November 10, 2017

VIA ELECTRONIC SUBMISSION

Attn: US Department of Transportation


Jobs to Move America (JMA) respectfully submits the following comments to the US Department of Transportation (DOT) regarding the DOT’s strategic plan for FY 2018-2022 and Request for Public Comment, Docket Number DOT-OST-2009-0092. Jobs to Move America is a non-profit committed to harnessing government procurement to realize equity; to promote environmental sustainability; to further open, democratic government; and to achieve an inclusive, diverse workforce that lifts people into middle-class jobs.

JMA applauds the DOT’s recognition of the importance of infrastructure investment and repair as part of its FY 2018-2022 Strategic Plan. In working to meet its strategic plan goals, JMA urges the DOT to ensure that local transportation agencies have maximum flexibility in using procurement as a strategic policy tool in local communities. The principle of federalism was a motivating factor in the creation and formulation of the Common Grant Rule (53 FR 8034-01), which is incorporated into the DOT’s own regulations, and promotes good policy through local experimentation and innovation. The DOT should promote innovative tools that help local transportation agencies fulfill their missions.

Tools that have been successfully utilized by local transportation agencies include efforts to promote good jobs, such as the United States Employment Plan (USEP). The USEP is a tool that transportation agencies can use to ensure that the billions of U.S. taxpayer dollars spent on public transportation equipment support the revitalization of the U.S. manufacturing sector, through the creation of high quality manufacturing jobs for U.S. workers and U.S. based manufacturing facilities.

The USEP is a voluntary program, included as part of the RFP process. Transportation equipment manufacturers are awarded points based on the robustness of their American manufacturing jobs proposal, investment in domestic manufacturing facilities, and commitments to recruitment and training people facing barriers to employment. The USEP can be tailored to fit the needs of different transportation agencies and manufacturers.

Unlike programs promulgated under the (now rescinded) DOT Local Hire Pilot SEP 14, the USEP complies fully with current federal laws and regulations on competition and prohibitions on geographic preference. The USEP, unlike former SEP 14 projects, can be included as a “Main Factor” in “Proposal Evaluation Criteria.” And, under Federal regulations, local transportation agencies have the ability to score the USEP to be at least 10%. The DOT itself has found that the USEP is an innovative tool and has approved the USEP for use by local transportation agencies (see Appendix Item 1: February 18, 2016 Letter from then Secretary Anthony Foxx).
Perhaps most importantly, the USEP complies with the current interpretation of the Full and Open Competition Rule. The current rule for full and open competition can be summarized by the following excerpt from a 2013 memo by the Office of Legal Counsel at the Department of Justice:

A state or local requirement that has only an incidental effect on the pool of potential bidders or that imposes reasonable requirements related to the performance of the necessary work would not unduly limit competition. But a requirement that has more than an incidental effect on the pool of potential bidders and does not relate to the work’s performance would unduly limit competition unless it promotes the efficient and effective use of federal funds.

Thus, the 2013 OLC Memo stated that local bidding or contractual restrictions must not “unduly limit” the pool of bidders. The USEP is compliant because it neither raises the price of final DOT funded projects, nor decreases the number of bidders.

UCLA professors Dr. Benjamin Nyblade and Scott Cummings found that the USEP has a neutral effect on bidding competition, as measured by the final price of the project and the number of bidders, and is therefore consistent with current statutes and regulations (see Appendix Item 2: December 7, 2016 Letter from Professor Scott Cummings to Molly Moran, DOT Acting General Counsel). Specifically, Professor Cummings found:

[T]he procurement data available provides no evidence that jobs standards language is significantly associated with the level of competition in bidding for large transportation authority contracts in terms of either the number of bids submitted or the ratio of those bids to independent cost estimates…[W]hat we have here is primarily an absence of evidence showing an affect of the USEP job standards language…Based on the data above, I can conclude that there is no evidence that inclusion of the USEP language by the local agencies…has had more than an “incidental effect” that “unduly limits” the bidding pool; nor has it had a significant impact either on the average price of all bids submitted or the winning bids in these projects….”

