

*Capital in Motion:
Rethinking Private Investment Strategies to Restore America's Infrastructure*

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Abstract

The United States' infrastructure is eroding and the nation's public capital remains underfunded. The American Society of Civil Engineers gave the U.S. infrastructure a D+ grade in their 2013 report card and estimated the nation needs \$3.6 trillion in investment by 2020 to address the shortfall. The inability of the United States to keep pace with needed infrastructure investment has real economic impact. Without the political will to address the lack of public investment in infrastructure the United States will continue to lose competitiveness, in addition to risking public safety. While public-private partnerships have grown as a percentage of infrastructure projects, they have been focused, primarily, on large projects that are more easily monetized, at the expense of smaller-scale projects. Therefore, this paper advocates for the establishment of a non-profit organization, which would create a fund to allow for the financial return for donated capital to be divested from the project. By decoupling the financial return from the project, the non-profit could consider private investment in restoring small and medium-sized infrastructure that could not be monetized easily through traditional public-private partnerships.

Describing The Problem

The US faces a significant backlog of investment in public capital. The American Society of Civil Engineers (ASCE) estimates that the country needs \$3.6 trillion in investment to address the current infrastructure debt by 2020 (American Society of Civic Engineers (ASCE), "*America's Infrastructure Report Card 2013*". The ASCE gave the nation's bridges a

D+ grade, noting that \$20.5 billion is needed by 2028 to eliminate the national backlog of deficient bridges, although only \$12.8 billion is spent currently (ASCE, *Report Card 2013*). Currently one in nine, or 11%, of the nation's bridges are classified as structurally deficient (ASCE, *Report Card 2013: Bridges*).

The infrastructure debt has real world implications for the safety of the American populace in addition to the nation's economic competitiveness. The lack of investment in infrastructure will increase transportation times, which will increase the loss to business due to increased costs due to growing infrastructure inefficiencies. According to ASCE, the gap in investment in infrastructure will cause the loss of 3.363 million jobs by 2020 and 6.859 million jobs by 2040 (ASCE, *Failure to Act: The Impact of Current Infrastructure Investment on America's Economic Future*, 2013). The infrastructure debt will also have an impact on individuals as well. According to the ASCE report, "the cost of deficient infrastructure is expected to reach \$5,400 per year for each household in the nation between 2012 and 2040" (ASCE, *Failure to Act: The Impact of Current Infrastructure Investment on America's Economic Future*, 2013). The United States Conference of Mayors cited a report from the World Economic Forum which showed that the United States had fallen in overall competitiveness from 2 to 5 within the last few years due largely to the ranking of 24th in infrastructure (US Conference of Mayors, "*U.S. Metro Economies: Outlook - Gross Metropolitan Product, and Critical Role of Transportation Infrastructure*," July 2012, p. 363).

Current Infrastructure Funding

The majority of state and local infrastructure spending is financed through tax-exempt bonds, with \$1.7 trillion coming from bonds within the last decade (Congressional Budget Office, "*Subsidizing Infrastructure Investment with Tax-Preferred Bonds*," October 2009). While the Federal government has

spent over \$100 billion per year, Federal spending has remained relatively constant as a percentage of GDP for 20 years, accounting for roughly 2 percent of Gross Domestic Product annually (Congressional Budget Office, “*Trends in Public Spending on Transportation and Water Infrastructure, 1956 to 2004*,” August 2007).

States provide a substantial of funding to repair and maintain aging infrastructure. According to the Congressional Budget Office, state and local government spending comprise roughly 75 percent of the (Congressional Budget Office, “*Public Spending on Transportation and Infrastructure*,” November 2010, p. 7). Additionally, almost all of the funding for maintenance of public capital comes from states and localities, with the federal government only contributing roughly 10 percent of the of the \$196 billion spent in 2007. While states and localities bear a significant burden of contributing to the relief of decrepit infrastructure, states have not addressed the need universally by bringing consistent revenue to the issue. For example, it took the Commonwealth of Virginia over 25 years to bring new financial resources to the issue of transportation and infrastructure (Governor of Virginia, “*Governor McDonnell Ceremonially Signs Virginia’s Historic Bi-Partisan Transportation Funding Bill*,” May 13, 2013). While the adoption of the bill in the Commonwealth is certainly positive, the State still faces a challenge of fixing 7.8 percent of the bridges that are structurally deficient across Virginia (Virginia Department of Transportation, “*State of the Structures and Bridges Report*” July 2012, p. 14).

