

Getting the Wheels Turning: Assessing Strategies for Financing & Advancing Mass Transit
Infrastructure in the 21st-Century

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James A. Gerken

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Abstract

This thesis explores several strategies for advancing the growth of mass transit infrastructure in the United States. This thesis finds that public-private partnerships (P3), design-build delivery systems, and value capture tools like tax-increment financing (TIF) all have potential for improving the feasibility of financing and constructing transportation infrastructure. However, they do carry some drawbacks and must be utilized in an appropriate context. While the three tools may address different components of a project and are not necessarily applicable in the same situation, this thesis finds that design-build carries the least risk and should be incorporated more broadly.

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Introduction

Providing high-quality mass transit is an important goal for many municipalities and regions in the United States. Even large cities not primarily known as being very transit-oriented have introduced new light rail, subway, and bus rapid transit (BRT) service this century. Offering commuters an efficient transit ride that is preferable to driving can reduce greenhouse gas emissions, promote a more active lifestyle, and ease street and highway congestion for those who remain in their cars. Forty-five states and the District of Columbia funded some form of public transit in fiscal year 2014. New York led the nation with \$4.8 billion in funding that year, followed by Illinois, California, Massachusetts, and Pennsylvania. Nationally, state transit funding increased 26.4 percent between fiscal years 2010 and 2014 to \$17.2 billion. The U.S. federal government provided \$10.6 billion in transit funding to the states, with \$4.8 billion of that going to the previously mentioned five states plus Maryland (American Association of State Highway and Transportation Officials 2016).

Despite the seemingly sizable amount spent by pro-transit states, paying for both mass transit capital construction and maintenance is still an issue and leads to budget shortfalls and delays in new projects.¹ To remedy this problem and pursue more creative financing solutions, some transit agencies and government entities have turned more frequently in recent years to different finance mechanisms that more closely involve the private sector. Municipalities and public sector authorities may not have the resources or financing to handle all aspects of project delivery and operation on their own or they may see an opportunity for cost- or time-savings through contracts that put more risk on the private sector. These tools include public-private

¹ New York's 2014 expenditure on mass transit, for example, represented just over five percent of the state's \$90.2 billion budget that year (New York State 2013a).

partnerships (PPP or P3), procurement and delivery strategies like design-build, privatization, and value capture mechanisms such as tax-increment financing.

Given the incidence of these tools' use in varied jurisdictions around the country, it is worth considering which have been, up to now, more and less successful and which belong in the planner's toolbox. The purpose of this thesis is to examine several of these strategies in-depth, along with the circumstances of their use, and any drawbacks or criticism. Along the way, this thesis seeks to answer two primary research questions. First, are these financing techniques effective at advancing the goal of getting mass transit funded or have they had any negative consequences? Secondly, what spurs agencies, municipalities, or officials to adopt these strategies? The answers to these questions will help planners to better understand the usefulness of these tools and their relevance for a particular jurisdiction or funding challenge.

Background

Although the financing strategies discussed here are not necessarily new, their use appears to have become more prevalent in the twenty-first century. This thesis aims to present a clearer understanding of how frequently transit agencies or state or local government turn to these tools to finance transit infrastructure and what their impacts are. This thesis will examine public-private partnerships, the procurement strategy known design-build, and an approach known as value capture and a form of it called tax-increment financing. A brief explanation of these tools follows.

Public-private partnerships (sometimes abbreviated as P3) are, as the name implies, arrangements between public and private sector entities. The public sector retains ownership over a project, but responsibility is shared with a private sector actor to secure financing or advance construction (Perlman & Pulidindi 2012). Design-build is a means of delivering new projects that is intended to reduce cost and time, and falls with the P3 umbrella. Rather than a public entity initiating separate contracts for the design and then construction of a project, known as design-bid-build, only one entity is contracted and they oversee both design and construction (Design-Build Institute of America). Within New York State, some state agencies are permitted to use design-build and Governor Andrew Cuomo has advocated for it (Slowey 2016). New York City agencies, however, are not permitted to use design-build. They are required to use the more traditional, and costly, method of design-bid-build (Holmes 2016). Although this project delivery strategy is not specifically a financing mechanism, it is worth studying as a potential cost-saving measure that contributes to the funding of more mass transit projects and thus advances the goal of better transit service. P3 policy is left up to each individual state, and thirty-

four states, the District of Columbia, and Puerto Rico currently have statutes which enable the use of P3s in developing transportation infrastructure (Federal Highway Administration). New York and New Jersey are not among them. Design-build involves less private involvement and shifts less risk to the private sector than other P3 structures like Design-Build-Finance, Design-Build-Operate-Maintain, or Design-Build-Finance-Operate-Maintain. Looking at the farthest end of the spectrum, there have been twenty-one U.S. highway projects, worth about \$23 billion, that utilized DBFOM and are operational or under construction as of December 2015 (U.S. Department of Transportation 2016, 4-7). Construction began on the first of these projects in 1993. However, Combined federal, state, and local spending on highways totaled \$165 billion in 2014 alone, suggesting that P3 projects currently represent a relatively small share of highway spending (CBO 2015, 8).

P3 approaches are relatively new in the U.S., and have been mostly utilized in highway transportation infrastructure, with some less than desirable outcomes. (Roux 2015). Privatization in the transportation world is defined as it is more widely, by transfer of ownership and operation of something from the public to the private sector. Privatization has the potential to benefit the public, in theory, but in practice may not prove to be a means toward achieving the goal of better mass transit.

Tax-increment financing (TIF) is a financing tool and value capture strategy in which a special TIF district is designated around the area of an infrastructure improvement. The improvement leads to increased property value assessments and thus increased tax revenue. The increased tax revenue, or increment, above the pre-improvement baseline is diverted for a period to servicing debt on the project (Peterson 2014). TIF was first used in California beginning in the 1950s and spread to nearly every other state by the end of the century. New York City first

utilized TIF with the recent one-station expansion of the 7 train of the New York City Subway from Times Square to Far West Midtown at Hudson Yards (New York City Independent Budget Office 2002). Nationwide, just over 2,500 individual municipal TIF bond issues, worth about \$39.2 billion were sold to investors between 2000 and mid-2015. 2012 to mid-2015 were the least active years, per a 2016 study, with two-thirds of the TIF dollar value being sold prior to the Great Recession in 2007 (Layton 2016, 5). The author noted that the lower number after 2012 is at least partially due to California leaving the new money TIF market, but even without California in his analysis there was still a decline nationwide. Along with discussing these financing mechanisms in a broad sense, this thesis will also examine several case studies to better illuminate the tools' impacts.

