Department of Transportation, Federal Highway Administration
- Department of Transportation, Federal Railroad Administration
- Department of Transportation, Federal Transit Administration
- Department of Transportation, Maritime Administration
- Environmental Protection Agency, Office of Ground Water and Drinking Water
- Environmental Protection Agency, Office of Wastewater Management
- Federal Communication Commission
- Federal Emergency Management Agency
- Federal Energy Regulatory Commission





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The purpose of this national infrastructure planning council should include:

- Building a common understanding of the scope, breadth, and approach of federal infrastructure investments among the department and agency officials
- Sharing current and pending project inventories with the goal of identifying synergistic opportunities
- Identifying strategic alliances that improve and optimally leverage agency investments and that advance the most critical and economically and environmentally beneficial infrastructure investments
- Stimulating coordinated approaches to solving goods movement, congestion, and other challenges, while also promoting infrastructure solutions that preserve energy and the environment

- Promoting strategies to improve federal and state practices of using objective measures to allocate and evaluate infrastructure projects, as well as methods to decrease costs or stretch federal resources
- Identifying opportunities to leverage private-sector investment
- Developing a best practices institute that disseminates models for accelerating project selection, preventive maintenance, and construction cost reduction
- Identifying options to innovate the approach to planning and construction infrastructure, as well as addressing key congestion and environmental challenges and opportunities associated with infrastructure improvements

The national infrastructure planning council would be an invaluable resource to helping launch and support the ongoing operation of the National Infrastructure Bank by ensuring the bank relies on expert federal capacity where it exists and only builds internal capacity to the degree that the federal agencies are not able to support the research and planning needs of the bank.

Critical to the success of this council is its leadership. The president will need to select a trusted neutral party with deep expertise in infrastructure and strong leadership skills to ensure the goals can be met. Moreover, the president will need to engage the leadership of this council in a manner that holds them accountable for results. The council will also need the strong support of the president to advance regulatory, policy, or legislative changes necessary to achieve the goals of the council.

In addition to bringing all the federal infrastructure agencies to a table to plan and work together, the federal government should ask the expert outside entities to evaluate the efficacy of uniting federal water infrastructure programs under one roof. The Army Corps serves the inland waterway users and the ports, but the Department of Transportation also has a critical decision-making role in how this transportation infrastructure is developed through the Maritime Administration. The Army Corps, FEMA, and the Department of Agriculture share responsibility for the operation and maintenance of our dams and levees. The EPA focuses on addressing storm water runoff and other flood-related environmental issues and it is responsible for supporting state efforts to ensure our drinking and wastewater quality.

None of these agencies, however, has the central mission of building our water infrastructure. Consider that the Army Corps Civil Works budget of \$5 billion was

less than 1 percent of the Department of Defense 2011 budget of \$689 billion.<sup>149</sup> Water infrastructure grant programs are a large part of the EPA budget, representing almost a third of their expenditures, but the regulatory responsibilities are the chief bread and butter of the agency.

Meanwhile the expertise to build good levees and good waterways, to dredge with an eye toward environmental preservation, and to build water treatment systems that meet our public health expectations require professionals with many of the same skills to plan, oversee, and ensure high-quality investments. We recommend that a series of outside evaluations be conducted to answer the following questions:

- To what degree is the technical expertise needed to operate these separate programs the same or similar?
- To what degree can these programs benefit by being organized in one federal agency?
- Is there an existing federal agency that should absorb the central mission of our water assets or should a new department be established?
- How would delinking existing programs from their current agencies undermine program performance and what can be done to mitigate any erosion of program quality by delinking?
- If a federal agency is organized or designated with the purpose of improving our water infrastructure—both water usage for travel and trade, and water treatment for drinking and environmental protection—what other federal programs could be or should be considered to be included in this new department and what other purposes might such a department serve?

Ideally this research should be conducted in a manner that gathers input from the effected federal agencies, members of Congress, and external stakeholders. We cannot presuppose the outcome of this research but we believe that based on the current challenges our water programs face, the creation of a federal water infrastructure department could improve federal innovation, performance, compliance oversight, project management, and accountability for these important federal water investments.

## Rely on objective measures of need to allocate federal funds

Transportation and water infrastructure: Federal funds for transportation and water infrastructure should be allocated among states in accordance with their relative need. Unfortunately that's not how it works today. A federal highway funding formula used for distributing more than \$38 billion annually to states heavily weights the vehicle miles of the roads in its calculation rather than the cost or need for road repair or expansion. The formula ignores the level of mass transit usage and congestion when distributing funds.<sup>150</sup>

Minimum guarantees of funding cause states with less need to get funds that could more wisely be used to address the urgent infrastructure repair needs in other states.

As a result, heavily populated states that have the most expensive and perhaps the most extensive needs receive less funding than an objective, metric-defined system of measures would allocate to them. For instance, Florida receives more highway improvement funding than New York does; Michigan gets less than Georgia; Washington gets less than Indiana; and Massachusetts receives less than Tennessee, Kentucky, or Alabama.

Worse yet, about 20 percent of all federal highway funds—\$9.6 billion—are distributed via the “Equity Bonus program,” which distributes funds to states to ensure states receive 95 cents for every dollar paid into the Highway Trust Fund by adding to the distribution system criteria, such as:

- Does the state have less than 40 people per square mile and federal land ownership in the state exceeds 1.25 percent total state acreage?
- Is the state's total population under 1 million?
- Is the state's median income less than \$35,000?<sup>151</sup>

This reduces the amount of funding sent to states that don't meet the Equity Bonus criteria. The result is that densely populated states like California, New York, and Pennsylvania lose out.