The US faces a significant backlog of investment in public capital. Within the current political environment, especially noting the recent fight over the budget and debt ceiling, there should be little expectation of drastic new sources of public revenue to address this important issue. Therefore, a new framework must be constructed to provide greater

private investment to restore America's infrastructure.

Limitations of local funding streams

As mentioned above, a substantial portion of infrastructure funds at the local level are derived from issuing municipal and revenue bonds. While localities have the ability to issue long-term debt service with low interest rates to fund projects, there is a statutory limitation to the debt a local jurisdiction will incur. Localities that have obtained high marks from bond rating agencies are reluctant to risk losing the ability to borrow money cheaply in the future by taking on more debt in the short term. For example, Arlington County, Virginia, has issued guidance that the County will not bear more than 10% debt service at a given point in time in an effort to maintain the jurisdiction’s AAA bond rating (Commonwealth of Virginia, “*Constitution*,” Article VII, Section 10 ; Arlington County, “*General Obligation Bond FAQ’s*,”; Arlington County, “*Arlington’s Aaa/AAA/AAA Bond Ratings Reaffirmed*,”).

Additionally, localities are reticent to raise taxes too much on the local population to fund infrastructure improvements. While elected officials may have a goal of making structural improvements, most politicians want to get reelected above anything else. Lastly, state departments of transportation are limited in the amount of funds that they can provide to localities. States, unlike the federal government, are constitutionally required to maintain a balanced budget. While some states have provided new resources as was mentioned in the previous section, they have not done this uniformly across the country. Therefore, substantial infrastructure concerns remain unfunded and unaddressed.

Public-private partnerships

Public-private partnerships, or P3s, are designed to bring additional financial resources and efficiencies

to public projects. These entities are created to streamline the planning, engineering, design, build, finance, construction, and on-going maintenance of an infrastructure project under one roof (Congressional Budget Office, *“Using Public-Private Partnerships to Carry Out Highway Projects,”* p. 3). Public-private partnerships are designed within two main categories, which are discussed more below.

The first category “represents a finance-based approach that aims to use private financing to satisfy the infrastructure needs. It relies on user fees and project demand to fund projects” (Ahmed Abdel Aziz, *“Successful Delivery of Public-Private Partnerships for Infrastructure Development,”* 2007, 918). According to Aziz, the second is considered a service based approach, where the “objective is to use the skills, innovations, and management of the private sector to optimize the time and cost” of delivering the project (Aziz, p. 918).

While P3s have increased as a percentage of all public projects, they have not been utilized in all infrastructure projects. Public-private partnerships have a tendency to be implemented in large scale projects - such as the development of a new highway or airport - where fees can be easily assessed and capital returned to investors. Additionally, the belief is that the individual project must generate the return on investment where invested capital is repaid through concessions, special tax districts, or availability payments (Department of Transportation, Federal Highway Administration, *“Federal-Aid Funding and Availability Payments,”*). Concessions agreements require a private entity to maintain a particular road and generally permit the concessionaire to toll the road to repay investors.

Availability payments supplant concessions agreements by allowing state or local governments to make regular, scheduled payments to a private sector entity for building and/or maintaining a set piece of infrastructure (Department of Transportation, Federal

Highway Administration, *“Federal-Aid Funding and Availability Payments,”* 2012). Availability payments are utilized either where tolling does not cover the complete cost of the improved infrastructure, or where tolling is not viable. Critics of concessions note that agreements are often for long periods - frequently for multiple decades - and remove potential future funding for infrastructure from the public sphere. The current conceptualization of public-private partnerships also overlooks a vast array of smaller projects because they are hard to monetize to create a return on investment for investors.

Critique of National Infrastructure Bank

President Obama and legislators at the Federal level have advocated for the establishment of a National Infrastructure Bank (NIB) to address the growing need to fund infrastructure projects across the nation. The President’s proposal would establish a NIB as a government-owned corporation and capitalized with \$10 billion in Congressional appropriations (The White House, *“Five Facts About A National Infrastructure Bank,”* November 3, 2011).