The DOT acknowledged receipt of this data from Professors Nyblade and Cummings in a January of 2017 letter (see Appendix Item 3: Letter from Acting General Counsel Moran to Professor Scott Cummings).

Lastly, and in addition, we urge the DOT to refrain from cutting rules and regulations that promote family supporting jobs and help the working and middle class, such as project labor agreements (PLAs). As the attached study from Peter Philips and Scott Littlehale shows, PLAs do not raise the cost of housing projects built without project labor agreements (see Appendix Item 4). Furthermore, maintaining such programs is consistent with President Trump’s vocal

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2 For data and study, see Appendix Item 2: December 7, 2016 Letter from Professor Scott Cummings to the DOT Acting General Counsel.
support for US job creation, and with the goals of the Strategic Plan and DOT statutes and regulations.

Respectfully,

Madeline Janis, Esq., Executive Director, Jobs to Move America, mjanis@jobstomoveamerica.org.

Katherine Hoff, Esq., National Policy Staff, Jobs to Move America, khoff@jobstomoveamerica.org
(213) 761-8037

Jobs to Move America
525 S Hewitt St
Los Angeles, CA 90013

Attached:

(1) February 18, 2016 Letter from then Secretary Anthony Foxx

(2) December 7, 2016 Letter from Professor Scott Cummings to Molly Moran, DOT Acting General Counsel.

(3) Reply letter from Acting General Counsel Moran to Professor Scott Cummings.

Dear Transportation Stakeholder:

Recently, Congress enacted the Fixing America’s Surface Transportation (FAST) Act providing $305 billion over the next five years for our Nation’s highways, bridges, transit, and rail systems. Transportation projects create jobs. The Executive Office of the President’s Council of Economic Advisers recently estimated that every $1 billion invested in Federal highway and transit infrastructure would support 13,000 jobs.

It is important to help communities use innovative ideas and approaches to leverage their transportation funds into jobs. For example, the U.S. Department of Transportation has established a pilot program to enable recipients of Federal highway and transit funds to utilize innovative contracting requirements that are designed to create jobs that may have traditionally been disallowed due to competition concerns. We are also working closely with employers in the transportation industry to partner with State and local workforce boards, community colleges, unions, technical education providers, and others, to align skills training with transportation job demand at the State and local levels.

There are many innovative ideas and approaches in using transportation funds to create jobs. The Jobs to Move America Coalition developed one such idea, the U.S. Employment Plan, for the purchase of rolling stock. The U.S. Employment Plan is a contractual provision that provides incentives for companies to create American jobs, locate facilities in the United States, and generate opportunities for unemployed workers through recruiting and training efforts. The Department has approved the use of the U.S. Employment Plan for the procurement of rolling stock for the Los Angeles Metropolitan Transportation Agency (for both light rail vehicles and buses), Amtrak, the Chicago Transit Authority, the Maryland Department of Transportation, and the California High Speed Rail Authority. For more information about the U.S. Employment Plan, you may visit the Jobs to Move America Coalition Web site at: www.jobstomoveamerica.org/resources/#employment.

The U.S. Employment Plan is only one example of an innovative approach to using transportation funds to create jobs. The U.S. Department of Transportation stands ready to provide technical assistance regarding Federal requirements as you develop and implement new ideas and approaches to using your transportation funding to create jobs. If you have any questions about a particular idea or approach on your federally assisted projects, please contact the appropriate agency funding your project.