Furthermore, our formulas guarantee that each state receives a fixed percentage of federal surface transportation and drinking and clean water funds. For transportation the minimums vary by federal highway program. This report estimates that approximately \$400 million was allocated to states based on these minimum apportionment requirements. For water grants, each state must receive at least 1 percent of the total federal appropriation.<sup>152</sup> These minimum guarantees of funding cause states with less need to get funds that could more wisely be used to address the urgent infrastructure repair needs in other states. These minimum guarantees should

be removed from the enabling legislation for these programs. Doing so would push millions of dollars more to the states with the greatest need for improvements.

Lawmakers should likewise require that funds released from the Harbor Maintenance Fund, the Inland Waterways Trust Fund, and the Airport and Airway Trust Fund go toward projects that meet a more rigorous need-based analysis.

**Airports:** The allocation formula for the Federal Airport and Airway Trust Fund programs is also laden with special program eligibility parameters that drive funds to underutilized airports. There are good reasons for the federal government to make sure rural communities have access to mass transportation options that enable local residents, businesses, and their business products to get to other locations and markets. But the degree to which this access is subsidized must be weighed against other pressing infrastructure projects.

The Essential Air Service program received FY 2010 appropriations of \$150 million for subsidies to 150 airports, some of which are located less than two hours from an airport hub with major carriers.<sup>153</sup> As a result of the increasing reach of the program and reduced commercial interest in serving these locations, the federal government is heavily subsidizing airfares for travelers in these rural areas.

The Associated Press, for example, reviewed the rural airport subsidy program and found that in 2010, just 227 passengers flew out of the Ely, Nevada airport, which received \$1.8 million in essential air grants to subsidize commercial air travel for passengers using the airport. As a result, travelers paid \$70 to \$90 for a one-way ticket. The cost to taxpayers for each ticket: \$4,107.<sup>154</sup> This is one of numerous examples of heavy subsidies provided to airports via this program.

The Essential Air Service program, first created in 1978 as part of the Airline Deregulation Act, was intended to be a 10-year program to help rural airports make the transition to the new environment of airline competition.<sup>155</sup> Clearly the goals of the 10-year transition period have not been achieved. Many rural communities cannot sustain access to air service without federal, and often state and county, subsidies as well.

In the summer of 2011, House Transportation Committee Chairman John Mica (R-FL) called for capping the amount of airfare subsidy at \$1,000 and eliminating some airports currently eligible for the program.<sup>156</sup> Instead, we believe that a graduated subsidy should be set at the per-flight level with a reasonable cap. In

addition, a maximum airport grant amount should be set so airports that increase their flight activity over time are more dependent on their user fee revenues than the federal government subsidy. The amount of subsidy should be calibrated to the flight distance to a major hub. And no subsidy should be provided for airports that are less than two hours from a major hub.

At a minimum these reforms would decrease the cost of the program, reduce the number of airports that are too heavily dependent on federal subsidies instead of user-fee-generated revenue, and increase the rationality for how much each flight is subsidized.

Like many of the other elements of our infrastructure, the current method of allocating harbor maintenance funds among ports for improvements must be reformed to increase the capacity of our most heavily used ports. “Eighty percent of oceangoing ships arriving in the United States call at one of the nation’s twenty busiest ports,” according to the Congressional Research Service, “but these twenty ports, based on a rough calculation, account for less than 40 percent of total [Trust Fund] expenditures.”<sup>157</sup>

Currently, the Army Corps must conduct a cost-benefit analysis that demonstrates that the benefits of improvements to a particular port outweigh the cost of the project. But the analysis does not require that the Corps rank the projects in its portfolio so they can readily select projects where the federal investment will have the greatest impact. Congress should direct the Corps to develop a process that enables this approach to prioritizing projects, so the projects that will increase the speed of goods movement in the ports with the greatest level of economic activity take priority. These projects should be funded first if resources are limited.

### [Help states get more productivity out of every dollar spent](#)

Some members of Congress are calling for the federal role in transportation to be “devolved” to the states. This is a bad idea. States already are responsible for the oversight of the federal surface-transportation funds. They oversee the local planning process and have the authority to decide how their federal highway, transit, and specialized surface transportation funds are spent. One obvious consequence of devolving federal highway and transit programs to the states would be shifting the political consequences of higher gas taxes or insufficient transportation funding entirely onto state elected officials.

More importantly, our country would no longer have a single entity responsible for ensuring a highly functional interstate highway system and national safety standard, all of which are essential for goods movement, commuting, national security, and leisure travel. But states do need a more rational federal structure. The Department of Transportation alone administers more than 100 federal programs for transportation, and state and local infrastructure agencies typically tap more than one federal program for large-scale projects.<sup>158</sup> Under the current system, it's a Herculean feat for state or local agencies to line up federal grants, loans, and tax benefits in a timely manner so that infrastructure projects can proceed.

Nevertheless, the breadth of federal programs is impressive. With streamlining, sufficient resources, and integrated planning, federal infrastructure investments can have a significantly larger impact. States should get more discretion with how funds are allocated among federal highway/transit programs and greater flexibility to use innovative bidding processes, engage private partners in the financing of large-scale projects, employ creative solutions to meet environmental protection requirements, and impose tolls on roads and bridges in the federal highway system.

