The Beacon Hill Institute

The Effects of Project Labor Agreements on Public School Construction in Connecticut

William F. Burke, BSBA
David G. Tuerck, PhD

THE BEACON HILL INSTITUTE FOR PUBLIC POLICY RESEARCH

JANUARY 2020

TABLE OF CONTENTS

TABLE OF TABLES

Executive Summary

A project labor agreement (PLA) is an agreement between construction unions and contractors employed on a building project under which the contractors adhere to specified work rules and hiring procedures. Typically, PLAs require that all workers be hired through union halls, that non-union workers join a union and/or pay dues for the length of the project, and that union rules apply to work conditions and dispute resolution. Construction unions actively lobby governments to require PLAs to the end of securing work for their members and union-signatory contractors on projects funded by taxpayers.

Before this report, the Beacon Hill Institute completed an extensive statistical analysis of the effects on school construction bids and on construction costs of PLAs in Ohio, Massachusetts, New Jersey, Connecticut, and the state of New York. In the Ohio, Massachusetts, New Jersey, and Connecticut studies, our analysis found final construction costs to be significantly higher when a school construction project was executed under a PLA. In the New York study, we found that final bids for construction projects were higher under a PLA.[1]

Our first report on Connecticut covered the years of 1996-2002 and appeared in 2004.[2] That study found that PLAs increased both bid costs and final construction costs of public-school construction projects by almost 18 percent.

Since the 2004 study, Connecticut school districts have continued to build new schools and renovate existing schools. A 2014 School Building Projects Advisory Council report indicates that in Connecticut there were 72 new school building construction projects and 31 addition and

[1] See http://beaconhill.org/labor-economics/ for links to our prior work on PLAs. A bid cost is a project's base construction bid that includes site work and, for many projects, both Project Labor Agreements and non-Project Labor Agreements.

[2] Paul Bachman, Jonathan Haughton, and David G. Tuerck, *Project Labor Agreements and the Cost of School Construction in Connecticut*, The Beacon Hill Institute at Suffolk University, September 2004. http://www.beaconhill.org/BHIStudies/PLA2004/PLAinCT23Nov2004.pdf.

renovation school projects between 2004 and 2013.[3] The *2013 School Construction Priorities* lists an additional 23 school construction projects with estimated costs over $1 million.[4] There is a substantial pool of more recent projects, from which it was possible to gather data.

For this report, we gathered data on construction awards and final construction costs for public school construction projects that did and did not use a PLA in Connecticut over the period 2001 to 2019. Fifteen of 52 PLA projects in our sample had final construction costs that came in over budget. We found that the presence of a PLA increases the final base construction costs of a school by $89.33 per square foot (in 2019 prices) relative to non-PLA projects. Because the average cost per square foot of construction is $450.15, PLAs raise the final construction cost of building schools by 19.84 percent.

We use control variables to separate the effects of PLAs on construction costs from other factors affecting construction costs. In this study, we control for the number of stories above grade, the square-footage of a new structure, whether the school is an elementary school or not, and other features that might make a school more expensive to build, such as the presence of a newly constructed school or a school construction project including significant renovations.

We utilize the findings to estimate the potential savings from not using a PLA on a construction project. We estimate that if the $2.031 billion of construction projects in our sample that were built with a PLA had been built without a PLA, taxpayers would have saved $503.463 million, or between $8.933 million per 100,000 square-foot project and $26.799 million per 300,000 square-foot project, if PLAs had not been used.

[3] "Report by the School Building Projects Advisory Council," School Building Projects Advisory Council, (February 7, 2014), https://portal.ct.gov/-/media/DAS/Office-of-School-Construction-Grants/School-Building-Projects-Advisory-Board/sbpac_report_02072014.pdf?la=en.

[4] "2013 School Construction Priority List," Connecticut Department of Administrative Services, Office of School Construction Grants and Reviews, (December 14, 2012), https://portal.ct.gov/-/media/DAS/Office-of-School-Construction-Grants/Task-191---School-Construction-Property-List-Projects/2013.pdf?la=en.

Introduction

PLAs are a form of a "pre-hire" collective bargaining agreement between contractors and labor unions pertaining to a specific project, contract or work location. They are unique to the construction industry. The terms of a PLA generally recognize the participating unions as the sole bargaining representatives for the workers covered by the agreements, regardless of their current union membership status. They require most or all workers to be hired by general contractors and subcontractors through the union hall referral system. Non-union workers must join the signatory union of their respective craft and/or pay dues for the length of the project. The workers' wages, working hours, dispute resolution process and other work rules are also prescribed in the agreement. PLAs supersede all other collective bargaining agreements and prohibit strikes, slowdowns and lockouts for the duration of the project.[5]

PLAs can be mandatory, that is, required by a government entity such as a school board as a condition of bidding and winning a contract to perform construction services on a project. Alternatively, they can be agreed to voluntarily by contractors participating in an open and competitive bidding process. Mandatory PLAs are anti-competitive insofar as they discourage open shop contractors from bidding on projects to which the PLAs are attached. Voluntary PLAs are less likely to raise costs insofar as winning bidders would not agree to follow union rules and hiring procedures unless it was cost effective to do so and unless it therefore made bidders more efficient by allowing them to negotiate the terms and conditions of the PLA directly with unions.

