ILEPI-LEP Economic Commentary #19 May 18, 2015

EFFICIENCIES OF PROJECT LABOR AGREEMENTS

ILLINOIS CAPITAL DEVELOPMENT BOARD PROJECTS, 2011-2013

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INTRODUCTION

A Project Labor Agreement (PLA) is a pre-hire agreement covering all crafts on a large, complex, long-term construction project in order to establish comprehensive employment terms and conditions for construction projects. A PLA therefore "operates as a 'job-site constitution,' establishing safe working conditions and rules, project execution and accountability on the job, and protocols for resolving labor disputes without resorting to strikes and lockouts" (UCLA Labor Center, 2014).

The principal aim of a Project Labor Agreement is to promote stability and productivity. A PLA is a "valuable construction management tool for project planning and labor cost reduction" which establishes quality standards that the private contractor must contractually meet (Kotler, 2009). From the point of view of the project owner (i.e., the government agency in a public construction project), any mechanism to reduce risks in a large project are beneficial. PLAs include provisions for eliminating strikes and lockouts during construction, resolving disputes while allowing work to proceed, providing access to a pool of skilled labor, and instituting uniform work rules and consistent shift work to improve efficiency and save money. PLAs can also ensure that public funding serves positive social outcomes. For example, PLAs typically include language requiring female and minority business ownership participation, as well setting goals for the hours to be worked by people of color and females.

Project Labor Agreements have been applied to both public and private projects since the 1930s. In the past twenty-five years, the use of PLAs on federally-assisted projects has generally depended on the political party of the President. Both Bush Administrations prohibited the use of PLAs on federal projects while President Clinton and President Obama encouraged their use on large projects. The Tennessee Valley Authority, the nation's largest public power company, has used PLAs continuously for two decades, with 96 percent of total construction work done under the master PLA (USDOL, 2011). In addition, PLAs have been used on private construction projects. Toyota and Wal-Mart are examples of corporations that have chosen to use PLAs on projects (Moran, 2011). Many large contractors report that PLAs are preferred in large private projects due to training needs and availability, the skill sets required for the work, and the conditions of local labor markets (USDOL, 2011).

Proponents of Project Labor Agreements argue that they have several advantages. PLAs provide uniform compensation, working conditions, and work rules for work on construction projects. They provide a reliable and uninterrupted supply of qualified workers at predictable costs, ensure that a project is completed on time and on budget, and ensure that there will be no labor disruptions by prohibiting strikes and lockouts.

An example of standard anti-work stoppage language incorporated into any work done under a PLA is as follows: "There shall be no strikes, sympathy strikes, picketing, leafleting, bannering, work stoppages, slowdowns, and other disruptive activity for any reason (including ambulatory pickets aimed at delivery vehicles) by the union(s) or employees against any contractor covered

under this Agreement and there shall be no lockout by any Contractor. This prohibition includes disputes relating to the negotiation or renegotiation of relevant CBAs and disputes related to any jurisdictional dispute between unions whether or not they are signatory to this Agreement. Failure of any employee to cross any picket line established by any Union, signatory or non-signatory to the Agreement, or by any other organization or individual at or in proximity to the Project, is a violation of this Agreement" (Pere Marquette Hotel Construction Agreement, 2011).

PLAs place all workers under one contract (rather than under multiple union contracts with different wage and benefit structures), reduce misclassification and wage theft, reduce injury risks by enforcing safety rules, and keep construction wages in-state.

Opponents of Project Labor Agreements argue that they increase costs by encouraging union work rules and wages and reduce competition because nonunion contractors may choose not to bid projects. Opponents argue that federally-assisted projects constructed during the period when PLAs were prohibited did not suffer from cost overruns due to labor disruptions (USDOL, 2011).

This Economic Commentary is a *case study* investigation into the performance of Project Labor Agreements using data from the Illinois Capital Development Board (CDB). PLAs are applied to all CDB projects included in this analysis. The commentary first details the evidence on PLAs. A summary of the CDB dataset used is subsequently presented, followed by an analysis on project performance. The commentary concludes by recapping key findings and offering policy recommendations.