Public-Private Partnerships

Public-private partnerships can take many forms. As explained previously, they involve an agreement between the public sector and one or more private entities. The public sector generally retains ownership over an asset, but the private sector partner finances the project, takes on a greater role in construction, or operates and maintains the finished product.

One important benefit of P3s is that it may lead to a more thorough reckoning with the full life-cycle costs of a project rather than just the upfront construction costs. The involvement of a private sector actor in a project can help to overcome the public-sector bias toward greater investment in capital projects over long-term maintenance expenditures that could extend the life of an asset (Funkhouser 2016). Moreover, budgets and schedules are often too optimistic because they are political in nature, but they are that way in order to secure funding, according to Dr. Michael Horodniceanu, the president of MTA's Capital Construction agency.² Spreading risk away from the transit agencies involved and streamlining the planning and review process for megaprojects are two steps that he suggested could aid in avoiding issues that lead to budget complications or project termination (Horodniceanu 2015).

In the New York City area, one of the strongest examples of a successful public-private partnership is the popular Hudson-Bergen Light Rail (HBLR) system that opened in 2000. The HBLR is a twenty-one-mile, twenty-four-station light rail system that operates in densely-populated Hudson County, New Jersey, between the cities of Bayonne and North Bergen, directly across the Hudson River from Manhattan.

² MTA formed the Capital Construction group in 2003 its large infrastructure projects that also include the Second Avenue Subway and the Long Island Rail Road's East Side Access (Metropolitan Transportation Authority).

Exhibit 1: The Hudson-Bergen Light Rail System in northern New Jersey



This image shows the Hudson-Bergen Light Rail system in New Jersey. The line, which opened in 2000, is a successful example of a public-private partnership for mass transit. (Source: JerseyDigs.com)

The system was built under a P3 model known as design-build-operate-maintain (DBOM).³

Under this arrangement, New Jersey Transit – the state-owned public corporation that controls New Jersey’s public transit services – owns the rail system. But it is operated and maintained by Twenty-First Century Rail Corporation, a private-sector partnership between AECOM and Kinkisharyo USA (Fazio 2016). U.S. defense contractor Raytheon was the initial lead private-sector partner before it shifted to a corporation known as the Washington Group. The latter was acquired by the URS Corporation, which in turn was acquired by AECOM. The HBLR P3 was marked by one notable lawsuit, *Twenty-First Century Rail Corp. v. New Jersey Transit Corp.* The case, which made it all the way to the New Jersey Supreme Court, arose over a dispute

³ While DBOM is on the same spectrum as design-build, which is discussed later in the paper, DBOM is considered a public-private partnership because the public sector finances the project, while a single private-sector entity is responsible for design-build procurement plus operation and maintenance for a specified period (FHWA).

around delays in one component of construction and resulting cost increases. The case was ultimately about whether a particular law firm should be dismissed from representing NJ Transit's engineering consultant because they previously represented one of the project subcontractors (Simpson 2012). Despite the lawsuit and dispute over the particular delay in one component of the project, the subsequent operation and maintenance component of the P3 has more or less been a success. It is not clear if this lawsuit would not have occurred if New Jersey Transit had pursued typical design-bid-build procurement to construct it and then operated it themselves. But with more private sector actors, whose bottom lines are inherently a top priority, involved in a project, there may be greater potential for legal disputes or conflicts of interest.

One potential source of problems with design-build-operate-maintain P3s arises when there is a turnover in the private-sector partner, especially if the firm that designed and built the project leaves the partnership, leaving another partner to handle operations and maintenance. With the Hudson-Bergen Light Rail system, however, the partnership changes were marked mostly by corporate acquisitions and thus there was continuity with corporate interests, personnel, and roles. The P3 structure utilized for the HBLR system has also reportedly influenced similar DBOM arrangements for light rail systems in Denver, Vancouver, and Ottawa. (Fazio 2016).

The Hudson-Bergen system has had influence within the New York area as well. New York City, which is hoping to build a light rail/streetcar hybrid system known as the Brooklyn-Queens Connector (BQX), has looked to the New Jersey system for inspiration (Fitzsimmons 2016). In January 2017, New York City Mayor Bill de Blasio said the city could, if authorized, utilize design-build for BQX construction (Toure 2017).⁴ It is unclear, however, if the city would

⁴ Please see the following section for more information on design-build the battle over its use in New York.

initiate a stronger P3 like DBOM for the project. Private consultants working on the Brooklyn-Queens Connector have supported such a partnership. Sam Schwartz – a transportation engineer and former NYC Traffic Commissioner who heads a consulting firm that developed a concept plan for the BQX – told *The New York Times* in 2016 that his team recommends one firm design, build, and operate it. “There’s no value in stalling construction” with only one private partner on the contract, he said (Dwyer 2016).

With the election of Donald J. Trump and his administration’s arrival in Washington, D.C., there has come a renewed attention to public-private partnerships. The Trump administration has suggested a wave of new infrastructure construction in the U.S. that could possibly rely on P3s (Rodd 2016). As with some of the administration’s other initiatives, the plan is not fully fleshed-out and its feasibility is not certain. The administration has continued to assert the likely role of P3s in the plan, but admitted that health care and tax changes will come before infrastructure spending receives congressional attention (Mulero 2017a).

Trump’s Secretary of Transportation, Elaine Chao, has expressed her support for P3s as an innovative financing tool for new infrastructure that can help the country to overcome the limitations of government resources. At her Senate confirmation hearing, she emphasized the need to incentivize partnerships with the private sector and remove legal and regulatory roadblocks to P3s (Watts 2017). She has cautioned, however, that P3s for transportation infrastructure are not the solution in every circumstance. “[They are] not the answer for everything because there’s a cost to that. And there’s consumer lack of acceptance for toll roads, for example, in certain areas,” she said at a National Governors Association meeting in February 2017 (Mulero 2017b). Members of that association, however, cautioned the Trump administration that P3s will not be enough for their states and federal spending on infrastructure

will need to increase. Colorado's democratic governor John Hickenlooper said public-private partnerships are a "great tool," but states and the federal government will need to provide additional resources (Mulero 2017c).