In earlier studies, the Beacon Hill Institute (BHI) found that the presence of PLAs increased construction bid costs over non-PLA school projects in Ohio, Massachusetts, Connecticut, New

[5] U.S. General Accounting Office, *Project Labor Agreements: The Extent of Their Use and Related Information*, Publication No. GAO/GGD-98-82, (Washington D.C.: 1998), http://www.gao.gov/achives/1998/gg98082.pdf.

York and most recently, New Jersey.[6] Of the five, the studies of Ohio, Massachusetts, Connecticut and New Jersey showed that PLAs increased final construction costs as well.

Other researchers have found similar results. For example, a study conducted by the New Jersey Department of Labor and Workforce Development found that the "cost per square foot for PLA projects was $260.00, or 30.5 percent higher than for non-PLA projects, which averaged $199.19 per square foot" on school construction projects in New Jersey.[7] A study by National University System Institute for Policy Research on school construction projects in California found that costs were "13 to 15 percent higher when school districts construct a school under a PLA."[8]

This is the second of two Connecticut studies. In the first study, our analysis covered projects undertaken between 1996 and 2002. The current study extends our examination of the effects of PLAs on public school construction projects that took place in Connecticut since 2001.

Historical Background on PLAs

PLAs in the United States originated in the public works projects of the Great Depression, which included the Grand Coulee Dam in Washington State in 1938 and the Shasta Dam in California in 1940. Since World War II, PLAs have continued to be used on a limited basis for some large construction projects procured by government entities, from the construction of the Cape Canaveral Space Center in Florida to the Central Artery project (the "Big Dig") in Boston. PLAs

---

[6] Paul Bachman, Darlene C. Chisholm, Jonathan Haughton, and David G. Tuerck, *Project Labor Agreements and the Cost of School Construction in Massachusetts,* The Beacon Hill Institute at Suffolk University, (September 2003). http://www.beaconhill.org/BHIStudies/PLAPolicyStudy12903.pdf. See also Paul Bachman, Jonathan Haughton, and David G. Tuerck, *Project Labor Agreements and the Cost of School Construction in Connecticut,* The Beacon Hill Institute at Suffolk University, September 2004. http://www.beaconhill.org/BHIStudies/PLA2004/PLAinCT23Nov2004.pdf.

[7] "Annual Report to the Governor and Legislature: Use of Project Labor Agreements in Public Works Building Projects in Fiscal Year 2008", New Jersey Department of Labor and Workforce Development, October 2010, http://lwd.dol.state.nj.us/labor/forms_pdfs/legal/2010/PLAReportOct2010.pdf, 3.

[8] Vince Vasquez, Dr. Dale Glaser, and W. Erik Bruvold, "Measuring the Cost of Project Labor Agreements on School Construction in California, " National University System Institute for Policy Research, 2010, http://www.nusinstitute.org/assets/resources/pageResources/Measuring-the-Cost-of-Project-Labor-Agreements-on-School-Construction-in-California.pdf, 1.

used on prominent private sector projects include the Alaskan Pipeline and Disney World in Florida.

The Arguments Against and For PLAs

Government-mandated PLAs on publicly financed construction projects are typically issued after lobbying campaigns from labor unions to help them increase market share and win work for union-signatory contractors. The logic of mandating PLAs is, however, increasingly dubious given the decline of union membership across the workforce and particularly in the construction sector. Only 12.8 percent of the U.S. private construction workforce currently belongs to unions, down from 15.6 percent in 2008.[9]

PLAs typically require that general contractors and subcontractors to hire most or all construction labor through union halls and union apprenticeship programs, contribute to multiemployer pension retirement plans and follow union work rules. PLAs force contractors to hire union workers in place of most or all of their own workforce. The contractors and any existing employees are required to contribute to union benefits plans even if they cover their own workers under their own policies. Typically, all workers are forced to pay union dues or fees and/or join a union in order to work on a PLA project. In addition, onerous work rules in typical PLAs restrict the contractors from using their own, often more flexible, operating rules and multiskilling procedures across multiple trades with their own non-union employees. These restrictive conditions cause costs to rise for a project subject to a government-mandated PLA.

Merit shop (non-union or open shop) contractors contend that their competitive advantages are nullified by a PLA even as they comply with other mandates such as prevailing wage laws. The result is that in practice, if not in principle, they are unable to bid competitively on jobs that have a PLA requirement. In turn, the absence of open shop bidders for PLA projects results in fewer bidders for the project, and with fewer bidders, the lowest bids come in higher than if open shop

[9] Union Membership and Coverage Database, December 29, 2019, http://www.unionstats.com/

contractors had participated. Therefore, the project cost will be higher, with fewer bidders attempting to under-bid each other for the contract. Some opponents also argue that requiring a PLA violates state competitive bidding laws that require a free and open bidding process.

Proponents of PLAs counter that PLAs keep projects on time and on budget and that they help to assure the use of qualified, skilled workers on a project. They argue that the agreements provide for harmonious work conditions by eliminating inefficiencies in existing union collective bargaining agreements and that they guarantee predictable wage costs for the life of the contract. They contend that the combination of work rules and provisions that prohibit strikes, slowdowns and lockouts keep the project on time while preventing cost overruns due to delays. They argue, furthermore, that the wage stipulations allow firms to estimate more accurately the labor costs for the life of the project and thus keep the project on budget.[10]

Proponents also argue that the work rules, such as overtime and vacation pay under PLAs are often less generous than the collective bargaining agreements for some trades. Thus, if a PLA stipulates that overtime pay begins only after 40 hours per week, and not after eight hours per day, as in some collective bargaining agreements, then the PLA will produce savings on overtime costs.