Evidence on the Efficiencies of Project Labor Agreements

Economic evidence on the efficiencies of Project Labor Agreements tends to find positive effects. Belman et al. (2010) analyzed data on school construction projects in Massachusetts, where some projects were conducted with PLAs and others were not. After accounting for more variables such as public vs. private schools, elementary vs. high school, number of floors, types of rooms and amenities, and location, the researchers found that PLAs had no impact on total construction costs. A cost effectiveness study by Hill International analyzed the use of PLAs by the New York City School Construction Authority from 2005 to 2009. The report found that the "total of major quantifiable cost savings resulting from utilization of a PLA in construction amount[ed] to $221 million" over five years, with most of the savings accruing from standardizing shift work and shift differentials. In addition, the collective bargaining agreements of every union involved in the PLAs were renegotiated and, while two unions went on strike during the time of the PLA, construction continued uninterrupted. The most frequent reason cited for using PLAs by project owners, governments, and contractors is the reduction of risk and the predictability of work flow (USDOL, 2011).

In addition, PLAs do not decrease the number of bids on public projects. In a controlled study of bids on construction projects in the San Francisco Bay Area, Belman et al. (2007) find that there is no statistically significant difference in the number of bids after one school district adopted a PLA. Li et al. (2008) also studied over 8,000 bid openings and concluded that projects only needed three or four bidding contractors to deliver the competitive price and that the loss of additional bidders would have negligible effect on the overall winning bid. The most efficient contractor will enter the market and win the bid, regardless of whether PLAs are included.

SUMMARY OF THE DATA

This Economic Commentary explores data on Capital Development Board (CDB) projects from January 1, 2011 through December 31, 2013). Over this three year period, a total of 317 projects were completed. For many of these completed projects, the bidding process occurred prior to the period of the analysis. The average time to complete a CDB project from its start date is 3.4 years. The median project takes 2.1 years from start to finish. In addition to projects completed, there were public biddings on an additional 418 projects covering the years of 2011, 2012, and 2013 (Figure 1). The various CDB project types covered by Project Labor Agreements include school and university buildings, state fairgrounds projects, veterans' homes, state parks construction, youth centers, mental health centers, crime laboratories, armory buildings, and other government buildings.

FIGURE 1: CONSTRUCTION TIME AND COST OF COMPLETED CDB PROJECTS, 2011-2013

All CDB Data: 2011-2013	Value
Completed Projects	317
Average Completion Time	3.4 years
Median Completion Time	2.1 years
Average Total Project Cost	$1,939,300
Total Construction Value	$614,758,230
New Project Biddings	418

Source(s): Illinois Capital Development Board, 2011-2013.

The construction value (or total expenditures) of the 317 completed projects equaled $614.8 million to the state, an average of $1.9 million per project. Of this $614.8 in value awarded to contractors, $79.1 million (12.9 percent) was awarded to Minority and Women Business Enterprise (MWBE) firms. This 12.9 percent MWBE share of total value is slightly greater than the MWBE share of pre-qualified firms eligible to bid on CDB projects. Constructors, construction managers, architect/engineers, subcontractors, and vendors owned by white males comprised 3,251 out of 3,692 pre-qualified firms (88.1 percent). Minority and women owned firms, conversely, accounted for 11.9 percent of eligible businesses. The demographic groups with the largest shares of construction owners outside of white males were white females (4.7 percent), Latino male (2.4 percent), and African American male (2.3 percent). Since MWBE contractors completed 12.9 percent of the work but accounted for only 11.9 percent of eligible businesses, Capital Development Board projects using Project Labor Agreements have supported female and nonwhite business owners in the effort to diversify the construction industry (Figure 2).

FIGURE 2: MWBE FIRM SHARE OF VALUE AWARDED VS. SHARE OF QUALIFIED BIDDERS, 2011-2013

317 Completed CDB Projects: 2011-2013	MWBE Value Awarded	MWBE Contractors
Total Construction	$614,758,230	3692 firms
MWBE Number	$79,140,148	441 firms
MWBE Share of Total	12.87%	11.94%

Source(s): Illinois Capital Development Board, 2011-2013.

Additionally, PLA projects establish a targeted percentage of appropriated funds for MWBE. Opportunities for the participation of female and minority companies often occur through the use of subcontractors on a project. In some cases, all of the subcontracting work in a particular construction area is awarded to a MWBE. For example, the 2011 Peoria Pere Marquette

construction agreement established that 20 percent of the actual dollar value of work would be done by minority and women owned enterprises. A final accounting of the project revealed that the dollar value goal for MWBE was achieved (Pere Marquette – Courtyard Report, 2014). In this case, fourteen of the subcontractors were minority-owned (10 African-American, 2 Hispanic, 1 Female, and 1 Native-American) and received nearly $10 billion in public funds (Executive Contract Summary, Pere Marquette-Courtyard Report, April 2012-August 2014). A second project in Peoria County, the Riverfront Museum, also featured over 22 percent of the dollar allocations going to female and minority owned enterprises (Riverfront Museum Enterprise Utilization Update, 2012). While the extent to which expenditure goals for MWBE on all PLA are met cannot be determined from the data provided by the CDB, the state's project bid requirements and reporting oversight are a strong inducement to compliance.