While the addition of resources to address the nation’s infrastructure debt is not inherently problematic, the proposal to create a National Infrastructure Bank has some significant weaknesses. First, each NIB proposal includes the capitalization of the entity through government action. Although, in my view, the government should act to create such a Bank, the probability that the Federal government could come to an agreement around the creation of such an entity given the current political gridlock in Washington remains low. This is especially true given that capitalizing the Bank would require large initial allocations, and could be perceived by conservative legislators as further expansion of the Federal government.

Second, the NIB would provide loans to states and localities for large-scale projects, that would require

repayment of the loan through taxes, fees, or tolls. The Congressional Budget Office notes that “a key limitation of providing funding through a federal infrastructure bank is that only some surface transportation projects would be good candidates for such funding, because most projects do not involve tolls or other mechanisms to collect funds directly from project users or other beneficiaries” (Congressional Budget Office, *“Infrastructure Banks and Surface Transportation,”* July 12, 2012, p. 2). The CBO report also argues that these large surface projects are already funded through existing federal grant programs (Congressional Budget Office, *“Infrastructure Banks and Surface Transportation,”* July 12, 2012, p. 2). The CBO report notes that several proposals for a National Infrastructure Bank set limits for the minimum size requirements for infrastructure projects (\$25 million for rural projects and \$100 million for other projects), although the majority of current highway spending is too small to meet these thresholds (Congressional Budget Office, *“Infrastructure Banks and Surface Transportation,”* July 12, 2012, p. 2).

Lastly, as a revolving loan fund, the National Infrastructure Bank would require repayment of the loans by localities or end users. Therefore, the Bank would likely focus on large scale, surface infrastructure projects, in addition to water and energy projects, that are already the primary focus of federal funds. The size requirements in most proposals, in addition to the need to repay loans, limit the scope and type of projects that could be considered for private investment. For example, the rehabilitation of pedestrian infrastructure could be overlooked by the Bank, given its relatively modest cost, but could be a critical need for a locality and area commercial interests. Additionally, there is a current federal prohibition on tolling on federally funded highways, which would limit the ability of the Bank to recoup funds (Department of Transportation, Federal Highway Administration, *“Road Pricing: Tolling & Pricing Programs”*).

Rethinking Private Investment in Infrastructure

While P3s have increased as a percentage of all public projects, they have been focused, primarily, on large projects and have ignored a wider scope of smaller infrastructure concerns. The focus of public-private partnerships on large projects is driven by the need of projects to generate revenue through concessions, availability payments, or special taxing districts. The need for the project to generate income directly also removes additional revenue from the public sphere. These funding mechanisms have been tied directly to the infrastructure, and therefore, make attracting private investment in smaller projects difficult, if not impossible.

There is an opportunity for private investors to make a return on investment repairing public infrastructure, but the dominant conception of P3s that focuses only on large projects needs to be rethought. A new entity needs to be created to widen the scope of private investment in public infrastructure projects, including small, projects that are overlooked currently.

A significant amount of private capital is sitting on the sidelines and could be essential to the rebuilding America’s infrastructure. According to Moody’s, US companies’ had increased their cash holdings by 10% in 2012 to \$1.45 trillion (Moody’s, *“Moody’s: US companies/ cash pile grows 10% in 2012, to \$1.45 trillion,”* March 18, 2013). Additional efforts need to be made to create the proper structure that provides incentives that encourage this private capital to be invested to restore a wide array of projects.

This paper advocates for the creation of a private, non-profit infrastructure development organization (NIDO), as a vehicle for the investment of private capital to fund infrastructure projects. Subsequently, the NIDO would create a pooled income fund (“Fund”) defined by section 642 of the Internal Revenue Code which would permit individuals and

institutions to buy shares in a diversified portfolio (Government Printing Office, “26 USC 642 - *Special Rules for Credits and Deductions*,”). The Fund would be invested in both fixed income assets and equities to provide a consistent, stable return for investors and the non-profit. The diversification of the Fund’s assets would decrease the opportunity for a larger return, but would mitigate the potential loss to invested assets. The Fund would provide steady interest to investors for a term not exceeding 20 years, and allow the NIDO to make grants to localities to rebuild ailing infrastructure. The interest return on Fund assets would be split, with a minimum of 2% interest provided to private investors, and a minimum of 1% to provide for infrastructure funding grants provided by the NIDO (explained further below). Returns that exceed 4% will be split equally among investors and the non-profit.