Advocates insist that the union training programs create a safer work environment, thereby reducing accidents and thus lowering the number of workers' compensation claims. Besides, they claim workers' union certifications and apprenticeship training programs ensure the qualifications of the workforce. These features, they argue, save money by reducing cost overruns. Also, proponents assert that through union apprenticeship programs, PLAs help to ensure local workers are hired and trained.

[10] Gerald Mayer, "Project Labor Agreements." Congressional Research Service, R41310, July 1, 2010, https://www.cga.ct.gov/2011/rpt/2011-R-0360.htm.

Such claims, against and for PLAs, are merely anecdotal. It is the owner's responsibility, in soliciting bids for a project, to specify the terms of the contract, including completion time and the expected quality of the work to be performed. When the owner is a public entity that is responsible for several or many construction projects over a long-time horizon, that entity should turn to the data to determine whether the practice of mandating a PLA does reduce costs as proponents claim. As in past studies, we use data to determine if the pro-PLA claims are valid.

Legal Background

The controversy over PLAs on public construction projects has intensified, with a myriad of court challenges from both sides of the argument.

In 1993, the United States Supreme Court's *Boston Harbor* decision raised the stakes over the use of government-mandated PLAs on public projects. In 1988, a federal court ordered the Massachusetts Water Resources Authority to fund the cleanup of Boston Harbor. The Authority's project management firm, IFC Kaiser, negotiated a PLA with the local construction unions for the multibillion-dollar cleanup effort funded by taxpayer dollars. In a move that set a precedent, IFC Kaiser mandated a PLA as part of the project's bid specifications.[11] As a result, a non-union trade group filed a lawsuit contending that the PLA requirement violated the National Labor Relations Act (NLRA). However, the United States Supreme Court held that a state authority, acting as the owner of a construction project and as a market participant purchasing construction services, was legally permitted to enforce a pre-hire collective bargaining agreement negotiated by private parties.[12] Since the *Boston Harbor* decision, most PLA litigation has centered on the competitive bidding requirements of state and local law.

[11] Herbert R. Northrup and Linda E. Alario, "Government-Mandated Project Labor Agreements in Construction, The Institutional Facts and Issues and Key Litigation: Moving Toward Union Monopoly on Federal and State Financed Projects," *Government Union Review* 19, no. 3, (2000): 60.

[12] Ibid.

New York State Chapter ABC, Inc. v. *New York State Thruway Authority* provided a significant ruling that affected the use of PLAs. The court ruled that PLAs are "neither absolutely prohibited nor absolutely permitted" on public construction projects in New York and that they should be considered on a case-by-case basis. The court ruled that the public owners of construction projects in New York must demonstrate that a PLA upholds the principles of the state's competitive bidding statutes and protects the public's interest by obtaining the lowest price for the highest quality work, and prevents "favoritism, improvidence, fraud and corruption in the awarding of public contracts."[13]

PLAs at the Federal Level

President George H.W. Bush's October 23, 1992, Executive Order 12818, "Open Bidding on Federally Funded Construction Projects," was the first serve in a PLA policy ping pong match between Republican and Democratic administrations that ensued after the *Boston Harbor* court case. The executive order prohibited federal agencies from requiring PLAs on federal construction projects.[14]

On February 1, 1993, President Clinton issued Executive Order 12836, "Revocation of Certain Executive Orders Concerning Federal Contracting," rescinding President Bush's Executive Order 12818.[15]

After his reelection, President Clinton attempted to implement a pro-PLA executive order that instructed federal agencies to determine if a PLA would "advance the government's procurement interest[s]" on federal construction projects and then to implement them on a project-by-project basis. However, that executive order was never signed.[16] After extensive political pressure from

[13] New York State Chapter ABC, Inc. v. New York State Thruway Auth., 88 N.Y. 2d 56,643 NYS 2d 480,666 NE 2d 185 (1996).
[14] Northrup, 3.
[15] Exec. Order No. 12836, 3 C.F.R. (1993).
[16] Draft Executive Order on the Use of Project Labor Agreements, April 1997, http://thetruthaboutplas.com/wp-content/uploads/2009/06/draft-of-pro-pla-clinton-executive-order-never-happened-040197.pdf.

the Republican-controlled U.S. Senate, President Clinton instead issued a June 5, 1997, memorandum that merely encouraged the use of PLAs on contracts over $5 million for construction projects, including renovation and repair work, for federally owned facilities.[17]

Subsequently, few projects were conducted under government-mandated PLAs because the regulatory process that established the rules in which the federal government could require and use PLAs delayed implementation of the Clinton memo. Also, few federal agencies opted to mandate PLAs on federal construction projects, as documented in a May 5, 1998, *U.S.* Government Accountability Office (GAO) report: *Project Labor Agreements: The Extent of Their Use and Related Information*. The GAO report found that it is nearly impossible to show any savings or increased quality derived from the use of government-mandated PLAs.[18]