Additionally, standard PLAs awarded by the CDB include provisions for hiring minority and female employees. For example, in 2011, Peoria County entered into a PLA for construction work on the Peoria Riverfront Museum. The agreement incorporated contract language between the contractors and sixteen building trades unions that provided extensive obligations to "afford employment opportunities for segments of the community who have been traditionally under represented in the construction industry" (Peoria Riverfront Museum Agreement, 2011). As part of the commitment to hire female and minority workers, the agreement included plans to recruit employees. One example of how this would be done was by "targeting minority and women workers thorough signs placed at the proposed site of the Project and throughout the community organizations and public or private institutions operating in the Peoria area" (Peoria Riverfront Museum Agreement, 2011).

A second 2011 CDB-awarded PLA occurred between the City of Peoria and contractors for construction on the Pere Marquette Hotel which also included "Minority Participation" commitments (Pere Marquette Hotel Construction Agreement, 2011). While comprehensive data regarding the racial and gender composition of the workforce on all projects for the time period studied was not available, the hours worked on this project are illustrative of the impact of PLAs on diversity. The agreement set a goal of 21 percent of total "labor hours" to be worked by minority employees. According to a labor utilization report, the project achieved its target, with female and minority employees logging 63,135 hours of work (Pere Marquette Contractor Report, 2014). Minority and women workers accounted for 189 of the project's total number of construction employees, or 16.3 percent. Additionally, nearly one-quarter of the apprentices hired on the project were female or minority workers (Pere Marquette-Courtyard Report, 2014).

Apprenticeship data is important because it reflects the opening of new employment opportunities for women and minorities in the building trades. Since CDB PLAs are made with the unionized trades, joint labor-management training programs ensure an increased minority accessibility to apprentice positions. In 2012, apprentices enrolled in joint building trade programs accounted for 76 percent of the state's apprentices (IDOL, 2013). One additional source of the very limited capacity of nonunion builders to provide qualified apprentices is that, for the period from January 1, 2012 to January 22, 2015, the nonunion Northern Illinois Chapter of the Associated Builders and Contractors had only 30 active apprentices spread out over ten separate crafts (DOLETA, 2015). By virtue of the unionized construction industry, PLAs increase career opportunities for both minority and non-minority workers.

PLAs also ensure that public funds contribute to the development of a skilled workforce and to investment in the local economy. Further examining the labor utilization record on the Pere Marquette project reveals that only 14 workers (1.2 percent) out of 1,156 resided outside Illinois (Pere Marquette-Courtyard Report, 2014). Nearly 300 of the employees lived in the City of Peoria

and were cumulatively paid in excess of $2.6 million in wages (Pere Marquette-Courtyard Report, 2014).

PROJECT PERFORMANCE

Large construction projects can be accompanied by significant unforeseen problems. Of the 317 projects completed from 2011 through 2013, a total of 244 (77.0 percent) experienced at least one change order, request for reduction, or time extension. The average project included 10.6 change orders once completed– some of which add thousands of dollars to the cost of the project and some that reduce costs. In total, the 317 projects completed using Project Labor Agreements experienced cost overruns amounting to $28.4 million, increasing total construction expenditures by 4.8 percent (Figure 3).

Although these added costs may appear high at first, these types of overruns are minimal in context. For example, the Indiana Department of Transportation (INDOT) reports that over half of the Department's contracts experience cost overruns and the overall rate amounts to 4.5 percent (INDOT, 2004). In addition, a survey of *private* "mega-projects" typically exceeding $1 billion found that 93.9 percent experienced cost overruns, and the median project was 51 to 75 percent over budget (PwC, 2013). According to a Pricewaterhouse Coopers report, one reason for cost overruns in the private sector is that risk is not properly allocated: "If an owner awards a fixed-price contract and shifts the cost risks to the contractor, the contractor may choose to mitigate that risk by hiring less experienced labor or using less expensive materials, creating a quality risk for the owner" (PwC, 2013). In public construction, a way to avoid this potential problem and encourage the use of skilled labor is to include a Project Labor Agreement. Properly contextualized, the cost performance of projects using Project Labor Agreements in Illinois was in line with overruns experienced in a public construction sector (i.e., street, highway, bridge, and other transportation construction) in a neighboring state and was superior to the performance of large private construction projects.