Sincerely,

Anthony R. Foxx
December 7, 2016

Molly J. Moran
Acting General Counsel
United States Department of Transportation
1200 New Jersey Ave., S.E.
Washington, D.C. 20590

Re: Effect of U.S. Employment Plan on Competitive Bidding

Dear Ms. Moran:

I have been asked by Jobs to Move America to express an opinion on whether, in undertaking federally funded rolling stock procurement transactions, local transit agencies using the U.S. Employment Plan (USEP) have met the legal requirements for “full and open competition.” I write this opinion as a law professor at the UCLA School of Law, where I have spent the past fifteen years teaching about and studying law as it relates to federal, state, and local economic development. This opinion is completely my own and in no way reflects the viewpoint of my institution; and I have received no compensation for it. My bottom line conclusion is that, with respect to the specific local transit agencies for which I have data, there is no evidence that the USEP has unduly inhibited competition in relation to either of the two central elements of competitive bidding: the pool of potential bidders or the ultimate contract price.

My opinion in this regard is based on a review of federal statutes, regulations, case law, and other relevant authority (including memoranda of the Office of Legal Counsel) related to competitive bidding in federal contracting. The legal standard for competitive bidding derived from that review was used to analyze data on railcar procurement from 2002 to 2016 (with and without USEP jobs language) provided by four large transit agencies: Chicago Transit Authority (CTA), Los Angeles Metropolitan Transit Authority (LA Metro), Massachusetts Bay Transportation Authority (MBTA), and the New York Metropolitan Transit Authority (NY MTA). 1 In essence, I applied the relevant law on full and open competition to the supplied rolling stock procurement facts in order to render a judgment about whether that procurement met the competitive bidding requirements.

The focal point of that analysis is the agencies’ use of the USEP, which seeks to promote domestic employment by creating incentives for rolling stock manufacturers to create good

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1 The raw data is attached to this letter as a Data Appendix.
American manufacturing jobs as part of their contract obligations. A model version of the USEP was developed by a team of economists and academics working with the Brookings Institution, in coordination with a legal task force appointed by then Deputy Secretary John Porcari to evaluate the matter. Although the specific language that local agencies use varies,\(^2\) in general, they require rolling stock bidders to describe their plans to create jobs in the United States (both directly and through their suppliers); the expected wages, benefits, and qualifications for those jobs; plans for recruitment of disadvantaged, minority, and women workers; and plans for the provision of training and apprenticeship opportunities related to those jobs.

The primary legal question is whether, by evaluating bids based on USEP criteria, local transit agencies comply with federal contracting requirements that mandate full and open competition. These requirements apply to rolling stock procurement by local transit agencies by virtue of the fact that they are “recipients” of federal funds from the Department of Transportation (DOT) for that procurement. The general rule governing transit project contracting by DOT funding recipients is set forth in 49 U.S.C. § 5325, which provides that such recipients “shall conduct all procurement transactions in a manner that provides full and open competition as determined by the Secretary." Federal regulations governing federally funded grant procurement similarly stress that procurement transactions “must be conducted in a manner providing full and open competition consistent with the standards of this section.” 2 C.F.R. § 200.319(a). Although these “common grant rule” provisions do not define “full and open competition,” they do provide a nonexhaustive list of “situations considered to be restrictive of competition,” which include “[p]lacing unreasonable requirements on firms in order for them to qualify to do business.” 2 C.F.R. § 200.319(a)(1).

As a preliminary matter, it is important to clarify aspects of the USEP. As used by agencies to date, the USEP results in the award of a price adjustment or additional points in a rating system in favor of bidders who submit the information encompassed by the Plan on a voluntary basis. The USEP does not impose any pre-bid requirement on bidders or disqualify any potential bidder in ways that might run afoul of the regulatory prohibition against “unreasonable requirements on firms in order for them to qualify to do business.” In addition, the use of USEP clearly informs potential bidders how jobs criteria will be used in the award of the contract, consistent with the regulatory mandate that local agencies have “a written method for conducting technical evaluations of the proposals received and for selecting recipients.” 2 C.F.R. § 200.320(d)(3).

I also note that in February 2016, DOT Secretary Foxx sent a letter to stakeholders encouraging transit agencies purchasing rolling stock equipment with federal funds to consider using the USEP language.\(^3\) This letter was based on the fact that a number of grantee transit agencies had requested DOT approval to incorporate the USEP into the bidding and selection process for the purchase of rolling stock. In each instance, the DOT approved use of the USEP considerations.