On February 17, 2001, under Executive Order 13202, President George W. Bush canceled the Clinton policy by effectively prohibiting government-mandated PLAs on federal and federally assisted construction projects. The executive order declared that neither the federal government nor any agency acting with federal assistance should require or prohibit construction contractors to sign union agreements as a condition of performing work on a government construction project.[19] On April 6, 2001, the Bush Administration amended Executive Order No. 13202 with Executive Order No. 13208, which exempted any project that already had at least one contract awarded with a PLA from Executive Order 13202.[20]

Some of the largest unions in the country, including the AFL-CIO, insisted that the order illegally interfered with their collective bargaining rights under the NLRA. They filed suit in federal court (*Building & Construction Trades* v. *Allbaugh*), and on November 7, 2001, a United States District

[17] Ibid.,3.
[18] U.S. Government Accountability Office, Project Labor Agreements: The Extent of Their Use and Related Information, GGD-98-82, (May 29, 1998), http://www.gao.gov/products/GGD-98-82.
[19] Worcester Municipal Research Bureau, "Project Labor Agreements on Public Construction Projects: The Case for and Against," Report No. 01-4 (May 21, 2001): 7, http://www.wrrb.org/reports/public-administration/2001/05/the-use-of-project-labor-agreements-on-public-construction-projects/.
[20] Exec. Order No. 13208, 3 C.F.R. 187 (2001)

Court Judge issued an injunction blocking the President's order. The Justice Department appealed and, the U. S. Court of Appeals for the District of Columbia overturned the lower court decision and ordered the judge to lift the injunction on July 12, 2002. In handing down its decision, the appeals court found that the NLRA did not preempt the executive order as the AFL-CIO argued.[21] The unions disagreed and filed to have the case reviewed by the United States Supreme Court. In April 2003, the Supreme Court declined to review the case, and the President's 2001 executive order remained in place.[22]

On February 6, 2009, shortly after entering office, President Obama issued Executive Order 13502, which changed the federal government's policy to one that encouraged executive agencies to consider requiring, on a case-by-case basis, the use of PLAs related to large-scale construction projects (projects where the federal cost exceeded $25 million).[23] It also permitted state and local lawmakers to mandate PLAs on federally assisted projects procured by state and local authorities, a practice that had been prohibited under the George W. Bush orders. The Obama executive order claimed that, without a PLA, large-scale construction projects are likely to experience (1) labor "disputes," (2) difficulties in predicting labor costs, interruptions in labor supply, (3) a lack of coordination on construction projects, and (4) uncertainty about the terms and conditions of employment of workers – all of which ostensibly lead to delays and cost overruns.[24]

If the claims made in Executive Order 13502 were true, then federal construction projects initiated during the George W. Bush administration's ban on government-mandated PLAs should have been rife with labor disputes leading to cost overruns and delays. That was not the case, however. A 2009 study by the Beacon Hill Institute found no evidence of any labor disputes or delays on

[21] "Bush Administration, Construction Unions in Fight Over Project Labor Agreements," *Bulletin Broadfaxing Network*, December 5, 2002.
[22] Halloran & Sage LLP, "Union Activity Across the Country," *Connecticut Employment Law Letter* 11, M. Lee Smith Publishers & Printers, (April 2003).
[23]U.S. Department of Labor, "Implementation of Project Labor Agreements in Federal Construction Projects: An Evaluation, Interactive Elements Corporation & Hill International," (February 25, 2011) https://www.dol.gov/asp/evaluation/reports/20110225.pdf.
[24] David G. Tuerck, Paul Bachman and Sarah Glassman, Project Labor Agreements: A Costly Solution in Search of a Problem, The Beacon Hill Institute, (August, 2009), http://www.beaconhill.org/BHIStudies/PLA2009/PLAFinal090923.pdf, 4.

the $57 billion of federal construction projects with a price over $25 million that were performed during George W. Bush's presidency.[25]

In 2009, the U.S. Department of Labor (DOL) selected Manchester, New Hampshire to build a new Jobs Corps Center with a PLA mandate. However, non-union contractors complained that many New Hampshire construction contractors and workers were non-union, and that the PLA would favor contractors from out of state. Nonetheless, the DOL solicited bids for the project under the PLA. A non-union contractor filed a bid protest with the GAO against the PLA mandate, and in the face of political pressure and an unfavorable ruling against the Labor Department, the PLA was eventually dropped, and the project rebid without a PLA. The second round of bidding produced three times as many bidders and bid prices that were 16 percent lower, ultimately saving taxpayers $6.2 million and allowing a local company to deliver the award-winning project on-time and on budget. [26]

To date, the Trump administration has not issued an executive order similar to the Bush orders restricting government-mandated PLAs on federal and federally assisted projects. To date, the Trump administration has not mandated any PLAs on any construction projects procured directly by a federal agency.

However, an unknown number of PLA mandates have proliferated on federally assisted projects procured by state and local governments. For example, according to a February 2019 report by the U.S. Department of Transportation's Federal Highway Administration (FHWA), from May 2010 to February 2019, state and local government authorities mandated PLAs on 418 state and local contracts (totaling $10.12 billion) receiving federal assistance from the FHWA.[27]

---

[25] Ibid, 6.

[26] Ted Siefer, "NH firm wins contract to build $35M job center in Manchester after years-long fight," *The New Hampshire Union Leader*,(April 21, 2013), http://www.unionleader.com/apps/pbcs.dll/article?AID=2013130429519&NL=1&template=printart#sthash.Ewo1ItG4.dpuf.