For example, if 1% of the \$1.45 trillion corporate reserve cash on hand were invested in the pooled income fund, the Fund would be capitalized with \$14,500,000,000. This capital would be invested prudently by a professional investment manager to achieve a return on principal for both investors and to provide grants to localities for infrastructure improvements. If the Fund achieved a conservative annual return of 4%, that would translate to \$580,000,000 in return on investment. 3% of the generated interest, or \$435,000,000, would be returned to investors. The remaining 1%, or \$145,000,000, would be used for grants to localities to address infrastructural issues.

Infrastructure Development Categorical Grants

The return on invested assets in the pooled income fund would provide the non-profit organization with the ability to distribute funds on a yearly basis through Infrastructure Development Categorical Grants (ICDGs) to qualifying jurisdictions to fund infrastructure improvements. ICDGs will be patterned off of existing federal grant programs for

transportation projects, which allow for jurisdictions to compete for available funds within familiar guidelines.

At the beginning of each year fiscal year the non-profit would announce the specified amount available for grants that cycle based on the returns invested returns from the previous year. Local governments would then submit proposals to the NIDO for funding. The non-profit would make efforts to ensure that funds were distributed in an equitable manner with respect to region and proportion.

By issuing grants, not loans, localities and states are able to consider repairing infrastructure without creating a funding stream for the proposal, removing general funds to repay private investors, or incur additional debt. The localities also maintain control over design and build functions throughout this process. While this may cut down on overall efficiency of the model by not housing these processes within on roof, it does increase accountability to the public, as the locality or state actor remains in control of the project.

63-20 Financing

In addition to issuing grants to localities, financing pursuant to Internal Revenue Code Rule 63-20 provides another tool to help localities and states to rebuild additional infrastructure. The rule permits private, nonprofit corporations to issue tax-exempt debt on behalf of a municipality, as long as the nonprofit corporation abides by the following criteria:

- (1) “The corporation must engage in activities which are essentially public in nature;
- (2) the corporation must be one which is not organized for profit (except to the extent of retiring indebtedness);
- (3) the corporate income must not inure to any private person;

- (4) the state or a political subdivision thereof must have a beneficial interest in the corporation while the indebtedness remains outstanding and it must obtain full legal title to the property of the corporation with respect to which the indebtedness was incurred upon the retirement of such indebtedness; and
- (5) the corporation must have been approved by the state or a political subdivision therefor, either of which must also have approved the specific obligations issued by the corporation” (Internal Revenue Service, “*H. 501(c)(3) BONDS – A Mini-Text*” p. 268).

The 63-20 financing would allow the NIDO to issue tax-exempt debt to restore infrastructure, especially projects such as water treatment facilities, which have associated ratepayers. The American Society of Civil Engineers estimates that “the U.S. will need \$126 billion in investment for water and wastewater treatment infrastructure by 2020, and \$196 billion by 2040” (American Society of Civil Engineers, “*Failure to Act: The Economic Impact of Current Investment Trends in Water and Waste Treatment Infrastructure*,” p. 12-13). The Environmental Protection Agency (EPA) estimates that 43.6% of the need and 45.6% of the population served by for State Community Water System 20-Year Need by Size and Population are in medium community water systems (serving 3,301 to 100,000 people) (Environmental Protection Agency, “*Drinking Water Infrastructure Needs Survey and Assessment, Fifth Report to Congress*,” April 2013, p. 9). When combined with small community water systems these systems account for 53.7% of the population and 61% of the nation’s need (Environmental Protection Agency, “*Drinking Water Infrastructure Needs Survey and Assessment, Fifth Report to Congress*,” April 2013, p. 9). According to the report by the EPA, the average large community water system (e.g. a system serving over 100,000 people) costs \$237,479,531 (Environmental Protection Agency, “*Drinking Water Infrastructure Needs Survey and Assessment, Fifth Report to Con-*

gress,” April 2013, p. 9). Medium and small community water systems cost \$20,066,972 and \$1,543,025, respectively (Environmental Protection Agency, “*Drinking Water Infrastructure Needs Survey and Assessment, Fifth Report to Congress*,” April 2013, p. 9). The need to repair the nation’s wastewater infrastructure provides a real opportunity for private investment which could begin to address substantial infrastructure needs.