When it comes to water infrastructure improvements, the federal government can help states stretch their federal funds further by being more explicit about state authority over how federally state water revolving loan funds are managed and how they generate earnings. State revolving loan funds invest federal grants and repaid loan funds in low-interest-bearing accounts and instruments, which often yield less than 1 percent a year. This results in billions of dollars of foregone earnings and capital growth insufficient to meet future infrastructure commitments. There are two simple steps that states can take to increase the amount of capital available to finance eligible infrastructure projects.

First, states should transition from a direct loan model to a leveraged loan model. A direct loan model loans public money to municipalities at below-market rates for eligible water infrastructure projects. Twenty-seven state clean water revolving loan funds and 20 state drinking water revolving loan funds use a direct loan model, with the balance employing a more state-of-the-art leverage model approach that permits the funds to increase their interest earnings and meet the needs of their borrowers. States using leverage models have historically seen a two- to four-fold increase in funding capacity.<sup>159</sup> The EPA should increase its technical assistance efforts to help the rest of the states adopt a leverage model approach.

Second, states should adopt pension-fund-like investment strategies. Water revolving loan fund administrators should adopt portfolio management methods similar to those of education endowments and pension funds in order to increase fund earnings. New York’s revolving fund already does something like this. Today, its portfolio consists of highly rated taxable municipal securities, all of which are higher-yield investments. All told, this investment strategy has allowed the fund to increase its lending capacity by 25 percent.<sup>160</sup> To increase the pace with which this approach is adopted, the EPA should offer clear guidance that describes the approach and approves the parameters for responsible financial stewardship of state revolving loan fund portfolios.

By leveraging public money and adopting modern portfolio management strategies, state revolving funds can free up significant additional capital for water infrastructure investment. CAP’s “How to Increase the Impact of Federal and State Water Infrastructure Funds” describes the loan leveraging and active asset management proposals in greater detail.<sup>161</sup>

### Increase the rate of repairs on existing infrastructure

In 2009 the American Association of State Highway and Transportation Officials’ “Rough Roads Ahead” report found that only half of the nation’s major roads are in good condition, based on an analysis of Federal Highway Administration data. The situation is worse in high-traffic, urban areas where one in four roads is in poor condition. In some major urban centers, more than 60 percent of roads are in poor condition.<sup>162</sup> In spite of the pressing need to repair these roads, Smart Growth America, a nationally recognized coalition of national and state organizations focused on innovative transportation policy solutions, found that states spent 57 percent of their highway funds building new roads between 2004 and 2008.<sup>163</sup> Smart Growth America found that 23,300 new lane miles were constructed—a 1.3 percent expansion. Meanwhile, the existing 1.9 million lane miles deteriorated due to state decisions to prioritize expansion of the system over maintenance.

Repair costs rise exponentially when roads are not routinely maintained. According to the American Association of State Highway and Transportation Officials, every \$1 spent to keep a road in good condition avoids spending between \$6 and \$14 later to rebuild the same road once it has deteriorated significantly.<sup>164</sup> Smart Growth points out that “these poor road conditions are a large and growing financial liability for states and Federal Highway Administration data illustrates how overwhelming this



burden has become. States would collectively need to spend \$43 billion every year for 20 years to bring roads currently in poor condition up to good and then keep roads in good condition going forward.”<sup>165</sup> \$43 billion is more than what all 50 states are currently spending on all repairs, preservation, and new capacity combined.

Although states lack the resources to address the full backlog of road repairs, federal policies should give an advantage to states that increase the pace by which they are bringing existing roads up to a state of good repair. Doing so would not add to the cost of upgrading our infrastructure but would ensure what needs to get fixed gets fixed first.

Similar trends exist in our water infrastructure system. States and localities are investing in expansion at the expense of bringing existing systems up to federal and state public health and water quality standards. The EPA estimates that 850 billion gallons in untreated wastewater is released into waterways each year.<sup>166</sup> Yet U.S. Census Bureau figures show that more than enough is being spent on capital expenditures by water systems. The problem is that our water investments are not focused on the most urgent water infrastructure repair needs.

Since our repair needs are growing, it is clear that a substantial portion of current public investment should not be directed at expansion to the neglect of repair needs. Federal funds for state revolving loans already include requirements that prioritize repair over expansion. Further measures should be taken to increase the share of state and local capital investments used on water repairs and upgrades rather than on expansion.





## Conclusion

As the marketplace becomes even more global, moving beyond stalemate on how to rebuild our nation's infrastructure will have global implications as well. The World Economic Forum found that "extensive and efficient infrastructure is critical for ensuring the effective functioning of the economy, as it is an important factor determining the location of economic activity and the kinds of activities or sectors that can develop in a particular economy."<sup>167</sup>

Compared to many parts of the globe, the U.S. infrastructure platform is sufficiently advanced. Our standing in this regard, however, is quickly eroding. President Dwight D. Eisenhower, for one, would never have stood for this. In 1956 he signed into law the Federal-Aid Highway Act. By 1976 the 42,000-mile federal highway system was complete. Nearly halfway to that milestone, President Eisenhower in 1963, looking back on the fruits of his campaign to persuade Congress to make this investment, said:

*More than any single action by the government since the end of the war, this one would change the face of America with straight-aways, cloverleaf turns, bridges, and elongated parkways. Its impact on the American economy—the jobs it would produce in manufacturing and construction, the rural areas it would open up—was beyond calculation.<sup>168</sup>*

Our requirements are different today, but the possibilities if we act are equal to President Eisenhower’s observation then—“beyond calculation.”