FIGURE 3: COST OVERRUNS AND CHANGE ORDERS OF COMPLETED CDB PROJECTS, 2011-2013

317 Completed CDB Projects: 2011-2013	Value
Completed Projects	317
With Change Orders	244
Average Number of Change Orders	10.56
Total Cost Overruns	$28,405,914
Rate of Cost Overruns	4.84%

Source(s): Illinois Capital Development Board, 2011-2013.

Perhaps more importantly, the typical bid awarded by the Capital Development Board is below the engineer's estimate. Almost two-thirds of winning bids (63.2 percent) are below the engineer's estimate, while the rest (36.8 percent) are above (Figure 4). Half of all CDB contracts ranged from 25.4 percent below the estimate to 11.7 percent above the estimate, with the median falling 8.8 percent below. The average difference between the actual contract and the engineer's estimate is -4.7 percent. That is, winning bids are on average 4.7 percent lower than the engineer's estimate but the average cost overrun is 4.8 percent. Thus, while cost overruns and savings may vary widely from project to project, engineer's estimates are very accurate assessments of costs to the taxpayer on the whole. The overall rate for cost overrun amounts to 0.1 percent compared to overall engineer's estimates.

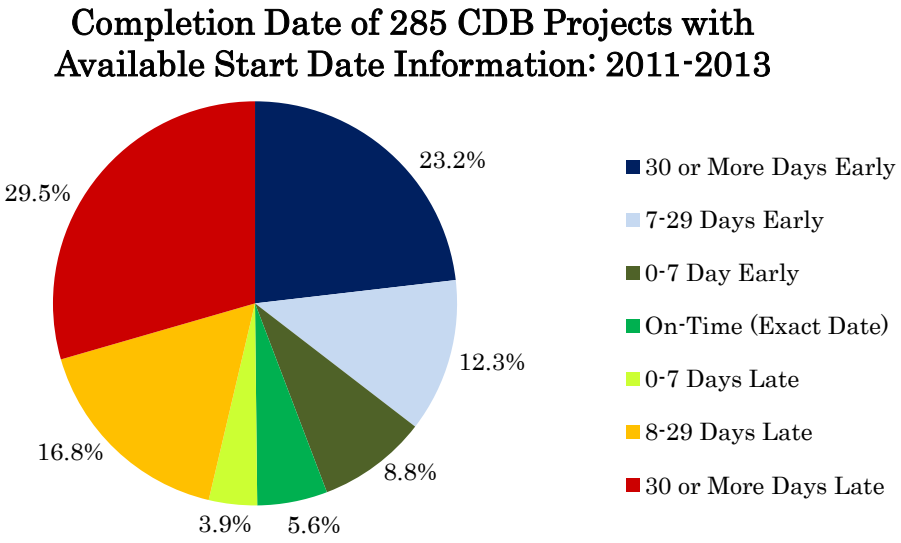
FIGURE 4: WINNING BIDS VS. ENGINEER'S ESTIMATE FOR NEW CDB PROJECTS, 2011-2013

418 New CDB Project Biddings: 2011-2013	Number of Winning Bids	Percentage of Winning Bids
Over 50% Below Engineer's Estimate	23	5.50%
26-50% Below Engineer's Estimate	108	20.33%
0-25% Below Engineer's Estimate	264	37.32%
1-25% Above Engineer's Estimate	154	22.97%
26-50% Above Engineer's Estimate	58	8.13%
Over 50% Above Engineer's Estimate	24	5.74%
Average Difference	4.70% Below Engineer's Estimate	

Source(s): Illinois Capital Development Board, 2011-2013.

The fact that the average winning bid is 4.7 percent below the engineer's estimate but the average cost overrun is 4.8 percent of the winning bid means that some public construction contractors in Illinois suffer from the same shortcomings as private contractors. On private "mega-projects," researchers found that "optimism bias" is a leading cause of cost overruns because contractors underestimate project complexities or assume construction will proceed smoothly (PwC, 2013). Contractors thus misallocate risk by not considering the likelihoods of all possible problems. The takeaway is that, while large "[p]rojects under budget are the exception, not the rule" in the private sector, the reverse is true for large public projects in Illinois (PwC, 2013). If contractor bids were closer to engineers' expectations, cost overruns would only be 0.1 percent for projects covered by PLAs– which is the direct benefit of uniform work rules and a consistent supply of skilled labor.

FIGURE 5: COMPLETION DATE OF COMPLETED CDB PROJECTS VS. ESTIMATED DATE, 2011-2013



Source(s): Illinois Capital Development Board, 2011-2013.