Despite the apparent enthusiasm for new public-private partnerships, and the fact that thirty-four states have authorized P3, their use for mass transit projects is not widespread. Even, things do seem to be changing. Last year, Moody's reported that the U.S. P3 market is "steadily" growing and is likely to continue growing (Moody's 2016). A 2013 report by AIG claimed that the U.S. is poised to become the world's largest P3 market for infrastructure due to a confluence of a dire need for infrastructure investment and investor interest (McNichol 2013). Private sector interests are certainly in favor of P3s and accessing public capital, but recognize the need for balance between the two sides' interests. "There's a need for motivational balance where both sides should have needs and resources for a partnership, and then you can take advantage of both sides," Michael Reininger, the executive director of a Florida-based holding company behind a new private passenger rail project known as All Aboard Florida, said recently (Danseyar 2017). He advocated more flexibility from both sides, but acknowledged that the private side has obligations to be strategic and profitable.

It is important to note that public-private partnerships are not a perfect tool and they do carry some risk. Engaging in P3s can help to advance the financing need to build projects and bring in private sector expertise, but the public ultimately has to pay for the project. In the case of highway infrastructure P3s, there are several notable examples where demand did not meet expectations and the user fees (i.e., tolls) were not enough to cover repayment the private-sector operator folded or tax revenue had to be shifted to cover it. These pitfalls are often the result of

specific P3 contracts that are negotiated to favor the private partner's gain over taxpayer interests, rather than an inherent flaw in the P3 concept (Gurley 2017).

A recent report from the Economic Policy Institute (EPI), a labor-focused think-tank, called the idea that P3s allow for free infrastructure “economic snake oil”.⁵ While the research has a decidedly anti-P3 tone, the information it provides is more of a cautionary tale about the use of P3s. The EPI emphasizes the distinction between the upfront financing of projects and the funding, the latter of which remains essential and may get ignored in the hype surrounding new P3s. Moreover, it is important to consider how projects will actually be paid for and who the taxes or user fees will impact (Blair 2017).

But this is nothing new. P3s “are not a panacea to anything,” said Jeffrey Gans, a partner at a Washington, D.C. law firm that focuses on financial services, and real estate and construction, among other things (Chiem 2015). With P3s or other forms of privatization, there is a transfer of risk to the private sector which increases the financial costs of borrowing to pay for the infrastructure (Gwilliam 2016, 100). Additionally, private sector companies may underestimate transport infrastructure project costs and overestimate demand. The nature of transit projects means that there can be challenges with P3s and effectively transferring demand risks in ridership to the private sector (Siemiatycki and Friedman 2012). Traditional P3s that compensate the private sector partner solely through fare box revenue have a poor record and lead to the need for government subsidy. Risk is shifted to the private sector actor because recovery of their investment is dependent on demand for the transportation asset. This may be mitigated by procurement models that promote risk sharing between the public and private sectors and innovative P3 arrangements where risk is shared or operations contracts are tendered separately

⁵ It is worth nothing that the Economic Policy Institute

to reduce the private operator's equity stake. These innovative arrangements have helped to reinvigorate interest in P3s for transit. The authors of a 2012 study offered four questions on which to assess demand risk and choose an appropriate P3 contract structure:

1. How does the allocation of ridership demand risk within the [P3] impact on the cost of borrowing capital for the project?
2. Do the terms of the [P3] contract limit the integration of the rapid transit project into the wider urban transit network and built form?
3. In what ways do the terms of the [P3] structure impinge on the flexibility of governments to change fares, reorganize adjacent transit service, or expand the rapid transit network in the future?
4. Are the incentives and penalties built into the [P3] contract significant enough to encourage ongoing quality performance by the concessionaire, and how will these activities be monitored and enforced? (Siemiatycki and Friedman 2012, 298-299).

Privatization naturally draws concerns due to the possibility that private sector motives will hinder public transit goals, or the provision of service by the facility or entity that was formerly in public hands or would have been built by the public. A 2006 study concluded that privatization, via contracting, appears to allow for substantially reduced costs but may bring considerable tradeoffs. Moreover, the author reminded her readers that "the broader social objectives of transit need to be kept in mind" (Scholl 2006). She also noted that there is a need for more research on the impacts of contracting and how to reduce the tradeoffs.

The American Planning Association supports public-private partnerships, from a policy perspective, and notes that there is a "clear and important" role for private investment in fixing the nation's infrastructure challenges. But they emphasize that use of this tool should involve true partnerships that involve equal risk and benefit sharing (American Planning Association). The organization's policy statement on P3s does not dive into the contexts of their use or potential pitfalls, and is limited to vague, qualified support. The New York-New Jersey-Connecticut Regional Plan Association presented a more nuanced assessment of public-private

partnerships in a 2007 white paper. The paper, centered around the proposed use of P3s for highway transportation in New Jersey, started from the assumption that a highway P3 is not necessarily good or bad, but depends on the details of specific agreements. They argued that full transparency, along with responsible spending of P3 revenue, is the most important policy to pursue with these partnerships (RPA 2007).

The New York State Office of the Comptroller investigated P3s and private financing of infrastructure in a 2013 report and concluded that the state should further study the risks to private financing of public infrastructure and set up a comprehensive legal framework for controlling it. The state's stance aligns with other public-minded assessments of P3s, that their use is can save the public money and improve services if done right, but there is a risk the public could bear costs it would not otherwise have incurred (DiNapoli 2013).

Another important aspect of P3s, and potential source of problems, to consider is conflict management and how to address the organizational complexity that arises when multiple parties with diverse interests enter into a project. Public-sector transit agencies, or other government transportation entities, are generally structured with a focus on customer service and improving the quality of the transit they provide. Private-sector actors engaged in P3s, on the other hand, have their bottom lines to consider and their roles and prescribed obligations within the partnerships. A study of conflict management and partner relationships in a London Underground P3 found several shortcomings. Employees of one of the private sector partners were unsure about communication and London Underground staff structures and whom to approach about problems. Additionally, conflict management trainings were not unified between partners and thus the parties had different approaches and priorities to resolving issues that arose (Currie and Teague 2015, 258). The authors note that while that particular P3 was not overly

problematic when it came to conflict management, it does present several lessons that could improve future public-private partnerships. P3 partners should collaborate to develop unified values and approaches, with both formal and informal systems for resolving conflicts, with an emphasis on the latter (Currie and Teague 2015, 263).

Overall, public-private partnerships do carry some benefits and given market trends and the current political climate and leadership in Washington, D.C., it seems likely that their use will accelerate for infrastructure and non-transit transportation projects. With transit projects, or even any use of P3s, public authorities must have the knowledge and information at hand to determine if a public-private-partnership is the most-effective and efficient way to bring about the project.