# Appendix: Methodology

This analysis begins with the premise that fiscal year 2010 is a reasonable baseline year for estimating the level of federal infrastructure investment. In choosing FY 2010 we can ensure consistency among all data sources. This baseline does not include any funding levels associated with the American Recovery and Reinvestment Act of 2009. But the 2010 baseline does include the time-limited appropriations for the TIGER grant programs and Section 1703 energy loans.

Some FY 2011 funding levels were reduced but the changes were modest and as such do not suggest a substantial change in direction from our 2010 baseline.

To generate the estimate of the level of federal investment in infrastructure in 2010, we summed the specific infrastructure-related federal appropriations, estimated credit subsidies, and tax expenditures in FY 2010. We then compared the credible estimates of need for repair by sector with the level of federal investment and the matching funds that derive from that federal investment from state, local, and private entities. The difference between the need and sum of the resources available in the baseline year became the “funding gap.” These calculations rely on the available appropriation data because appropriations are the amount that the federal government has the capacity to invest given the amount of available federal revenue.

We also evaluated the amount of user fees or dedicated revenues that are likely to be made available to attract private financing through loans and other debt instruments to fill some of the gap. We describe this data below. In addition, we estimated the level of investment that could credibly be generated by offering tax incentives for private investors. We also describe how we arrived at these estimates below. We deducted what could reasonably be expected from the private financing from the amount of funds needed to establish the amount of funding needed from the federal, state, or local government to close the funding gap. The remaining gap was then apportioned to the federal or state government in accordance with the existing match requirements of existing federal law.

Our analysis indicates that at a minimum the level of increased federal investment we calculated should be maintained for 10 years. Doing so will address the backlog of needed repairs and capacity improvements. To ensure sufficient resources over the 10-year period, the amount of funding we proposed will need to be indexed to inflation annually. Based on the CBO-projected inflation rate for the next 10 years, the level of annual increased funding would need to rise to at least \$154.4 billion by 2021.<sup>169</sup>

The following outlines the methodologies employed to arrive these estimates.

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## Grants

### Methodology for estimating the appropriations for approximately \$82 billion in direct grants for infrastructure

To calculate the amount of appropriations made in FY 2010 for infrastructure grant programs, we relied on publicly available data, which in most cases were basic federal agency budget documents. Where publicly available budget documents were not specific or detailed enough for our calculations, the federal agency's response to the author's inquiries served as the basis of the estimate. Such inquiries were only necessary to determine the level of appropriations used for freight grants by the U.S. Department of Transportation and Army Corps funds appropriated for dam and levee repairs. Our sources for the publicly available data were:

**Highways and roads:** Appropriation amount derived by author's calculations based on: "Apportionment of Fiscal Year 2010 Funds Pursuant to the Surface Transportation Extension Act of 2010," available at <http://www.fhwa.dot.gov/legisregs/directives/notices/n4510727/n4510727t1p6.htm>. User fee data from: Joint Committee on Taxation, "Present Law and Background Information on Federal Excise Taxes" (2011), available at <http://www.gpo.gov/fdsys/pkg/CPRT-112JPRT63427/html/CPRT-112JPRT63427.htm>.

**Bridges:** Appropriation amount derived by author's calculations based on: "Apportionment of Fiscal Year 2010 Funds Pursuant to the Surface Transportation Extension Act of 2010." User fee data from: Joint Committee on Taxation, "Present Law and Background Information on Federal Excise Taxes."

**Mass transit:** Appropriation amount derived from: Federal Transit Administration, “FTA Supplemental Fiscal Year 2010 Apportionments, Allocations and Corrections,” Federal Register, May 13, 2010, available at <https://www.federalregister.gov/articles/2010/05/13/2010-11479/fta-supplemental-fiscal-year-2010-apportionments-allocations-and-corrections#g-1>. User fee data from: Joint Committee on Taxation, “Present Law and Background Information on Federal Excise Taxes.”

**Passenger rail:** Amtrak, “Fiscal Year 2011 Revised Budget and Comprehensive Business Plan” (2010), available at [http://www.amtrak.com/servlet/BlobServer?blobcol=urldata&blobtable=MungoBlobs&blobkey=id&blobwhere=1249207590642&blobheader=application%2Fpdf&blobheadername1=Content-disposition&blobheadervalue1=attachment;filename=Amtrak\\_AmtrakFY11RevisedBudgetandComprehensiveBusinessPlan.pdf](http://www.amtrak.com/servlet/BlobServer?blobcol=urldata&blobtable=MungoBlobs&blobkey=id&blobwhere=1249207590642&blobheader=application%2Fpdf&blobheadername1=Content-disposition&blobheadervalue1=attachment;filename=Amtrak_AmtrakFY11RevisedBudgetandComprehensiveBusinessPlan.pdf).

**High-speed rail:** Appropriation amount from: Federal Railroad Administration, Budget Estimates Fiscal Year 2012 (Department of Transportation, 2011) available at <http://www.dot.gov/budget/2012/budgetestimates/fra.pdf>.

**Ports:** Appropriation amount derived from: “Harbor Maintenance Reports: FY 2010,” available at <http://www.savingsbonds.gov/govt/reports/tfmp/hmaint/hmaint.htm>.

**Airports:** Appropriation amount from: Federal Aviation Administration, “FY 2012 President’s Budget Submission,” Exhibit II-1, FY 2010 Actual. User fee data from: Joint Committee on Taxation, “Present Law and Background Information on Federal Excise Taxes.”