Although the legal materials I reviewed provide no clear test for determining what constitutes “full and open competition” in the context of rolling stock procurement, they


\(^3\) Letter from Anthony R. Foxx, U.S. Secretary of Transportation, to Transportation Stakeholders (Feb. 18, 2016), available at https://www.transit.dot.gov/funding/procurement/procurement.
generally focus on two aspects of the bidding process that are particularly relevant to my analysis: the amount of the winning bid price (i.e., the ultimate cost of the rolling stock) and the size of the bidding pool.

First, full and open competition requires a bidding process in which competition ultimately yields a contract that provides the best value to the contracting agency. Although the lowest bid price is an important factor in this analysis, transportation contracting rules make clear that a “recipient may award a procurement contract . . . to other than the lowest bidder if the award furthers an objective consistent with the purpose of this chapter, including improved long-term operating efficiency and lower long-term costs.” 49 U.S.C. § 5325(c). Even without a showing of long-term efficiency or cost reduction, a local agency acquiring rolling stock may enter a contract through a competitive procurement process based on “performance, standardization, life cycle costs, and other factors.” 49 U.S.C § 5325(f)(1)(b). In such a process, the agency is required to award contracts “to the responsible firm whose proposal is most advantageous to the program, with price and other factors considered.” 2 C.F.R § 200.320(d)(4). Thus, in evaluating whether a local requirement, like the USEP, unduly impedes competition, its impact on bid pricing is a significant factor, though it is not decisive insofar as full and fair competition is satisfied by rolling stock procurement decisions based on a mix of value-based criteria. Significant price impacts may undercut the competitive process, but how much impact on bid price is too much is nowhere clearly defined.

Second, full and open competition requires a strong pool of bidders vying for contracts because it is only through that type of competition that a local agency can be sure that it is getting the best value. For this reason, the Office of Legal Counsel (OLC), in interpreting a similar (though not identical) federal highway procurement statute (23 U.S.C § 112) concluded that competitive bidding requirements are violated when a state or local agency imposes requirements that “unduly limit the pool of potential bidders.” As the OLC stated: “A state or local requirement that has only an incidental effect on the pool of potential bidders or that imposes reasonable requirements related to the performance of the necessary work would not unduly limit competition. But a requirement that has more than an incidental effect on the pool of potential bidders and does not relate to the work’s performance would unduly limit competition unless it promotes the efficient and effective use of federal funds.”

In light of this analysis, I evaluate the data on the use of USEP by four large transit agencies in relation to the following two questions:

1. Does the use of USEP language have more than an “incidental effect” that “unduly limits” the pool of potential bidders?

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5 OLC MEMO 2013, at 2-3. The OLC further stated that “we do not believe that the statute’s competitive bidding requirement precludes any and all state or local bidding or contractual restrictions that have the effect of reducing the pool of potential bidders for reasons unrelated to the performance of the necessary work.” OLC MEMO 2013, at 2. Instead, the OLC concluded that the agency administrator has discretion to determine if a requirement “unduly limits competition” by assessing whether it promotes “the efficient and effective use of federal funds in the long run or protects the integrity of the competitive bidding process.” OLC MEMO 2013, at 2-3.
2. Does the use of USEP language have a significant impact on the price of rolling stock bids and the ultimate contract cost?\textsuperscript{6}