This paper advocates that the NIDO should establish individual 63-20 non-profit corporations for each water system reconstruction project. The 63-20 non-profit would issue tax-exempt bonds to invest in the restoration of wastewater treatment infrastructure. Pursuant to 63-20 financing, the nonprofit would, therefore, have control over the wastewater treatment facility for a period of 25 to 30 years with the ability to use the facility’s revenue to pay off debt service and generate revenue for the nonprofit’s future grants.

For example, a 63-20 non-profit corporation could issue \$237,479,531 in debt service for wastewater infrastructure repairs to a given locality. The non-profit would have control over the wastewater facility for a period not exceeding 30 years and would have the ability to utilize the fees collected through management of the facility within that period to pay off the associated debt service. According to the Environmental Protection Agency, the typical resident in the United States uses an average of 100 gallons of water per day and spends \$523 per year on water related charges (Environmental Protection Agency, “*Infrastructure Financing & the Price of Water Services*,” September 14, 2012). Therefore, a locality with a locality of 210,000 residents, or 52,500 families of four, would generate \$27,457,500 per year in revenue which exceeds the assumed \$12,467,675 amortized debt for \$100 million at a 5% interest rate over a 30 year period. Arlington County, Virginia, a jurisdiction similar in size to the above example, has established a rate of \$12.61 per thousand gallons

household or \$24,163,912.5 to \$52,962,000 per year for 52,500 families in the County.¹

Through a combination of grants and 63-20 financing, a non-profit organization could bring hundreds of millions of dollars in additional resources to rebuild infrastructure each year. For example, a NIDO could generate a yearly minimum of \$146,543,025 if pooled income fund grants were combined with 63-20 financing for a small water system project. If a NIDO combined grants and 63-20 financing for three large water system projects, \$857,438,593 per year, or over \$4 billion in a 5 year period.

Benefits of New P3 Framework

There are several notable benefits to the new proposed P3 structure outlined in the proceeding section. First, it provides an economic incentive for corporations and individuals to invest their cash reserves in infrastructure projects. While some corporations and individuals are motivated by altruistic ventures or the ability to deduct contributions to non-profit organizations from their taxes, many actors are self-interested. Therefore, the option to allow individuals to make a return on donated capital is a valuable tool to solicit financial resources. This allows public corporations to utilize their excess capital reserves for public purposes, while still respecting the fiduciary duty to make a profit for shareholders. Additionally, the donations to the pooled income fund would be tax deductible in the year they were made, which provides another incentive to both individual and corporate donors.

Second, this capital will be invested in the market, which would create a return for investors while divesting said return from a specific project. Currently,

private-public partnerships are considered for large-scale surface transportation projects, airports, ports, energy, and water projects where tolls or fees can be easily assessed. Third, the act of divesting the return on investment from the specific project allows the non-profit to consider private investment in a wider scope of small projects, such as sidewalk and bridge replacements, because the financial component has been decoupled from the project itself. Finally, this model is not reliant on governmental budget processes, which allows for consistent, private investment in infrastructure around the country for years.

Conclusion

The United States faces an enormous challenge regarding funding the substantial costs of repairing the nation's infrastructure. Unfortunately, governments at all levels face limitations - statutory and political - which prevent the infusion of additional financial resources. Additionally, the current private-public partnership framework limits the type and scope of projects considered for private investment. It is the belief of this paper that the establishment of a non-profit infrastructure development organization as a means to provide grants to localities and states to rebuild infrastructure projects that may be overlooked by the current model of public-private projects.

The establishment of a non-profit infrastructure development organization would achieve two key goals. First, the non-profit would create a return on investment for donors who contributed to a pooled income fund, which creates a financial incentive for private capital to be utilized to begin to restore the nation's infrastructure. Secondly, by divesting the

¹ The range was calculated by using EPA averages for the low end (100 gallons per day) and Arlington County estimates for the high end (20,000 gallons a quarter or 219.18 gallons per day)

(<http://water.epa.gov/infrastructure/sustain/Water-and-Wastewater-Pricing-Introduction.cfm>
<http://www.arlingtonva.us/departments/EnvironmentalServices/uso/file64500.pdf>).

financial return from the project itself, the non-profit organization can consider issuing grants - not loans - for the redevelopment of public capital that would be overlooked by existing financial frameworks.