[27] U.S. Department of Transportation, Federal Highway Administration, Interim Guidance on the use of Project Labor Agreements, (May 7, 2010), https://www.fhwa.dot.gov/construction/contracts/100507.cfm and subsequent data on the use of PLAs on federally assisted FHWA projects: https://thetruthaboutplas.com/wp-content/uploads/2019/03/FHWA-PLA_SummaryTables_022619-Created-032219.xlsx.

State governments also have enacted legislation on the use of PLAs. To date, a total of 25 states have adopted measures restricting the use of government-mandated PLAs on state, state-assisted and local construction projects to some degree.[28] Since 2011, 26 states enacted measures following the Obama administration's pro-PLA policy. Roughly eight states have enacted measures encouraging the use of PLAs on a case-by-case basis.

PLAs in Connecticut

The *Boston Harbor* decision opened the door for PLAs on public construction projects throughout the country, including Connecticut.

In Connecticut, the use of PLAs in construction projects has been especially contentious. The percentage of construction force union members to total employed workers in Connecticut stands at 20.1 percent, as of 2018.[29]

PLA opponents in Connecticut continued the trend in other states by challenging PLAs in court, contending that PLAs violate competitive bidding statues. In two separate, but related, court cases involving the use of a PLA in the construction of a parking garage in Hartford (*Connecticut Associated Builders and Contractors, et al. v. City of Hartford, 251 Conn. 169, 1999* and *Connecticut Associated Builders and Contractors, et al. v. Theodore Anson, Commissioner of Public Works, 251 Conn. 202, 1999*), the Connecticut Supreme Court held that contractors and trade associations did not have the right to challenge

[28] ABC Applauds Passage of Texas Law Ensuring Fair and Open Competition, June 3, 2019, https://thetruthaboutplas.com/2019/06/03/abc-applauds-passage-of-texas-law-ensuring-fair-and-open-competition/ and list of states with Fair and Open Competition Measures (as of May 2019): https://thetruthaboutplas.com/wp-content/uploads/2019/08/State-and-Local-Government-Mandated-Project-Labor-Agreement-Laws-as-of-053019.xlsx

[29] Union Membership and Coverage Database, Connecticut, December 29, 2019, http://www.unionstats.com/

the award of a contract unless there were alleged illegalities in the bidding process that "amount to fraud, corruption, favoritism or acts that undermine the objective and integrity of the competitive bidding process."[30] The Court, in essence, restricted the ability of non-union contractors to challenge PLAs in Connecticut courts.

PLAs have provoked further controversy in Connecticut. In January of 2012, the Connecticut Supreme Court reversed a Superior Court decision and gave standing to Electrical Contractors Inc. (ECI), a Hartford nonunion company, to sue the Hartford Board of Education after it won a bid on two school construction projects but declined to sign a PLA covering the projects. The Hartford Board of Education awarded the contract to another firm, and ECI sued the Board. The ruling reversed a Superior Court ruling that denied ECI standing to sue. The decision opened the door for other non-union contractors to sue over PLAs.[31]

The Connecticut Legislature and Governor responded by enacting Public Act 12-70 later in 2012. The Act explicitly allows the use of PLAs on public construction projects in Connecticut, undercutting the effects of the State Supreme Court ECI decision.[32] The bill allows Connecticut municipalities the decision of choosing whether to use a PLA for any school construction project which will cost more than $10 million.

Connecticut cities such as Bridgeport, Hartford, New Haven, New London and Waterbury have frequently required PLAs on school construction projects. Elsewhere in

[30] "Construction Law Update: New Developments in Connecticut Construction Law," Pepe & Hazard LLP, Construction and Surety, Client Advisories; Internet; available at http://www.pepehazard.com/Publications/Publicationtext.cfm?pubid=19; accessed July 19, 2004.
[31] Supreme Court of Connecticut. ELECTRICAL CONTRACTORS, INC., et al. v. DEPARTMENT OF EDUCATION et al, No. 18525. (Decided: January 17, 2012), https://caselaw.findlaw.com/ct-supreme-court/1594236.html.
[32] "Malloy signs design-build, PLA law," Hartford Business.com, (July 11, 2012), http://m.hartfordbusiness.com/apps/pbcs.dll/article?AID=/20120711/NEWS01/120719936.

Connecticut, major public-works projects have used PLAs, including most recently the Gold Star Bridge, which will allegedly require a PLA and the Gold Star Bridge and Road and Bridge Rehabilitation project on I-84 and Route 8 in Waterbury.

Connecticut Governor Ned Lamont has requested that the new CT2030, which includes $21 billion in transportation projects, be built requiring the use of PLAs. [33]

Evidence on PLAs

The evidence on whether PLAs drive up construction costs had been mostly anecdotal until we started investigating PLAs in Massachusetts over a decade ago. The earlier evidence fell into two categories: (1) estimates by consultants that were made in the pre-bid stage of a project, with no attempt made to verify their cost-saving claims after the fact, and (2), estimates that restricted to only a few projects. No "analysis" of either kind provides any quantitative evidence that PLAs increase or reduce construction costs.

It is statistically possible to test whether PLAs raise construction costs by using the approach taken here and in our previous studies. In this study, we present data that relates to Connecticut public school building projects. We then report the results of our regression analysis and the cumulative effect of these results on the construction costs.