Design-Build

Design-build is a system for delivering capital projects that combines the design and construction of a new asset into one contract. Rather than a public entity initiating separate contracts for the design and then construction of a project, known as design-bid-build, only one entity is contracted and they oversee both design and construction (Design-Build Institute of America). In theory, design-build reduces the potential for conflicts between the work of what would otherwise be separate design and construction firms and resulting delays and/or cost overruns.

Design-build falls within a spectrum of project delivery methods that vary by the level of private sector control or privatization. Design-bid-build lies at one end, where control lies with the public sector. Moving past design-build, there are other schemes that are more fully public-private partnerships or involve privatization. Design build operate maintain (DBOM) is marked by a P3 contract between a public agency and a private sector entity who oversees the design-build process, along with operation and maintenance of the asset. At the far end of the spectrum are arrangements that involve private sector financing or ownership of the project (Partridge 2013).

Within New York State, some state agencies are permitted to use design-build and Governor Andrew Cuomo has advocated for it (Slowey 2016). While announcing a major milestone in the construction of the new Tappan Zee Bridge across the Hudson River in December 2016, the governor's office cited the use of design-build as an important factor in expediting construction and reducing cost to the state (New York State 2016). The governor also included a design-build proposal in the written report accompanying his 2017 State of the State

address. He proposed that all New York State agencies and authorities involved with construction activities be authorized to enter into design-build contracts (Cuomo 2017, 48-50).

The proposal noted that the Metropolitan Transportation Authority is utilizing design-build for “nearly all” of its new projects, including many within New York City. Although the state-controlled MTA is able to utilize design-build procurement within the five boroughs, New York City’s agencies are not permitted to use design-build. They are required to use the more traditional, and costly, method of design-bid-build (Holmes 2016). Cuomo’s State of the State proposal did not advocate for authorization of design-build in the city. Earlier this year, Mayor Bill de Blasio pushed for design-build in New York City in front of the annual meeting of the New York Building Congress, a construction industry trade group. “It’s something we all know could help us get a lot done more quickly, but we’re gonna need your help in Albany and there’s a lot of reach in this room,” the mayor told the group. “Getting Design Building Authority will allow us to create a better city for all” (Toure 2017).

Despite the interest in design-build in the city and the governor’s push for its greater use, New York has been slower to utilize it than other states and areas within the U.S. As of January 2017, New York is one of five states where design-build is a limited option. (Three states limit it to one agency or project.) Twenty-six states and the District of Columbia have fully authorized its use by all agencies for all construction projects. It is fully authorized for transportation projects in twenty-eight states and D.C. (Design-Build Institute of America 2017).

Its use is likely to expand in New York, but it lags behind other states because of legal and regulatory uncertainties in New York. New York State law mandates that design services can only be performed by licensed professionals, which becomes complicated when one firm is performing both the design and construction roles and may have different priorities that just a

design firm. Design-build is permissible in New York, but there have been several legal challenges. Moreover, the 2011 law authorizing some state agencies to use design-build seemed to present conflicting views on its use in different contexts (Block and Levy 2016).

Along with New York City and State's executive leaders, local academics and agency leaders have also expressed support for greater use of design-build. Mitchell L. Moss, director of the Rudin Center for Transportation Policy and Management at New York University told *The New York Times* in December 2016 that "there's really no justification" for limited use of design-build in New York. "New York hurts itself by not having it available for use in New York City," he said. The New York City Department of Transportation Commissioner, Polly Trottenberg, echoed his sentiments, explaining that the greater efficiency of using design-build could save the city up to a combined \$330 million on six large projects (Hu 2016).

The New York City DOT identified design-build authorization for major capital projects as one of its three goals for project delivery in its 2016 Strategic Plan document. The other two project delivery goals are delivering capital projects in a more timely and cost-effective manner and streamlining "internal and interagency standard operating procedures for capital projects" (NYC DOT 2016). The specificity of the design-build goal, which reads more like an objective, compared to the other two goals, illustrates the importance of design-build to the agency. The New York City Bar Association has also offered unequivocal support for expanding design-build to all New York agencies. "All public owners should have every service delivery methodology, including design-build, available for them to use as they deem appropriate for all project types, both vertical and horizontal," the association's Construction Law Committee wrote in a 2014 report (NYC Bar Association 2014).

A 2015 report from the New York University Rudin Center for Transportation Policy and Management said that the “need has never been greater” for design-build in New York State. The Rudin report rightfully notes that the backlog of infrastructure needs in New York has grown in recent years, especially due to the impacts of Hurricane Sandy. Using design-build may also serve to encourage innovation rather than just securing the lowest bids. (NYU Rudin Center 2015). The Regional Plan Association has not addressed design-build specifically in any of its policy papers or regional transit advocacy work. The organization did, however, present its lifetime achievement award to the chairman of the New York State Thruway Authority in 2013, praising him for his work orchestrating the design-build contract behind the new Tappan Zee Bridge (RPA 2013). They noted the project was the largest procurement in New York State history.

Despite design-build’s potential for cost and time-savings in constructing transportation infrastructure, it does have some disadvantages. The public owner of the project may lose some control over the design process because the owner will not be reviewing and approving design details. Additionally, not every private firm will be able to assemble a design-build team, possibly leading to less competition (Pabor and Pennington 2012). It also has its critics and those who oppose more widespread use of it. The largest opposition comes from some labor unions, who fear that it may undercut their interests.

In 2013, the New York State AFL-CIO issued a public memorandum expressing its opposition to a section in that year’s budget proposal bill in the New York State Legislature that would have expanded design-build among state agencies and allowed for design-build-finance. The union federation said it opposed blanket permission for design-build, because the project delivery method “has the potential to bypass all existing competitive bidding, lowest responsible

bidder and labor protections, such as the Wicks Law” (New York State AFL-CIO 2013). The group argued instead that design-build should only be authorized on a project by project basis with legislative oversight to ensure that projects utilize project labor agreements (PLAs). PLAs are collective bargaining agreements that determine the wages and benefits for workers on a specific project in advance and generally require union labor for construction. Supporters say ensure uniform wages, benefits, and work rules and a steady labor supply that helps with timely delivery. Opponents of PLAs argue they are anti-competitive and unfair because they shut out nonunion contractors and laborers and ultimately drive up project costs due to union wages and work rules (Moran 2011).⁶

Another group, the International Brotherhood of Electrical Workers (IBEW) Utility Labor Council of New York, a federation of eighteen local IBEW unions, went even further in its opposition to the 2013 bill, claiming that design build “has not proven [sic] on any consistent basis that it saves time and money, results in fewer contract disputes, provides greater transparency and accountability, and ultimately provides a better quality product” (IBEW ULC 2013). Ultimately, the final version of the budget bill did not contain the design-build provision (New York State 2013b).