**Rail freight:** TIGER grant allocations derived from personal communication with Tony Furst, Department of Transportation, May 26, 2011. The \$220 million in recurring funds are the value of the appropriation set aside for rail freight grade improvements funded under the Federal Highway Safety Program.

**Inland waterways:** Appropriation amount derived from: Department of the Army, Office of the Assistant Secretary for Civil Works, “Fiscal Year 2010 Civil Works Budget for the U.S. Army Corps” (2009). User fee data from Joint Committee on Taxation, “Present Law and Background Information on Federal Excise Taxes.”

**Drinking water:** Appropriation amount derived from: “Environmental Protection Agency,” available at <http://www.whitehouse.gov/sites/default/files/omb/budget/fy2012/assets/environmental.pdf>.

**Wastewater:** Appropriation amount derived from: “Environmental Protection Agency,” <http://www.whitehouse.gov/sites/default/files/omb/budget/fy2011/assets/environmental.pdf>

**Dams and levees:** Appropriation amount derived from personal communication with Walter (Pete) Pierce, U.S. Army Corps of Engineers, January 11, 2012.

The sum of federal grants made in these categories of infrastructure investment in 2010 was \$82.16 billion.

#### Loans/credit subsidies: Methodology for analysis of federal credit data

The analysis of federal loan and loan guarantee programs is based on several data sources. We used available data from the Office of Management and Budget’s Federal Credit Supplement, program rules, authorizing legislation, and appropriations legislation from 2010 to calculate the following estimates:

*“Authorized principal amount”*—All infrastructure-related federal credit programs examined for this paper are in some way limited in the total amount that can be loaned or guaranteed each year. In cases where that limit is laid out explicitly in the authorizing legislation, we used that number. In cases where the limitations are placed on the subsidy amount (in other words, a maximum cost to government), we imputed the maximum principal amount using the Office of Management and Budget’s estimated “subsidy rate” for 2010 (the estimated cost to government as a percentage of the total of dollars loaned or guaranteed). So if a loan program had a maximum credit subsidy of \$100 million and an estimated subsidy rate of 10 percent, we estimated the maximum principal amount to be \$1 billion ( $100,000,000 / 0.10 = 1,000,000,000$ ).

*“Maximum subsidy amount”*—This calculation is similar to the one we used for authorized principal amounts. In cases where subsidies are explicitly laid out in appropriations legislation, we used that number. If limits are only placed on the principal amount, we imputed the subsidy amount using OMB’s estimated “subsidy rate” for 2010. So if a loan program had the authority to lend \$2 billion and an



estimated subsidy rate of 10 percent, we estimated the subsidy amount to be \$200 million ( $2,000,000,000 \times 0.10 = 200,000,000$ ).

*“Minimum leverage”*— Certain credit programs limit the percentage of total program costs that can be covered by a federal loan or guarantee. “Minimum leverage” is the total amount of private and nonfederal public sources that must be in place to receive the maximum principal amount authorized under the program. This calculation is based entirely on program rules and our estimate of the maximum principal amount for each credit program. If rules lay out a maximum percent of total project costs that can be covered by a federal loan or guarantee, we imputed the federal share of the project debt by dividing the total authorized principal by the maximum percentage the loan can contribute. So if a loan program can only cover 25 percent of program costs, and the authorized principal for the federal loan is \$1 billion, then the estimated minimum program costs would be \$4 billion ( $1,000,000,000 / 0.25 = 4,000,000,000$ ). That yields a “minimum leverage” of \$3 billion.

*“Actual obligations and actual credit subsidy”*—Every year the Office of Management and Budget reports the total amount obligated or loaned in the previous year for each program and the estimated subsidy rate for that book of business in the Federal Credit Supplement. For this analysis, we started with the 2010 obligation numbers reported in the 2011 budget.<sup>170</sup> We called this number the “actual obligation.” We then estimated the “actual credit subsidy” by multiplying the total amount obligated by the reported subsidy rate. So if a loan program has \$1 billion in obligations and an estimated subsidy rate of 10 percent, we estimated a credit subsidy of \$100 million ( $1,000,000,000 \times 0.10 = 100,000,000$ ).

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## Tax expenditures

### Methodology for estimating the tax expenditures that support infrastructure-related bond issuances

The estimates of tax expenditures are a rough estimate of the federal cost and amount of private capital raised through state and local government bond offerings. We used three main data sources for this calculation. Total bond issuances from 2010 for each infrastructure category came from The Bond Buyer’s “2010 Yearend Statistical Review.” Tax expenditure figures for each type of tax-exempt bond came from the Office of Management and Budget’s “Analytical Perspectives, Budget of the

United States Government, Fiscal Year 2010.” And data for 2010 total issuances of Build America Bonds came from the Department of the Treasury.

Because data was obtained from a variety of sources and, in some instances, datasets were incomplete, certain assumptions had to be made. For this reason, the calculations offered in this paper provide estimates rather than precise figures about the exact amount of private capital raised for infrastructure investment by different bond programs.

