

Meeting the Infrastructure Imperative

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

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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.”¹

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.² 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.³

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.⁴

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.⁵

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 2010.⁶ 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.⁷ 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.⁸ 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.⁹ 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.¹⁰ (see Figure 1)

FIGURE 1
How we pay for increased infrastructure spending
 in billions

Sources of new investment capital	Amount
Federal sources	
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
Private investment	
State match	11
Total revenue	129.2

*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.¹¹
- End oil tax breaks by eliminating the \$4.1 billion in oil production tax subsidies.¹²
- Update the structure of infrastructure user fees, which can generate \$8 billion annually.¹³

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.

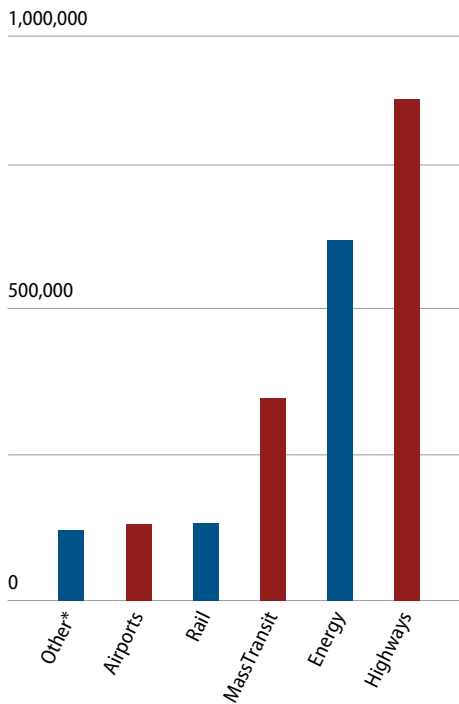
Private investment in energy infrastructure works very differently. In this sector, investors expect public funds to reduce the risk that their private market product cannot cover its costs in the short run. For instance, while a private investor may be confident that they can recoup their costs and 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.¹⁴

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."¹⁸

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."¹⁵ 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.¹⁶

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.¹⁷ 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 2009.¹⁹ 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.

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.²⁰

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.²¹

The balance of the private investment is likely to occur in the transportation sector.²² 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
Total	129.2

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.²³

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	\$133 billion
Estimated amount of needed investment	\$262 billion
Estimated annual gap	\$129 billion

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.

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



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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