Data Sources

We started with data from the Office of School Construction Grants & Review School Priority Lists from 2001 and on, which contains school construction projects whose

[33] "Big payoff to big labor in Gov. Lamont's new transportation plan", (December 22, 2019), https://yankeeinstitute.org/2019/11/08/big-payoff-to-big-labor-in-gov-lamonts-new-transportation-plan/

sponsors sought assistance via grants from the state.[34] According to the Office of School Construction Grants & Review, "All school construction projects seeking State assistance are required to be authorized by the legislature, except for those described in C.G.S. 10-283(b)." The Lists contain data from these government offices including estimated construction costs, bid sizes, and estimated square footage of potential public-school construction projects. We went through each Priority List after 2001 to determine which public-school construction projects were authorized in order to create a starting point for our database. We also used a Connecticut Education directory derived from Connecticut Data to find any additional public-school construction projects not contained within the Priority Lists.[35]

We then contacted local school districts and contractors for various school construction projects in order to obtain final construction costs and other essential data. We could not find certain data, such has the number of bids per trade package, and whether or not the requested projects were rebid without a PLA after the initial round of bidding under a PLA.

Adjusting for Inflation

Our sample of 95 school construction projects covers the period 2001 to the present. To compare the final construction costs of PLA with non-PLA schools, it was necessary to correct for the fact that construction costs rose during this period. We used the U.S. Department of Labor's Bureau of Labor Statistics index for "New School Building Construction" to make the

[34] "School Construction Priority List," Connecticut Department of Administrative Services, Office of School Construction Grants and Reviews, (December 14, 2019), https://portal.ct.gov/DAS/Office-of-School-Construction-Grants/School-Construction-Priority-List-Projects

[35] Education Directory, December 29, 2019, https://data.ct.gov/Education/Education-Directory/9k2y-kqxn

needed correction. Because the index begins in 2005, we used the compound annual growth rate (CAGR) of 3.7 percent for all years from 2005 to 2019 as the growth rate to estimate the index for the years 2001-2004.[36]

Table 1 compares the characteristics of the school construction projects with a PLA ("PLA projects") with those where there was no such agreement ("non-PLA projects").

Table 1: Summary Statistics for Construction Projects by PLA Status

Variable	Final Construction Costs (2019 $ millions)	Size of project (square feet)	Final Construction cost/square foot (2019 $)	Number of stories
Mean				
PLA	55,700,000	117,529	483.73	2.77
Non-PLA	45,400,000	110,733	410.47	1.95
Standard Deviation				
PLA	31,700,000	65,143	104.99	0.85
Non-PLA	31,300,000	73,822	121.25	0.75
Minimum				
PLA	14,500,000	30,000	266.25	1
Non-PLA	6,245,000	14,500	218.97	1
Maximum				
PLA	155,000,000	295,000	690.95	5
Non-PLA	144,000,000	312,000	649.39	4

A notable pattern in the data is that PLA projects, on average, cost $73 ($483 minus $410) more per square foot (in 2019 prices) than non-PLA projects. However, this is not conclusive, because it is possible that PLA projects are systematically different – for instance more complex.

A regression analysis allows us to determine whether the difference in PLA versus non-PLA projects is robust to differences in project size and other variables. To capture the effect of economies of scale, we include a variable for the logarithm of square footage of construction,

[36] U.S. Department of Labor, Bureau of Labor Statistics, Producer Price Index, PPI industry data for new school building construction, Series ID: PCU236222236222 (accessed December 6, 2019), https://www.bls.gov/data/.

which ensures that the effect of additional size diminishes as the project becomes bigger. In addition, we include a measure of the number of stories, the presence of a gym, theater, auditorium, and multiple cafeterias. We also include a variable, we call "new," to account for projects that were brand new, where costs are higher in certain cases than projects that are renovated as new or had significant renovations. We also accounted for other features such as whether the project is an elementary school. In our regressions, the dependent variable is the final construction costs per square foot (in 2019 prices). The most critical independent variable is a dummy variable that is set equal to 1 for PLA projects and to 0 for non-PLA projects. The ordinary least squares regression results are presented in Table 2.

Our results show that the PLA projects added $89.33 per square foot (in 2019 prices) to the final hard base construction costs. The important point here is that this amount represents the effect of PLA projects after controlling for other measurable influences on costs; these other influences are important for explaining why construction costs differ from project to project. The estimates in Table 2 show that it matters whether the project is built under PLA arrangements.

Table 2: Ordinary Least Squares Estimation of Final Construction Costs Per Square Foot

Variable	Coefficient	Standard error	p-value (one-tailed test)
Constant	641.25	265.25	.009
PLA	89.33	28.19	.001
New	40.78	26.22	.062
Gym	26.76	30.90	.195
Theatre	15.24	39.35	.350
Multiple cafeterias	-33.66	92.89	.359
Log Square Feet	-18.92	22.65	.203
Elementary	-25.72	28.70	.186
Stories	-18.92	16.45	.127
Auditorium	8.42	28.20	.383
Other	29.96	29.76	.159
Pool	-42.75	77.49	.291

Adjusted R^2 is .10. Sample size is 96.