Cuomo’s 2017 State of the State proposal to expand design-build attempted to ease some of the organized labor concerns. Although the governor’s proposal did not go as far as the 2013 New York State AFL-CIO memo, it did include much of the same language. “All design-build projects are deemed ‘public works’ and must include prevailing wage provisions, and expressly

⁶ The previously cited 2015 NYU report argued that state local agencies should be able to use both design-build and PLAs, but neither should be contingent on use of the other (NYU Rudin Center 2015, 26). The report also emphasized that design-build legislation should be tailored to ensure opportunities for small, minority, and women-owned businesses.

authorize a project labor agreement to be included if a study shows it would be beneficial to reduce delay and result in cost savings advantages to the project” (Cuomo 2017, 49).

Five of New York City’s public agencies were nearly granted authority to utilize design-build in 2016, but the New York State Legislature bill authorizing it did not pass before the end of the legislative session. Unlike prior the legislative attempts to change state rules, this bill had support from labor organizations who offered support after the bill was amended to require PLAs (Holmes 2016). Opposition to the measure came from the New York State chapter of the Associated General Contractors of America (AGC), a construction industry trade association representing general contractors, and the New York State Society of Professional Engineers. Both groups issues memoranda of opposition to the 2016 New York State Legislature bill. Both groups’ memos offered support for design-build generally, but opposed the bill as it was introduced for different reasons. The AGC opposed the bill because of the mandated PLAs. They expressed their concern that requiring union labor for projects will exclude African-American and Hispanic-owned construction companies, the vast majority of which are non-union. (New York State AGC 2016).⁷ The professional engineers group framed their opposition in terms of public safety and quality assurance. They were concerned that the authorizing legislation would give too much power to the construction contractor who could compromise project quality or design firm oversight in the name of cost savings (Fasano 2016).

Although public safety and quality control seem like natural concerns that anyone would support, the engineers’ opposition was informed more by self-preservation and is part of a larger turf war between the design and construction communities. Concerns about design-build

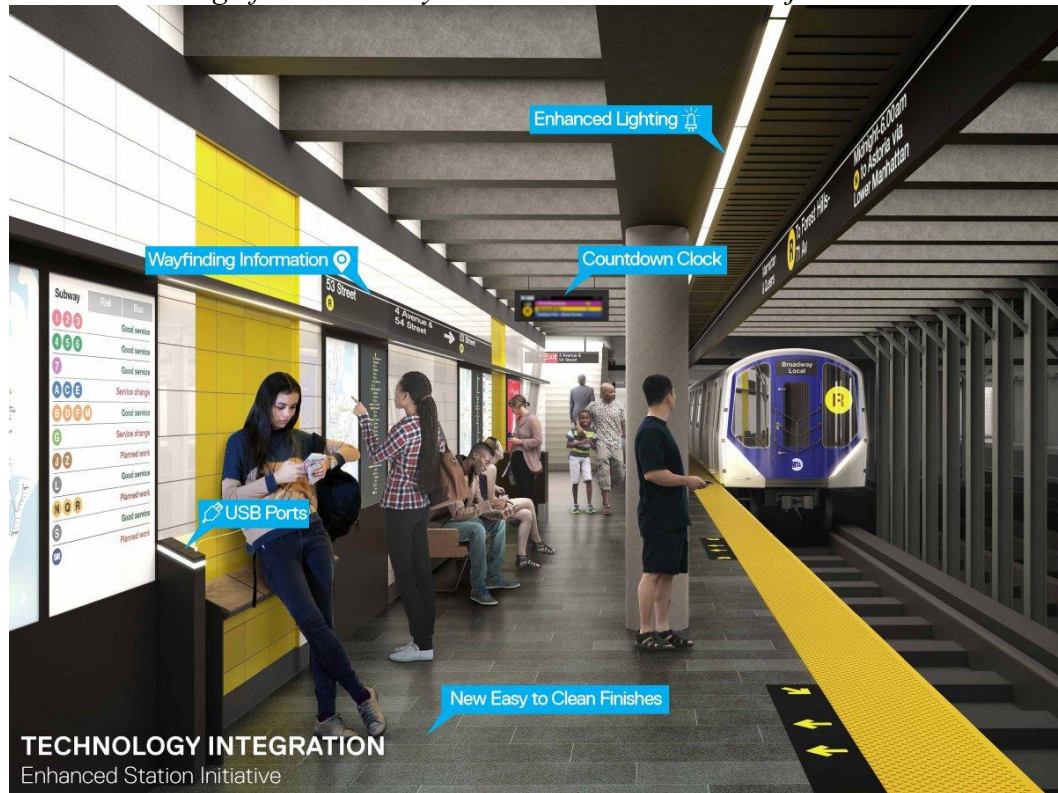
⁷ They claimed, without source, that 98 percent of African-American and Hispanic-owned construction companies are non-union. This statistic is repeated elsewhere, and seems to have originated with the National Black Chamber of Commerce. (Alford 2013).

cheapening design or introducing safety risks may be a result of early marketing of design-build as a cost-saving tool. Moreover, the back and forth between designers and contractors over who should control a project is a disservice to the authorities initiating a project and the public at large, and ignores the potential for collaboration between the two parties under design-build (NYC Bar Association 2014).

An important test for design-build in New York and its use for mass transit projects will be the Metropolitan Transportation Authority's upcoming project to modernize more than thirty subway stations. This project, which began with three R-train stations in Brooklyn, will be the first use of design-build by New York City Transit.⁸ "By using the design-build method, we are putting the onus on one contractor to get the work done seamlessly and on time," MTA Interim Executive Director Ronnie Hakim said at the time (Metropolitan Transportation Authority 2017a).

⁸ Despite its name, New York City Transit is a state-level authority that is a part of the MTA. NYC Transit operates the city's subway system, its buses, and the Staten Island Railway rapid transit line which is not connected to the rest of the subway.

Exhibit 2: Rendering of NYC Subway Station Modernization Project



This photo depicts a rendering of one of the New York City Subway stations that will be modernized under a new project. This will be the first use of design-build by New York City Transit and the project's timely completion could impact future decision-making around design-build within the MTA. (Photo source: MTA / NYS Governor's Office)

The MTA has undertaken several large capital projects to expand mass transit in the New York City area, many of which have been marked by delays. The 7-train extension, the Fulton Center, and the first phase of the Second Avenue Subway all had their timelines adjusted to reflect delays in the construction process. Recent updates suggest the Long Island Rail Road expansion into Grand Central Terminal, known as East Side Access may see a one-year delay on an important component of the work (Castillo 2017). The planned August 2018 reopening of the Cortlandt Street subway station that was destroyed in the September 11 attacks may also be delayed (Barone 2017). While the \$72.1 million contract awarded for the station rehabilitations pales in comparison to the more complex, multi-billion-dollar capital projects that were so delayed, this first use of design-build within New York City Transit should still serve to

demonstrate if it will help to usher in on-time and on-budget completion. MTA leadership appears ready to utilize design-build more widely moving forward.