To calculate our estimate it was first necessary to distinguish between bonds that were issued to refinance existing debt and bonds that were issued to fund actual projects and activities (so-called “new money” bonds). The “2010 Yearend Statistical Review” provides figures for new money bond issuances by sector (transportation, housing, and so forth). These figures do not differentiate between the amount of new money issuances that were tax exempt, the amount of new money issuances that were taxable, and the amount of new money issuances that were Build America Bonds. But since Build America Bonds were not allowed for refinancing purposes, all Build America Bonds issuances could be considered new money. The remaining new-money issuances were assumed to be tax-exempt debt as the Bond Buyer data illustrates that tax-exempt bonds constitute most of the remaining bond issuances.

Second, we estimated new money issuance figures for more specific categories within each sector, such as “Airports and Seaports” (listed under the “transportation” sector in The Bond Buyer “Yearend Statistical Review”). Since the U.S. Treasury Department breaks out Build America Bonds issuances by the type of activity financed, we were able to back out the amount of new money, tax-exempt bonds for each type of activity finance. To do so, we subtracted the total amount of Build America Bonds issued for each activity from the total amount of bonds (tax-exempt and taxable) issued for that given activity.

Third, we estimated the 2010 cost of the tax expenditure of these “new money” bonds issued in 2010 by taking the total of each type of new money bond issuance and multiplying each by the total tax-expenditure for tax-exempt bonding provided by the Office of Management and Budget’s Analytical Perspectives. OMB data list the outlays and tax expenditures of all outstanding bonds. For this reason it was necessary to estimate the percentage of these total cost figures that were due solely to issuances in 2010 that were “new money.” Clearly, this calculation assumes that the 2010 “new money bond issuances” had the same interest rates and average debt service obligations as all the remaining bonds outstanding.

In addition, since both Build America Bonds and tax-exempt bonds generate a cost to the Treasury in not only the year in which they were issued but also over the entire period in which the bonds remain outstanding, we also estimated the net present value cost of these bonds. To estimate the net present value cost of these programs, it was necessary to estimate the average life of a tax-exempt and Build America Bond that were issued for an infrastructure project. The “average life” of a bond is the average amount of time the bonds remain outstanding. To perform this calculation, we assumed that the average bond issued for an infrastructure project was 25 years because infrastructure projects typically demand longer-term financing given the long economic lives of infrastructure projects.

The net present value calculation assumed an average interest rate on the bonds of 5.5 percent, which is an approximation of the average yield on revenue bonds for that maturity. For the tax-exempt calculation, it was assumed that the average issuer has to sell its bonds to an investor who pays a 28 percent marginal tax rate. This means that the issuer has to offer such an investor a tax-exempt yield that is comparable to the after-tax yield of a comparable Treasury bond to an investor who pays a marginal tax rate of 28 percent. This roughly corresponds to research from the U.S. Treasury Department that finds that municipal bond issuers have to appeal to bond buyers in tax brackets below the top bracket of 35 percent. (For more, see: Alan Krueger and John Bellows. “Build America Bonds: A new Approach to Municipal Finance,” AEA Meetings, January 7, 2011.)

## Highway and transit needs: Methodology for analysis of federal highway and transit needs

Our estimates of federal highway and transit needs are based on analysis of data presented in Chapter 7 of the Department of Transportation’s “2008 Status of the Nation’s Highways, Bridges, and Transit: Conditions and Performance.”<sup>171</sup> Below is a brief explanation of how we arrived at each estimate.

### *Highway needs*

Chapter 7 of that Department of Transportation report lays out data on necessary capital investments to highways to achieve various levels of conditions and performance. We focused on three desirable outcomes for our analysis of this data: sustaining current spending levels, making additional investments to maintain the current quality of the highways, and making a more aggressive investment to improve the quality of the highways. The data in the DOT report are based on

two sources: a sophisticated model of needs for federally funded highways and bridges; and a less-sophisticated estimate of unmodeled (nonfederal) highways. Since we focus on needs associated with federal highways and bridges, we only used the “modeled” needs data for our analysis.

We used data from Tables 7-5, 7-14, and 7-21 in the report to calculate our estimates. Based on conversations with the authors of the report, we selected a zero percent capital increase as “maintain spending,” a 5.25 percent capital increase as “maintain quality,” and a 6.7 percent capital increase as “improve quality.” For all data in this section of the analysis, we assumed zero change in so-called “user fees,” meaning no new revenues from tolls, taxes, and other dedicated fees. Since all numbers are reported in 2006 dollars, we then inflated all needs estimates to 2010 dollars using annual estimates of the Consumer Price Index, reported by the Congressional Budget Office.

### *Transit needs*

For the most part, we used the same methodology described above for highways to calculate our estimates for transit system needs. The DOT report presents data on the necessary capital to achieve various performance outcomes, this time using a single statistical model. Transit needs were broken out into four basic categories: rehab and replacement; expansion; performance maintenance; and performance improvement. Similar to the highway section, the report contained data for three levels of investment for each category: “maintain spending,” “maintain quality,” and “improve quality.”

We used data from tables 7-25, 7-26, 7-27, and 7-28 for this analysis. Since all numbers were reported in 2006 dollars, we inflated all needs estimates to 2010 dollars using annual estimates of the Consumer Price Index, as reported by CBO.

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## User fees

### Methodology for estimates of revenues derived from increases in airport user fees

**Data sources and methodology for airport fees:** Increasing international arrival/departure taxes from \$16.10 to \$30 raises approximately \$2 billion. This estimate is based on data for tax revenue raised from international arrival/departure taxes from the Airport and Airway Trust Fund Receipts and Balances for 2010. This was

done by first calculating the estimated total number of international arrivals and departures for 2010 by dividing the total tax revenue from international arrival and departure taxes by the \$16.10 per arrival/departure tax rate. Next, this figure was multiplied by the size of the tax increase (\$30.00-\$16.10) on international arrivals and departures.