To answer these questions, I asked the UCLA Empirical Research Group, directed by Dr. Benjamin Nyblade, to analyze data on bidding for 16 large transit authority contracts for four authorities (CTA, LA Metro, MBTA, and NY MTA) between 2002 and 2016. This data included information on the nature of the project, the number and identity of bidders, the bid amounts, and the winning bid for each project. In addition, for each project, the data indicated whether the individual bids included USEP language or not. For three of the four transit authorities (CTA, LA Metro, and MBTA), an independent cost estimate (ICE) was provided. The NY MTA data is qualitatively different from the other three in two important respects. First, the NY MTA did not provide an ICE for its projects, which prevented constructing bid-to-ICE ratios; second, the jobs language inserted by the NY MTA, though similar to that of the USEP, came from a jobs preference incentive available in state law. Because of these differences, we created two aggregate measures: Combined All (which includes NY MTA) and Combined w/o NY. Basic descriptive information about the bidding on contracts with USEP jobs standards language (wl) and with no jobs standards (nol) language is set forth below in Table 1.

\begin{table}[h]
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\begin{tabular}{|l|c|c|c|c|c|c|c|}
\hline
\multicolumn{8}{|c|}{Table 1: Analysis of Bidding Pool and Price of Rolling Stock Contracts in Four} \\
\multicolumn{8}{|c|}{Transit Authorities with USEP, 2002-2016} \\
\hline
\textbf{Authority} & \textbf{Contracts (wl)} & \textbf{Contracts (nol)} & \textbf{Average # of Bidders (wl)} & \textbf{Average # of Bidders (nol)} & \textbf{Average Ratio Winning Bid to ICE (wl)} & \textbf{Average Ratio Winning Bid to ICE (nol)} & \textbf{Average Ratio All Bids to ICE (wl)} & \textbf{Average Ratio All Bids to ICE (nol)} \\
\hline
MBTA & 2 & 4 & 4.5 & 2.75 & .86 & 1.02 & 1.29 \\
CTA & 1 & 1 & 2 & 3 & .76 & .69 & .83 & .79 \\
LA Metro & 3 & 1 & 2.33 & 3 & 1.04 & .87 & 1.05 & .91 \\
NY MTA & 3 & 1 & 2.33 & 3 & n/a & n/a & n/a & n/a \\
Combined All & 9 & 7 & 2.77 & 2.86 & 0.93 & 0.94 & 1 & 1.13 \\
Combined w/o NY & 6 & 6 & 3.00 & 2.83 & 0.93 & 0.94 & 1 & 1.13 \\
\hline
\end{tabular}
\end{table}

To assess whether the inclusion of jobs language affected the pool of bidders, Table 1 breaks down the average number of bidders with and without jobs language by transit authority. Of the 16 contract bidding processes there is data for, 9 included jobs standards language, and 7 did not, with each transit authority including at least one example of each type. For each of the contracts there were 2-6 bidders, with 14 of the 16 cases having 2 or 3 bidders. In terms of overall averages, the Combined All average number of bidders with jobs

\textsuperscript{6} Note that with respect to both questions, I do not presume that an affirmative answer means that the use of USEP language is necessarily incompatible with “full and open competition” requirements since it might be possible to make a case that a significant impact on the bid price or pool would nonetheless be justified by other value factors or long-term efficiency and process integrity considerations. However, I am not analyzing the relation between the USEP and such other factors here.

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language (2.77) and without (2.86) were essentially the same, as were the Combined w/o NY averages (3.00 with jobs language and 2.83 without). Thus, in terms of the number of bidders, there is no significant variation in this data, nor is there any statistically significant distinction between the number of bidders by jobs standards language.

To assess whether the inclusion of jobs language affected the price of the winning bid, Table 1 sets out the ratio of the winning bid price to the ICE with and without jobs language, and compares that to the ratio of all bids to the ICE. The ratio of bids to ICE are more variable, although again on average there is little difference between the cases in which there are and are not jobs language. Both CTA projects we have data on, for example, had every single bid come in below the ICE, whereas for LA Metro, there was one project in which both bids came in dramatically lower than the ICE (ratios of 0.54 and 0.56), and another in which both bids came in dramatically higher (ratios of 1.67 and 1.89) (and both of these included USEP jobs language). On average, the bids to ICE ratio for bidding on contracts with the language is slightly lower than for those without the language (both for winning bids and all bids) but this difference is small and not statistically significant given the large variability in bid to ICE ratios.