Lastly, the utilization of 63-20 financing allows a non-profit organization to bring significant additional resources to the redevelopment of water systems across the United States. The ability to issue tax-exempt debt allows a NIDO to generate significant financial resources to restore the nation's water facilities which could be paid over decades by existing ratepayers. The combination of grants and 63-20 financing allow a non-profit to provide hundreds of millions of dollars, on a consistent, annualized basis to begin restoring America's infrastructure.

Topics for Additional Research

While the issue of infrastructure funding is large, and cannot be contained completely within the confines of this paper, there are several topics which deserve additional research in future papers. The first of which is the concept of installing solar panels on bridges and utilizing power purchase agreements to provide revenue to fund their construction. In the United Kingdom, the Solarcentury company repaired Blackfriars Bridge in London with the installation of 4,400 solar panels as the roof of the bridge. The project provides an estimated 12,847,000 kWh annually and is able to power half of the metro station's electricity needs and is the largest solar bridge in the world (SolarCentury, "*Blackfriars: taking it to the bridge*").

According to the EPA, "a Solar Power Purchase Agreement (SPPA) is a financial arrangement in which a third-party developer owns, operates, and maintains the photovoltaic (PV) system, and a host customer agrees to site the system on its roof or elsewhere on its property and purchases the system's electric output from the solar services provider for a predetermined period" (Environmental Protection

Agency, "*Solar Power Purchase Agreements*," <http://www.epa.gov/greenpower/buygp/solarpower.htm#two>). The agreement would permit a non-profit to install solar panels on a bridge and lease the solar panels, including the resulting energy produced within, to the municipality or energy company for a term of no less than 25 years. Maintenance of the solar panels and accompanying equipment would be the responsibility of non-profit entity. Additional research should be done to determine the ideal size and cost of bridge projects that could use this type of financing regime.

The second proposed area of further research is on the structure for delivering grants for infrastructure projects. While it is the belief of this paper that the structure suggested above is the best solution to providing private capital to underserved infrastructure, there are other models which should be studied. There are over 700 community foundations throughout the country which could serve as a provider of grants at the local level (Foundation Center, "*Key Facts on Community Foundations*," August 2012). Under this framework a national non-profit organization could receive donations to a pooled income fund, from which it could make yearly endowments to community foundations. The community foundations, in coordination with local elected and community leaders could determine which projects to fund each year. While only limited research on this topic was done for this paper, the initial concern with this approach is that dividing financial resources across their country in this manner could diminish their impact.

An additional concern is that community foundations are not distributed equally across the nation, and therefore, some jurisdictions would be favored disproportionately. For example, the Midwest has a higher concentration of community foundations than the rest of the United States, and through this model would receive more resources as a result. More research should be done to determine whether the im-

pact of implementing a proposal that would utilize community foundations for issuing grants to localities would be detrimental to the goal of addressing significant infrastructural concerns.

References

Aziz, Ahmed Abdel, "Successful Delivery of Public-Private Partnerships for Infrastructure Development," *Journal of Construction Engineering*, 2007, p. 918.

American Society of Civil Engineers (ASCE), "America's Infrastructure Report Card 2013," 2013 (<http://www.infrastructurereportcard.org/>).

American Society of Civil Engineers, "Failure to Act: The Impact of Current Infrastructure Investment on America's Economic Future," January 15, 2013 (http://www.asce.org/uploadedFiles/Infrastructure/Failure_to_Act/Failure_to_Act_Report.pdf).

American Society of Civil Engineers, "Failure to Act: The Economic Impact of Current Investment Trends in Water and Waste Treatment Infrastructure," January 15, 2013, p. 12-13 (http://www.asce.org/uploadedFiles/Infrastructure/Failure_to_Act/ASCE%20WATER%20REPORT%20FINAL.pdf).

Arlington County, "Arlington's Aaa/AAA/AAA Bond Ratings Reaffirmed," (<http://news.arlingtonva.us/releases/arlington-aaa-aaa-bond-ratings-reaffirmed>).

Arlington County "General Obligation Bond FAQ's," (<http://www.arlingtonva.us/departments/ManagementAndFinance/CapitalImprovementProgram/page78529.aspx>).

Commonwealth of Virginia, "Constitution," Article VII, Section 10 (<http://constitution.legis.virginia.gov/>).