Even in projects that are not being contracted through design-build procurement, the MTA is still using the term to describe accelerated project timetables. New York City Transit recently shortened the project schedule for the repairs to the L-train's Canarsie Tunnel from eighteen to fifteen months. The repairs are necessary due to flooding and damage from 2012's Hurricane Sandy and require a full shutdown of the popular L-train between Manhattan and Brooklyn. "To expedite the repair and reconstruction process, NYC Transit will implement procedures to ensure that the project advances in a fast-tracked fashion similar to the expedited nature of design-build projects," NYC Transit announced in a March 2017 press release (Metropolitan Transportation Authority 2017b). The phrasing highlights the buzz around expanded use of design-build in New York and likelihood of its integration into more New York City Transit projects.

While there is potential for cost savings with design-build in transportation, the greatest gains may come in time savings (Gransberg 2003, 134). Even so, another important factor to consider in the use of design-build with transportation projects is the potential for long-term cost savings beyond just in construction costs. Emphasis is generally placed on funding the construction of new projects at the lowest cost, rather than the upkeep and maintenance of existing assets. The overall lifecycle costs may also not be considered. By introducing a Lifecycle cost analysis into design-build proposals, project owners can shift the priority over to minimizing lifecycle costs rather than just accepting the lowest bid for initial construction (Gransberg and Molenaar 2003). More recent research suggests that the time savings with design-build for transportation projects are real, but the cost savings over design-bid-build are

still “inconclusive” (Park and Kwak 2017, 293). Use of design-build for public transportation is definitely warranted at least some of the time, but it remains to be seen if objective criteria for determining when to use design-bid-build or other strategies can be developed.

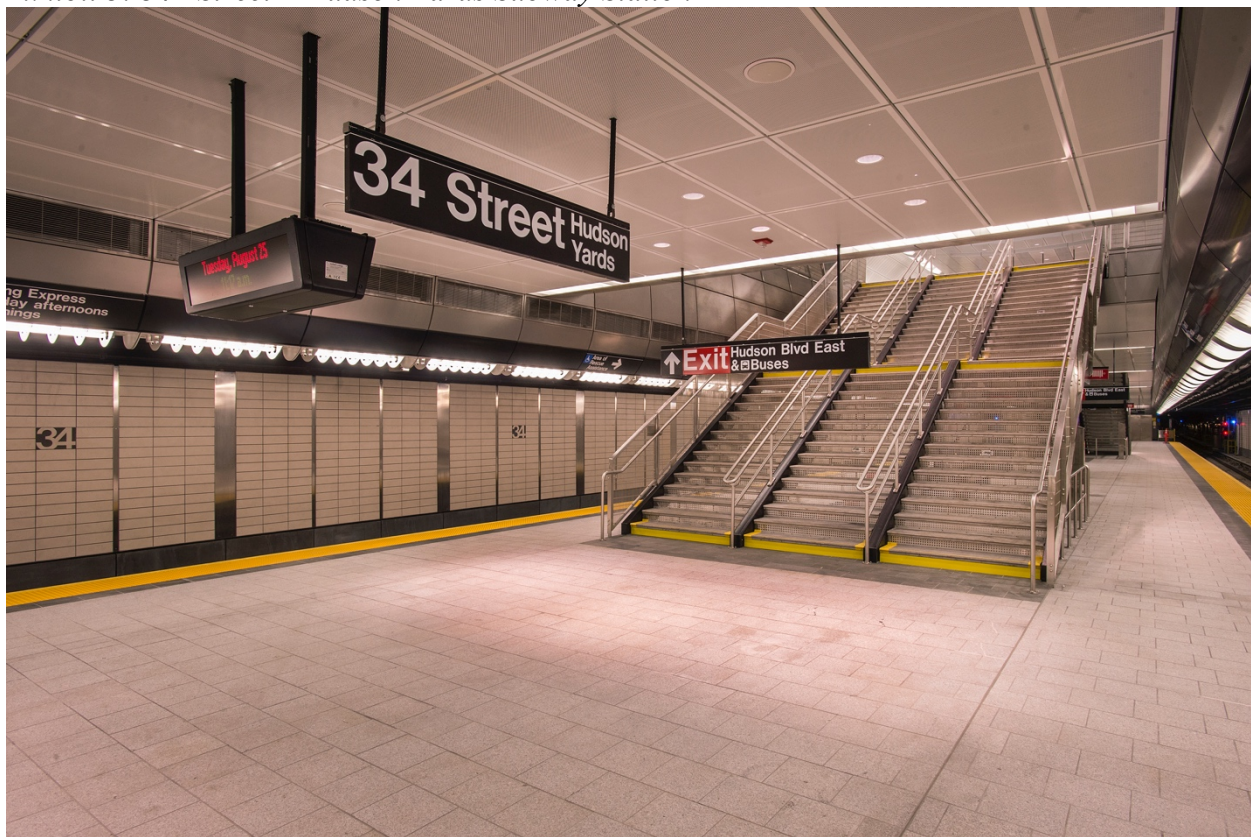
Value Capture

Value capture is a strategy for financing public infrastructure, and especially transportation infrastructure, that makes use of, or captures, the increased land values near a capital project to pay off the public debt associated with the project. Tax-increment Financing (TIF), as previously discussed is a common use of value capture. An important argument in favor of value capture is that it allows the public to reap the benefits from public investment, rather than gains just going into the hands of private investors (Batt 2001, 196). Public investment, whether through new transit infrastructure or through capital improvements to existing services, can lead to significant increases in land values in close proximity to transit stations. Levying taxes on landowners who see increased land values returns some of the benefit back to the taxpayers. Operating costs are best financed through operating fees or other revenue streams, but capital costs are well-suited to value capture because taxes on strategically-located land are economically efficient and the value capture can occur as bond-financed projects are amortized (Batt 2001, 208-209).