Data sources were: Airport and Airway Trust Fund Receipts and Balances, Federal Aviation Administration, 2005–2010. For more, see: Microsoft Excel worksheet for “Trust Fund Receipts by Tax Type, 2005-2010” under “Historical Data,” available at [http://www.faa.gov/about/office\\_org/headquarters\\_offices/apl/aatf/historical\\_data/](http://www.faa.gov/about/office_org/headquarters_offices/apl/aatf/historical_data/); Federal Aviation Air Traffic Activity, Total Combined Aircraft Operations at Airports, Forecasts 2011-2031. For more, see: Table 31, available at: [http://www.faa.gov/about/office\\_org/headquarters\\_offices/apl/aviation\\_forecasts/aerospace\\_forecasts/2011-2031/](http://www.faa.gov/about/office_org/headquarters_offices/apl/aviation_forecasts/aerospace_forecasts/2011-2031/)

**Levying a takeoff and landing fee of \$155 raises approximately \$5.0 billion.** This estimate is based on data on total combined aircraft operations at airports with FAA and Contract Traffic Control Services. The calculation excludes military aircraft operations. The calculation multiplies the \$155 fee by the total number of nonmilitary, general aviation operations in 2010. Note that there is one \$155 fee per commercial takeoff and landing pair, and not one \$155 fee for a commercial plane takeoff and one \$155 fee for a landing.

This report considered the implications on passenger demand of imposing an airport operations fee. The Tinberg Institute in Amsterdam and the Canadian Government’s Office of Finance each commissioned meta-analysis of the elasticity of demand in passenger airfare. Both studies found that for different market segments there are distinct demand impacts or sensitivity. In the case of business travelers, the research finds that there is little price sensitivity associated with air travel. With respect to leisure travel, demand is relatively sensitive to changes in personal income. With respect to the price of leisure travel, however, the greatest impact on demand can be found on short-distance flights, but even in this case those sensitivities decrease over time. While the fees we propose will increase the cost of travel, research indicates they will may not have a dramatic impact on the level of passenger demand. See: Martijn Brons and others, “Price Elasticities of Demand for Passenger Air Travel, A Meta Analysis” (The Netherlands: Tinbergen Institute, 2001); Gillen, Morrison, and Steward, “Air Travel Demand Elasticities: Concepts, Issues and Measurement” (Ottawa, Ontario: Department of Finance Canada, 2003).

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## About the author

**Donna Cooper** is a Senior Fellow with the Economic Policy Team at the Center for American Progress. Her portfolio of policy work includes federal infrastructure policy. Before coming to CAP in 2010, she served for eight years as the secretary of policy and planning for the Commonwealth of Pennsylvania, where she was responsible for crafting the state's plan for accelerating infrastructure improvements as well as measures to promote smart infrastructure policy. Ms. Cooper was the co-leader of the state's implementation team for managing the state's infrastructure improvements supported with federal Recovery Act resources. She also served as lead member of the state's Sustainable Infrastructure Task Force.