A one-tailed test of the statistical significance of the PLA coefficient gives a p-value of .001, which means that there is less than a .1 percent chance that we have accidentally found that PLA projects are more expensive than non-PLA projects. Put another way, there is at least a 99.9 percent probability that PLA projects are more expensive than non-PLA projects, holding other measurable aspects of a project constant.

The equation also shows that projects with a gym are more expensive, as are schools with a theater or auditorium. The negative coefficient for the logarithm of square feet captures the effect of economies of scale on cost. Surprisingly, the inclusion of more than one cafeteria and a pool reduces cost per square foot. One explanation is that schools large enough to have more than one cafeteria or a pool are exhibiting the same economies-of-scale effect that is shown by the logarithm of square feet variable.

With an adjusted $R^2 = 0.10$, the equation "explains" 10 percent of the variation in construction bid costs across projects. Clearly, other factors also influence the cost of construction – the exact nature of the site such as soils, the materials used for flooring and roofing, the outside finish and the like. But as a practical matter, it is impossible to collect data on every factor that increases or decreases cost. Our specification is no different from any other specification in recognizing this fact.

For the PLA effect shown here to be overstated, it would have to be the case that PLA projects systematically use more expensive materials, or add more enhancements and "bells and whistles," than non-PLA projects. In some cases, certain magnet schools built in Connecticut under a PLA have more advanced buildouts than non-magnet schools built without a PLA in effect. However, we excluded multiple outliers from our analysis to remove this effect. This gives us confidence that the PLA effect shown here is real. Furthermore, we attempted to ascertain the prevalence of elements that might make a project more expensive in our data collection process.

Robustness

It is helpful to explore the robustness of our results. In other words, is there still a PLA effect if we look only at elementary school construction projects or at small, medium or large projects? The results of this exercise are summarized in Table 3.

Table 3: Regression Estimates of the "PLA Effect" For Different Sub-Samples and Model Specifications

Sub-sample	PLA effect ($/sqr ft.)	p-value (one-tailed test)	Other variables included	Sample size (# of PLA projects)	Adjusted R^2	Mean cost/sq. ft	
						Non-PLA projects	PLA projects
Final costs (baseline)	89.33	.001	Gym, theater, stories, elementary, auditorium, multiple cafes, log sqrft., new*, pool	96 (52)	.10	410.47	483.73
Award cost ($/sqrft.)	60.33	.050	Gym, theater, stories, elementary, auditorium, multiple cafes, log sqrft., new*, pool	95 (51)	.05	445.91	496.98
Small projects only	109.71	.010	Gym, theater, stories, elementary, auditorium, multiple cafes, log sqrft.*, new, pool	47 (24)	.12	409.72	515.58
Medium projects only	67.90	.140	Gym, theater, stories, elementary*, auditorium, multiple cafes**, log sqrft.*, new*, pool**	34 (19)	-.14	431.79	457.29
Large projects only	109.74	.073	Gym*, theater, stories, sqrft., elementary**, auditorium, multiple cafes**, log sqrft.*, new, pool	11 (6)	.10	367.39	481.06
Elementary schools only	120.91	.025	Gym*, theater, stories, log sqrft.*, elementary**, auditorium, multiple cafes**, new*, pool	30 (12)	.11	390.42	487.08
Middle & HS only	96.48	.004	Gym*, theater, stories*, auditorium, multiple cafes**, log sqrft.*, new*, pool	66 (40)	.04	424.35	482.71
Weighted by sqrft.	81.45	.000	Gym, theater, stories*, elementary*, auditorium, multiple cafes, log sqrft.*, new*, pool	96 (52)	.14	410.47	483.73

Notes: log sqrft. = logarithm of square footage for each project; stories is the number of stories above ground; elementary = 1 if elementary school or primary school, 0 if junior high or high school; gym =1 if school has a gym, 0 if not; theatre =1 if school has a theatre, 0 if not; auditorium = 1 if the school has an auditorium, 0 if not; multiple cafes = 1 if school has multiple

cafeterias, 0 if not; pool = 1 if school has pool, 0 if not; New=1 if the school was newly constructed or renovated. * denotes statistical significance at the 95 percent confidence interval. **denotes omitted variables.

The first column indicates the sample, or sub-sample, used in estimating the regression equation. We performed this analysis by running separate regressions for the following samples:

1. the "baseline" sample, which consists of all the cases for which information was available on final construction costs; this was also used to give results weighted by project size ("weighted by sqrft");
2. small projects, medium size projects and large projects;
3. elementary and non-elementary schools; and
4. a sample consisting of the cases for which information was available on bid costs. [37]

The "PLA effect" column shows the estimate of the effect of having a PLA on the cost of construction (in dollars per square foot, in 2019 prices), and the corresponding "p-value" column measures the statistical significance of these coefficients. The PLA effect is statistically significant at the 5 percent level or better, except for small schools and elementary schools. The size of the PLA effect differs, depending on the sample examined. The results of the "baseline" regression analysis presented in Table 2 are reproduced in the first row of Table 3.

Following standard practice, our regressions use ordinary least squares (OLS), which means that each observation (here, a school building project) carries equal weight in the regression. However, we also estimated our preferred equation using weights, where each project is given a weight that is in proportion to the square footage that it represents. This means that a project of 150,000 square feet, for instance, would have twice as much weight in the equation as a project of 75,000 square feet. The weighted regression shows a PLA effect of $81.45 per square foot, again statistically significant.