A recent example of a mass transit project financed with value capture, through a TIF-like structure, is the 7-train extension of the New York City Subway. Prior to the expansion, the 7-train provided service along the IRT Flushing Line between Times Square in Midtown Manhattan and the neighborhood of Flushing, Queens with two other stops in Manhattan and in several neighborhoods in western Queens. After several years of delays, the expansion opened in September 2015 with a single new station at West 34th Street and 11th Avenue in Far West Midtown. (See *Exhibit 2*.) The station is in close proximity to the existing Jacob K. Javits Convention Center and a new district being built on top of below grade rail yards, known as Hudson Yards.

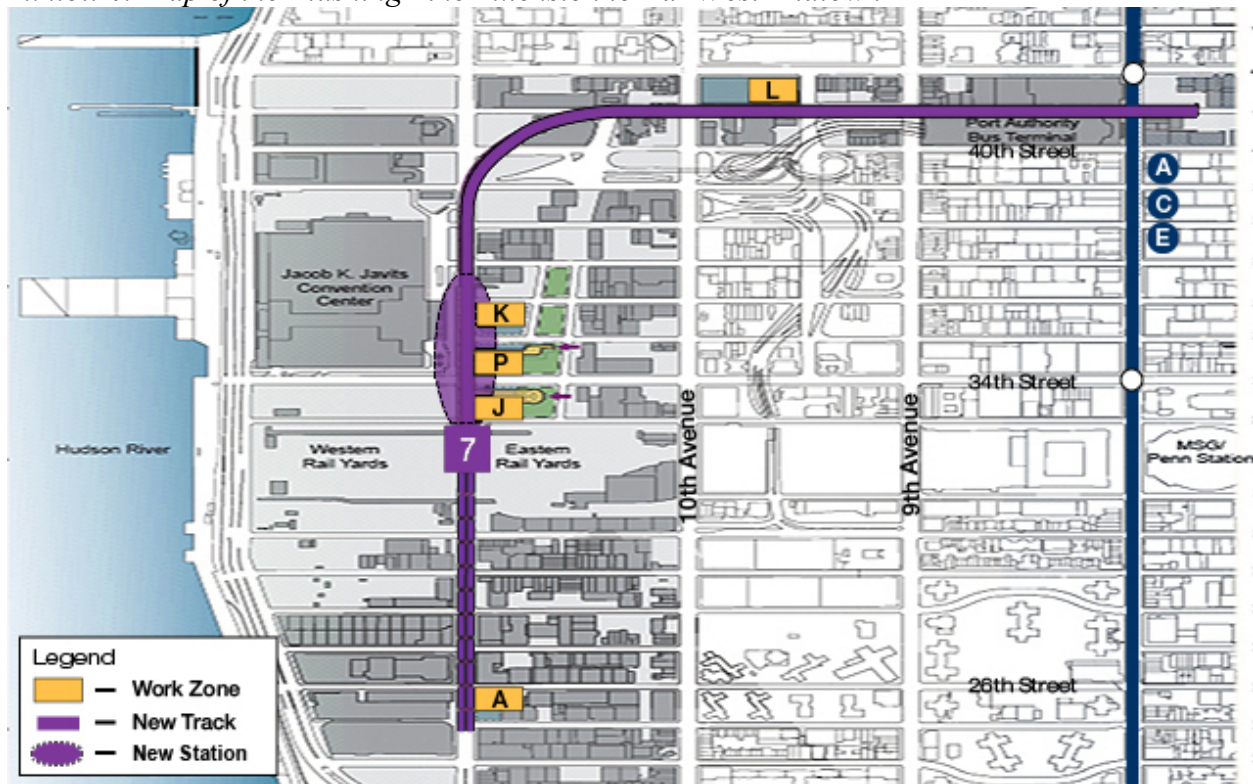
The 7-train extension is unique in the modern history of New York City Subway expansions in that it was financed by New York City, rather than the state-controlled Metropolitan Transportation Authority which operates the subway. It was also the first use of TIF in New York City. Given the high price of subway construction in New York City, the MTA embraced the city's use of tax-increment financing for the 7-train extension. "I hope that we'll recognize the utility of this new financing paradigm as we look forward for other opportunities to expand our mass transit network," Dr. Michael Horodniceanu, said about the project in 2013 (Rubenstein 2013).

Exhibit 3: 34th Street – Hudson Yards Subway Station



This photo depicts the view at platform level inside the 34th Street – Hudson Yards station that became the new terminus of the 7-train in September 2015. (Photo source: Wikimedia Commons)

Exhibit 4: Map of the Flushing Line Extension to Far West Midtown



This map depicts the route of the one-station Flushing Line extension for the 7-train from Times Square to the vicinity of the new Hudson Yards development and the existing Jacob K. Javits Convention Center at 11th Avenue. An intermediate station at 10th Avenue and 41st Street (Location “L” on the map) was planned but ultimately scrapped due to costs. (Image source: Curbed New York).

New York is also intending to pursue value capture financing with the proposed Brooklyn-Queens Connector (BQX) streetcar line. The project is likely to be financed through a TIF scheme in which a new non-profit development entity would issue tax-exempt bonds to pay for the construction. Increased property tax revenue from real estate around the new line would be used to pay off the debt. The BQX financing would be similar to the 7-train extension and Hudson Yards project. Even though the city has described the project as “self-financing,” there is a concern with the BQX, or any similar use of value capture. New development and/or increased property values may not materialize fast enough for the debt payments and the city pay have to pay for some it or make concessions. “Some of where the [BQX] is going has significant

development already. You might not be able to attribute [further growth] to the BQX,” the deputy director of the city’s Independent Budget Office said in 2016 (Khurshid 2016).

Outside of New York City, or even cities with such extensive transit systems, value capture around new transit developments can still prove to be a useful tool. In the auto-dependent city of Perth, Australia, an analysis of residential land values using hedonic price modeling found that there is a strong willingness to pay for access to transit, and close proximity to transit can increase land values up to forty percent (McIntosh et al. 2014, 338). Given this demand for transit-accessible property, there is a case to be made for value capture in a variety of contexts, especially in historically car-oriented and lower density cities.

In a 2016 essay, Lauren Ames Fischer and Elliott Sclar argue that value capture strategies – which capitalize on the increased economic value of transit-served places to improve or expand transit, and include TIF – are certainly appealing and should be considered as a funding source. But, in practice, they are proving to be more of a limited solution than expected. They critique the earlier literature on value capture, noting that it “fails to fully appreciate the difficulties of implementation” (Fischer & Sclar 2016, 122). They conclude that land-based financing strategies should be examined holistically for their broader impacts and policy interactions, and selected carefully to avoid using the wrong strategy. Zhao et al. (2012), who are cited by Fischer and Sclar, offer a broad overview of value capture strategies used in transportation finance. They identify eight commonly used policies that can be considered value capture strategies, one of which is TIF.