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## Endnotes

- 1 U.S. Chamber of Commerce, "Donohue and Trumka Issue Joint Statement on SOTU," Press release, January 26, 2011, available at <http://www.uschamber.com/press/releases/2011/january/donohue-and-trumka-issue-joint-statement-sotu>.
- 2 Mark Zandi, "An analysis of the American Jobs Act," Moody's Analytics: The Dismal Scientist, September 9, 2011, available at [http://www.economy.com/dismal/article\\_free.asp?cid=224641&src=mark-zandi](http://www.economy.com/dismal/article_free.asp?cid=224641&src=mark-zandi).
- 3 Congressional Budget Office, "Estimated Impact of the American Recovery and Reinvestment Act on Employment and Economic Output from April 2011 Through June 2011" (2011), available at <http://www.cbo.gov/ftpdocs/123xx/doc12385/08-24-ARRA.pdf>.
- 4 Author's calculation reached by comparing the current level of federal appropriations for infrastructure and the funds leveraged by these federal appropriations to rigorous independent or federal agency research detailing the level of needed investment. See Appendix for the description of the methodology and data sources used to make this calculation.
- 5 Michael Ettlinger and others, "Spurring Job Creation in the Private Sector" (Washington: Center for American Progress Action Fund, 2011), available at [http://www.americanprogressaction.org/issues/2011/08/private\\_sector\\_jobs.html](http://www.americanprogressaction.org/issues/2011/08/private_sector_jobs.html).
- 6 Author's calculation including the sum of the data collected on federal appropriations in 2010 for grants, credit subsidies, and tax expenditures for infrastructure. See Appendix for the description of the methodology and data sources used to make this calculation.
- 7 Author's calculation. See Appendix for the description of the methodology and data sources used for this calculation.
- 8 Author's calculation based on available data for the U.S. Department of Transportation's most significant loan programs that leverage private capital and by tracking the experience of federal loan programs that stimulate private investment in the clean energy sectors. In addition, the author interviewed operators and researchers involved in water infrastructure financing. This estimate of additional private investment does not include anticipated increases in bonds floated for infrastructure because doing so could double count the amount of private investment. We also do not include an increased level of private-sector investment in water or energy infrastructure beyond what we stimulate by our plan because this analysis is intended to estimate the impact of additional federal investment and federal reforms. It is likely that due to the growing population and shifts in population centers that additional increased levels of private-sector investment in these sectors will occur independent of federal action. See Appendix for the description of the methodology and data sources used to make this calculation.
- 9 The federal Safe Accountable Flexible Efficient Transportation Equity Act requires states to provide a 20 percent match to federal funds for specific transportation investments. The federal Safe Drinking Water Act and the Water Quality Act also require a 20 percent match for federal grants for state-administered clean drinking and waste water revolving loan funds.
- 10 Total federal budget authority for fiscal year 2010 was \$3.48 trillion, according to: Office of Management and Budget, "Analytical Perspectives, Budget of the United States Government, Fiscal Year 2012" (2011), available at [http://www.whitehouse.gov/omb/budget/Analytical\\_Perspectives](http://www.whitehouse.gov/omb/budget/Analytical_Perspectives).
- 11 Author's calculation is based on projections of crude oil imports from 2011–2035 from the U.S. Energy Information Administration and applying a \$9.5 per-barrel tax indexed to a rate of inflation of 1.025 to the estimated number of imported barrels of oil annually.
- 12 Seth Hanlon, "Big Oil's Misbegotten Tax Gusher" (Washington: Center for American Progress, 2011), available at [http://www.americanprogress.org/issues/2011/05/big\\_oil\\_tax\\_breaks.html](http://www.americanprogress.org/issues/2011/05/big_oil_tax_breaks.html). Hanlon outlines several tax expenditures specifically for oil producers and other tax expenditures that benefit all companies and have a particularly advantageous impact on oil and companies. For this analysis we include the largest oil-specific tax expenditures which are: domestic, manufacturing, production for oil producers, percentage depletion, and expensing of intangible drilling costs.
- 13 CAP recommends updating fees collected by the federal Airport and Airway Trust Fund. Specifically, we propose an increase in the international ticket tax from \$16.50 to \$30 per ticket and an airport operations fee of approximately \$155 per takeoff. This fee can be calibrated depending on type of aircraft. These new air travel fees will generate \$7 billion annually. For inland waterways, the Obama administration has advanced a proposal to overhaul how operators pay to use the waterways. We endorse efforts to make dramatic changes to increase the share that users pay for waterway maintenance and improvement. At a minimum, we are proposing that the diesel fuel tax applied to barges and other vessels that use the waterways be increased by 4.4 cents. Doing so brings the fuel cost in line with other vehicles and will generate \$16 million to \$18 million for improvements. Increased fees are not needed for ports, since U.S. Treasury reports indicate that the Harbor Maintenance Fund has a surplus of more than \$6 billion. We propose that this surplus be expended by increasing the annual appropriations funded with these resources by \$1 billion. CAP has proposed that the Environmental Protection Agency accelerate state efforts to employ modern portfolio management strategies in the administration of state revolving loan funds for water and wastewater. Based on the experience of states that employ these techniques, we estimate that an additional \$294 million can be generated for drinking and wastewater improvements.
- 14 Our estimates of private-sector investment were based on data provided by the U.S. Department of Transportation and the U.S. Department of Energy. The calculations rely on this data to estimate the value of road construction that can be gained by expanded tolling and pent-up private investment demand. See Appendix for sources and methodology.
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- 21 Author's calculations based on the historic trends in energy investment indicate that on average every federal dollar invested leverages \$10 of private investment. CAP estimated the level of new investment needed to achieve the energy production and generation mix necessary to achieve the desired level of CO2 reduction by 2040. Based on this analysis, we estimate that the United States needs to generate \$40 billion per year in clean energy investments. As such this CAP proposal recommends that \$4 billion in federal credit subsidies, grants, or tax credits be available to leverage \$40 billion in private-sector clean energy investment. See Appendix for sources and methodology for this analysis.
- 22 Our estimates of private-sector investment were based on data provided by the U.S. Department of Transportation for the TIFIA program and DOT estimates for projected toll revenues on high volume roadways. For energy investments, the author relied on CAP's analysis of the leverage of U.S. loan programs administered by the U.S. Department of Energy. See Appendix for sources and methodology.
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- 38 The FAA Reauthorization passed on February 6, 2012, limits EAS to locations that average 10 or more enplanements a day, with certain exemptions. It also restricts EAS participation to currently enrolled communities, and reduces authorized EAS spending from \$143 million in FY 2012 to \$93 million in FY 2015.
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- 40 Author's analysis of OMB data in the federal credit supplement of the 2012 budget: "Supplemental Materials," available at <http://www.whitehouse.gov/omb/budget/Supplemental>. See Appendix for a detailed description of this calculation.
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## About the Center for American Progress

The Center for American Progress is a nonpartisan research and educational institute dedicated to promoting a strong, just and free America that ensures opportunity for all. We believe that Americans are bound together by a common commitment to these values and we aspire to ensure that our national policies reflect these values. We work to find progressive and pragmatic solutions to significant domestic and international problems and develop policy proposals that foster a government that is “of the people, by the people, and for the people.”

## Center for American Progress



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## About Doing What Works

CAP's Doing What Works project promotes government reform to efficiently allocate scarce resources and achieve greater results for the American people.

This project specifically has three key objectives:

- Eliminating or redesigning misguided spending programs and tax expenditures, focused on priority areas such as health care, energy, and education
- Boosting government productivity by streamlining management and strengthening operations in the areas of human resources, information technology, and procurement
- Building a foundation for smarter decision-making by enhancing transparency and performance measurement and evaluation

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