[37] Small projects are defined as those below 100,000 square feet, while large projects are those above 200,000 square feet. Medium size projects are those falling between 100,000 and 200,000 square feet.

Conclusion

Based on data on construction costs and related variables for school projects in Connecticut since 2001, we find the following:

(i) PLA projects added $89.33 per square foot to cost (in 2019 prices) relative to non-PLA projects. Because the average cost per square foot of construction is $450.15, PLAs raised the base construction costs of building schools by 19.84 percent.

(ii) We are more than 99.9 percent confident of this finding, based on the available data.

(iii) The finding that PLA projects have higher construction costs is robust, in that:

   a. The effect persists even when the data are subdivided, so that the effect is evident separately for mid-size projects, large projects, middle schools and high schools.

   b. A regression that weights observations by project size also shows the effect.

(iv) Out of the 52 PLA projects, 15 had final construction costs that came in over budget. The budgets of all 52 PLA projects in our sample were based on the use of a PLA.

In sum, the evidence that PLAs have increased the cost of school construction in Connecticut since 2001 is strong. Taken together, the 52 PLA projects in our sample accounted for 5.636 million square feet of construction with a combined cost of $2.031 billion, based on the projects that we were able to include in our study. Our estimates show that taxpayers would have saved $503.463 million, or over $9.681 million per project, if PLAs had not been used.[38]

[38] $503.463 million = 5.636 million square ft. multiplied by $89.33 per square ft.

Appendix

BHI utilized a multi-step data collection process. In the first step, we contacted school districts in Connecticut to obtain the most recent list all projects for public schools in Connecticut since the year 2001. Specifically, we requested:

- Winning base construction bid (excluding insurance, bonds and other soft costs);
- Type of school, (elementary, middle or high school);
- Number of stories above grade;
- Final construction cost;
- Whether the base construction bid include demolition/site work costs;
- Whether there was a PLA (Project Labor Agreement) requirement on the project;
- Was the project a new school or an addition/renovation;
- Number of square feet of new and/or renovated building space;
- Whether the project includes any of the following: auditorium, swimming pool, multiple cafeterias, gymnasium, studio and other features that would add to the project cost;
- Number of bids for each trade package;
- Were the final construction costs within the original budget;
- Was the original project budget based on the use of a PLA (for PLA projects only);
- Was the project rebid without a PLA, after the initial round of bidding under a PLA.

School districts in Connecticut returned information on school projects, such as the name of the school district or municipality, the contact information, final construction cost (if available) and square footage for all projects within the request. However, some data did not include the final school construction cost data, as schools were not required to keep record after a certain amount of time.

From July 2019 through October 2019, BHI contacted each district by email and phone explaining the type of information we were requesting. BHI followed up by mailing Freedom of Information Acts (FOIA) letters to the superintendents of each public-school district in Connecticut (see

example letter below). We made follow-up phone calls to every school district that failed to respond, starting one week after the letters were emailed. We made subsequent follow-up attempts with each district using telephone calls and emails multiple times.

We augmented the data collection process by conducting internet searches that included websites of the school districts, construction firms, construction management firms, architectural firms, and other construction related websites and documents. We obtained some information from these searches on the final construction costs, award amounts, number of square feet, stories above grade, and features, such as gymnasium and other features. Independent internet searches also provided information as to the PLA status of some projects, but these projects were only added to the data base if the information was confirmed by the school district or other officials.

Sample FOIA Letter

Dear **[Superintendent]**:

Under the Connecticut **Freedom of Information Act § 1-200 et seq.,** I am requesting an opportunity to obtain data that pertain to the school construction project in your local school district. We need the following data for the school construction projects **[Connecticut Municipality]**. More specifically, we need the following data for the following school projects:

- Winning base construction bid;
- Number of stories above grade;
- Final base construction cost;
- Does the base construction bid include demolition/site-work costs;
- Whether there was a PLA (Project Labor Agreement) * requirement on the project;
- Number of square feet of the new building;
- Number of bids for each trade package;
- Were the final construction costs within the original budget;
- Was the original project budget based on the use of a PLA (for PLA projects only);
- Was the project rebid without a PLA, after the initial round of bidding under a PLA.

If there are any fees for searching or copying these records, please inform me if the cost will exceed $10. However, I would also like to request a waiver of all fees in that the disclosure of the requested information is in the public interest. This information is not being sought for commercial purposes.

Sincerely,

Beacon Hill Institute

About the BHI Staff

William F. Burke is the Director of Research at the Beacon Hill Institute. He holds a bachelor's in business economics from Suffolk University.

David G. Tuerck is President of the Beacon Hill Institute. He holds a Doctorate in Economics from the University of Virginia.

Nicholas Sammarco is a Research Assistant at the Beacon Hill Institute.

Matthew Lewis is a Research Assistant at the Beacon Hill Institute.

The Beacon Hill Institute for Public Policy Research
165 Main Street, Suite 306,
Medway, MA 02053
Tel: 855-244-4550
Email: bhi@beaconhill.org
Web: www.beaconhill.org

The Beacon Hill Institute focuses on federal, state and local economic policies as they affect citizens and businesses. The Institute conducts research and educational programs to provide timely, concise and readable analyses that help voters, policymakers and opinion leaders understand today's leading public policy issues.

©January 2020 by the Beacon Hill Institute