There is one recent, notable example of the use of these other value capture tools in New York City, in which a private developer agreed to \$220 million in transit investments in exchange for zoning approval of a large office tower, known as One Vanderbilt, near Grand

Central Terminal (Fitzsimmons 2015). This is reportedly the largest private investment in the New York City Subway system to date. Zhao et al. note that the set of value capture strategies they analyzed “generally fares well” under economic efficiency criteria. (Zhao et al. 2012, 445). The authors conclude that value capture will likely be a useful tool in the coming days. But, as Fischer and Sclar also noted more recently, it is important to consider the context-specific choice of value capture tools and their consequences.

Another 2012 article on value capture, not cited by Fischer and Sclar concluded that, among five value capture strategies, TIF and special assessment districts (SADs) are likely to produce the highest revenue. Corroborating Fischer and Sclar’s conclusion that value capture strategies may be more difficult to implement in practice than expected, the authors conclude that deploying TIF requires “significant institutional capacity, community support, and agreement among taxing agencies” (Mathur & Smith 2012, 7). They also advocate careful design and implementation of these tools to minimize inequities and other negative consequences.

Outside of specifically transit-related uses of TIFs, such as with their use to entice new commercial development, there is concern that they are not a good deal for taxpayers and may have negative side effects. Municipalities often assume that the tax revenue they are foregoing to provide a tax break for a new development would not have materialized otherwise and thus they are not losing anything, but associated economic growth will bring higher public infrastructure and service costs that will be borne by the taxpayers. There is also concern that TIFs used for tax breaks will unfairly favor large corporations or retailers or politically-connected groups over small businesses (McGraw 2006). The Regional Plan Association offered its support for value capture’s place in the transportation infrastructure toolbox in 2012. One of the organization’s vice presidents wrote that value capture is appealing because it can engage the private sector and

its wealth to further the public's vision, while not transferring as much control and revenue to the private sector as with public-private partnerships (Kooris 2012).

Conclusion

Providing high-quality mass transit is an important goal for the twenty-first century. Transit will be important to local and regional competitiveness in the coming decades, and the United States' competitiveness with other developed countries. With much of the country's population growth this century occurring in urban areas and many areas remaining dependent automobiles, local, state, or regional authorities must seek creative means of increasing transit access and improving existing service, especially with older systems (U.S. Census Bureau 2012). Achieving this means securing financing, and constructing transit infrastructure in a time- and cost-effective manner.

Among the options at their disposal, public-private partnerships, design-build, and value capture strategies all offer benefits and drawbacks to the transit authorities and the public. It is important, therefore, to compare them and identify the most beneficial tool. The table below assigns scores to each of the tools in three categories: the level of risk to the public sector, the track record thus far based on projects and trends examined in this thesis, and the broader potential impact of the tool's use.

Table 1

	Public-Private Partnerships	Design-Build	Value Capture
Public Sector Risk	1	3	1
Track Record So Far	2	3	2
Potential Impact	3	1	2
Total	6	7	5

(Note: Scores range from one to three, with three indicating the best score.)

P3s in particular may carry the most risk for the public sector, as has been seen with some P3 highway projects in several states. Care must be taken to ensure the P3 is the right tool and introduces something from the private sector that the public authority could not have done on its own, or as well. Value capture financing also presents risks to the public if new development or land value increases are slower than expected and the promised tax increments do not materialize. With the risks present in P3s and value capture, design-build may be the safest strategy among the three. Thus it scores the highest in the risk category. But the tools are not perfectly comparable and the appropriate context of their use should be always be considered.

In the track record category, design-build also scores the highest. Its use is relatively new in New York, but its widespread use around the country and the enthusiasm for expanding it in New York, attests to its usefulness for shortening project schedules, if not reducing project costs as well. P3s score moderately in this category because of projects that have succeeded, like the HBLR in New Jersey. But given the complexity of these partnerships and the potential for unexpected costs to the taxpayer when demand for the asset does not materialize or the deal was structured to favor the private sector, they are not perfect. Similarly, value capture was successfully utilized in the 7-train expansion in New York City, but the tool often requires complex arrangements and there are concerns about the diversion of tax revenue to pay for the new infrastructure.

Lastly, in the category of potential impact, public-private partnerships score the highest for potential impact. With the market research suggesting increased use in the U.S., and their mention by the Trump administration in initial discussions of infrastructure plans, it is likely that P3s will factor more prominently into the development of transportation infrastructure in the coming years. If utilized appropriately to transfer risk, P3s could lead to a greater number of

projects getting built. Value capture also present an opportunity for municipalities or public authorities to finance and build a large project that might not otherwise be implemented. A project like the 7-train extension might not have made it into the Metropolitan Transportation Authority's capital budget and the existence of this station will provide a great benefit to residents and workers in far west Midtown Manhattan. However, given value capture's complexity for assembling the necessary financing and relative infrequency of its use, it does not score as highly as P3.

Design-build scores the lowest in this category. Even though it is not as risky for the public as the other tools and is less complex, it is unlikely to tilt the scales for a project that would not otherwise be built, or usher in any dramatic changes. Nevertheless, design-build is an important tool that should be utilized wherever possible in planning mass transit projects. It may not be right for every situation, and care must be taken to ensure a fair and competitive contracting process, but in many circumstances, it seems to present an improvement over the typical design-bid-build process. Given the New York Metropolitan Area's density and existing transit infrastructure, and need for greater transit access as the region grows this century, it is important for New York State to continue expanding the use of design-build and authorize it for New York City's agencies. Local and regional transit advocates should also push New Jersey to authorize its use statewide.

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Exhibit 1: <https://jerseydigs.com/wp-content/uploads/2016/10/udson-bergen-light-rail-expansion.jpg>

Exhibit 2: <http://42mzqz26jebqf6rd034t5pef-wpengine.netdna-ssl.com/wp-content/uploads/2016/07/subway19n-4-web.jpg>

Exhibit 3: [https://upload.wikimedia.org/wikipedia/commons/8/8d/34_St-Hudson_Yards_Station_\(21201559438\).jpg](https://upload.wikimedia.org/wikipedia/commons/8/8d/34_St-Hudson_Yards_Station_(21201559438).jpg)

Exhibit 4: <http://ny.curbed.com/2015/7/21/9938612/7-train-extension-is-pretty-much-complete-will-open-in-sept>