Congressional Budget Office, "Infrastructure Banks and Surface Transportation," July 2012, (<http://www.cbo.gov/sites/default/files/cbofiles/attachments/07-12-12-InfrastructureBanks.pdf>).

Congressional Budget Office, "Public Spending on Transportation and Infrastructure," November 2010, (<http://www.cbo.gov/sites/default/files/cbofiles/attachments/11-17-10-Infrastructure.pdf>).

Congressional Budget Office, "Subsidizing Infrastructure Investment with Tax-Preferred Bonds," October 2009, (<http://cbo.gov/sites/default/files/cbofiles/ftpdocs/106xx/doc10667/10-26-taxpreferredbonds.pdf>).

Congressional Budget Office, "Trends in Public Spending on Transportation and Water Infrastructure, 1956 to 2004" August 2007, (<http://cbo.gov/sites/default/files/cbofiles/ftpdocs/85xx/doc8517/08-08-infrastructure.pdf>).

Congressional Budget Office, "Using Public-Private Partnerships to Carry Out Highway Projects," (<http://www.cbo.gov/sites/default/files/cbofiles/attachments/01-09-PublicPrivatePartnerships.pdf>).

Department of Transportation, Federal Highway Administration, "Road Pricing: Tolling & Pricing Programs," (www.fhwa.dot.gov/ipd/revenue/road_pricing/tolling_pricing/).

Department of Transportation, Federal Highway Administration, "Federal-Aid Funding and Availability Payments," 2012 (http://www.fhwa.dot.gov/ipd/pdfs/fact_sheets/tifia_availability_payments.pdf).

Environmental Protection Agency, "Drinking Water Infrastructure Needs Survey and Assessment, Fifth Report to Congress," April 2013, p. 9 (http://water.epa.gov/grants_funding/dwsrf/upload/epa816r13006.pdf).

Environmental Protection Agency, "Infrastructure Financing & the Price of Water Services," September 14, 2012 (http://water.epa.gov/infrastructure/sustain/financing_priceofwater.cfm).

Environmental Protection Agency, "Solar Power Purchase Agreements," October 16, 2012 (<http://www.epa.gov/greenpower/buygp/solarpower.htm#two>).

Foundation Center, "Key Facts on Community Foundations," August 2012 (http://foundationcenter.org/gainknowledge/research/pdf/keyfacts_comm2012.pdf).

Government Printing Office, "26 USC 642 - Special Rules for Credits and Deductions," (<http://www.gpo.gov/fdsys/pkg/USCODE-2011-title26/pdf/USCODE-2011-title26-subtitleA-chap1-subchapJ-partI-subpartA-sec642.pdf>).

Governor of Virginia, "Governor McDonnell Ceremonially Signs Virginia's Historic Bi-Partisan Transportation Funding Bill," May 13, 2013 (<http://www.governor.virginia.gov/news/viewRelease.cfm?id=1809>).

Internal Revenue Service, "H. 501(c)(3) BONDS – A Mini-Text" p. 268 (<http://www.irs.gov/pub/irs-tege/part2h02.pdf>).

Moody's, "Moody's: US companies/ cash pile grows 10% in 2012, to \$1.45 trillion," March 18, 2013,

(http://www.moodys.com/research/Moodys-US-companies-cash-pile-grows-10-in-2012-to--PR_268757).

SolarCentury, “*Blackfriars: taking it to the bridge*,” <http://www.solarcentury.com/uk/case-studies/blackfriars-taking-it-to-the-bridge/>

US Conference of Mayors, “*U.S. Metro Economies: Outlook - Gross Metropolitan Product, and Critical Role of Transportation Infrastructure*,” July 2012
(<http://www.usmayors.org/metroeconomies/0712/FullReport.pdf>)

Virginia Department of Transportation, “*State of the Structures and Bridges Report*” July 2012
(http://www.virginiadot.org/business/resources/bridge/State_of_the_Structures_and_Bridge_Report_2012.pdf).

The White House, “*Five Facts About A National Infrastructure Bank*,” November 3, 2011,
(<http://www.whitehouse.gov/blog/2011/11/03/five-facts-about-national-infrastructure-bank>)

World Economic Forum, “*The Global Competitiveness Report 2011-2012*,”
http://www3.weforum.org/docs/WEF_GCR_Report_2011-12.pdf, 363).