Half of all Capital Development Board projects are completed on time (Figure 5). Full data on estimated completion date and actual completion date are available on 285 CDB projects from January 1, 2011 through December 31, 2013. Of these projects, 142 were constructed on time (49.8 percent) and 143 were late (50.2 percent). There is, however, significant variation in the completion of large projects, so some of the schedule estimates could have been unreasonable. For example, a project's estimated completion date might not fully account for extenuating

circumstances affecting production inputs (i.e., equipment malfunctions or repairs, energy costs, weather). Thus, it is important to focus on projects that are *considerably* late. Slightly more than seven in ten projects are completed early, on-time, or within one month of the estimated completion date (70.5 percent) while about three in ten (29.5 percent) are completed more than 30 days late.

There are many reasons why some Capital Development Board projects are not finished on time. Changes in environment, management, strategy, politics, and public funding can all contribute to missed deadlines and delays. Overoptimistic schedules and poorly defined objectives can also be factors. Without Project Labor Agreements coordinating schedules, including no strike provisions, and ensuring access to skilled labor, it is likely that more Capital Development Board projects would have been completed late.

Economic Benefit of CDB Projects

Capital Development Board projects provide major economic value to the state. For the 317 projects completed from 2011 through 2013, total construction expenditures totaled $614.8 million. Economic multipliers based on aggregate industry data suggest that, for every dollar invested in infrastructure construction of non-residential and non-commercial structures, between $1.59 and $1.85 is generated in economic output (Zandi, 2008; IMPLAN, 2011). Using these multipliers, Capital Development Board projects using Project Labor Agreements are estimated to have increased Illinois' Gross Domestic Product by $1.0 billion to $1.1 billion between 2011 and 2013 (Figure 6). This stimulus was critical, as the state's unemployment rate was over 9 percent during this time (Manzo et al., 2014).

Figure 6 presents Illinois data from the 2012 Economic Census of Construction to estimate the value of Capital Development Board projects to construction workers. In 2012, blue-collar construction worker wages plus total fringe benefits (i.e., labor costs) amounted to 21.8 percent of total construction costs in Illinois. The average construction worker earned $79,815 in wages plus benefits and worked 1,902 hours in the state during that year. Using these estimates, CDB projects paid out approximately $134.2 million in labor income to construction workers. This supported over 3 million hours of work for nearly 1,700 blue-collar construction workers. Once again, Project Labor Agreements ensure that those 1,700 workers have clearly-defined terms and conditions of employment and that those 3 million labor hours are uninterrupted by a labor strike or an employer lockout.

Figure 6: Economic Impacts of Completed CDB Projects to the State, 2011-2013

317 Completed CDB Projects: 2011-2013	Value
Total Construction Value	$614,758,230
Estimated Impact on Gross Domestic Product	$0.977-$1.137 billion
Labor Cost Share of Total Construction Cost	21.84%
Labor Income to Construction Workers	$134,245,625
Average Construction Worker Wages plus Benefits	$79,814.68
Estimated Blue-Collar Construction Workers Employed	1,678.0
Uninterrupted Labor Hours Worked	3,199,043

Source(s): Authors' analysis of Illinois Capital Development Board data from 2011-2013 using Zandi (2008), IMPLAN (2011), and state data from the 2012 Economic Census by the United States Census Bureau (2015).

POLICY RECOMMENDATIONS AND CONCLUSION

Project Labor Agreements promote stability, productivity, cost reduction strategies, uniform work rules, access to skilled labor, local investments in skilled labor and job opportunities in the construction industry for women and minorities.

In their use by the Capital Development Board, projects covered under PLAs from 2011 to 2013 were found to:

- support female and nonwhite business owners in the effort to diversify the construction industry;
- experience cost overruns at a lower rate than a survey of "mega-projects" in the private sector;
- have zero or minimal *actual* cost overruns for the typical project;
- be completed on time or within one month of the estimated completion date 70.5 percent of the time; and
- increase Illinois' economic output by at least $1.0 billion and support over 3 million hours of uninterrupted work for nearly 1,700 blue-collar construction workers.

It is recommended that Project Labor Agreements continue to be utilized on large public construction projects in Illinois. By ensuring a stable supply of skilled workers and instituting uniform work rules, PLAs reduce risk for government agencies and generate cost savings for taxpayers. Given the significant cost overruns found on large private projects, it is also recommended that private firms in Illinois consider following the lead of corporations like Toyota and Wal-Mart in incorporating PLAs. The PLA is a vital cost efficiency tool that promotes safe, economy-boosting infrastructure for Illinois residents.

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