This analysis supports the conclusion that the procurement data available provides no evidence that jobs standards language is significantly associated with the level of competition in bidding for large transit authority contracts in terms of either the number of bids submitted or the ratio of those bids to independent cost estimates. From a statistical standpoint, given the relatively small number of cases being examined, it is not surprising to find no statistically significant relationship in this data. The small number of cases means that the statistical evidence is likely to be weak in any direction. It is fair to say that what we have here is primarily an absence of evidence showing an effect of the USEP job standards language, rather than strong evidence of the absence of any effect.

This absence of evidence, nonetheless, is important for assessing the legal validity of the USEP at this stage in its development. Based on the data above, I can conclude that there is no evidence that inclusion of USEP language by the local agencies under consideration has had more than an “incidental effect” that “unduly limits” the bidding pool; nor has it had a significant impact either on the average price of all bids submitted or the winning bids in these projects. As the USEP plan is adopted in more projects, we will have a greater store of data with which to conduct more analysis. Until then, I conclude that the present use of the USEP in the jurisdictions for which we have procurement information appears to be consistent with the federal requirement that procurement transactions operate in a manner that provides full and open competition.

Sincerely,

Scott L. Cummings
Robert Henigson Professor of Legal Ethics
UCLA School of Law
Data Appendix Attached

CC: Vincent White, Acting Assistant Secretary for Policy
    Judith S. Kaleta, Deputy General Counsel
    Terence W. Carlson, Assistant General Counsel for General Law
    Michael W. Harkins, Deputy Assistant General Counsel for General Law
Data Appendix
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<tr>
<td>7</td>
<td>ABB</td>
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<td></td>
<td></td>
<td></td>
<td>$102,916,661</td>
<td>$104,393,982</td>
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</tr>
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<td>October 22, 2012</td>
<td>RFP</td>
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<td>24 70% low floor Light Rail Vehicles</td>
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<td>RFP</td>
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<td>Yes</td>
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<tr>
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<td></td>
<td></td>
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<td>D</td>
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<td>F</td>
<td>G</td>
<td>H</td>
<td>I</td>
<td>J</td>
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</tr>
<tr>
<td>2</td>
<td>Contract Name and Description</td>
<td>Date Awarded</td>
<td>Did the Solicitation Contain Job Standards Language (yes)</td>
<td>Company Names (all bidders)</td>
<td>Description</td>
<td>Average cost of vehicle in R179 ICE multiplied by number of vehicles</td>
<td>Average cost of vehicle in 2015/2016 multiplied by number of vehicles</td>
<td>Independent Cost Estimate (Rate+Option)</td>
<td>Bid Amounts Excluding Job Investment (Base+Options)</td>
<td>Job Standards Language?</td>
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<td>July 31, 2002 RFP</td>
<td>Yes</td>
<td>Kawasaki</td>
<td>1040 Subway Vehicles</td>
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<td>$1,888,878,000.00</td>
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<td>May 31, 2013 RFP</td>
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<td>$1,888,878,000.00</td>
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<td>May 31, 2013 RFP</td>
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<td>$1,888,878,000.00</td>
<td>$2,537,455,000.00</td>
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<td>R179 for 300 Subway Cars</td>
<td>May 31, 2013 RFP</td>
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<td>Kawasaki</td>
<td>126 New Vehicles and 380 Convertible/Reliant</td>
<td>$2,537,455,000.00</td>
<td>$1,888,878,000.00</td>
<td>$2,537,455,000.00</td>
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<td>9</td>
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<td>126 New Vehicles and 380 Convertible/Reliant</td>
<td>$2,537,455,000.00</td>
<td>$1,888,878,000.00</td>
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<td>September 78, 2013 RFP</td>
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<td>Kawasaki</td>
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<td>$1,454,984,000.00</td>
<td>$1,277,888,000.00</td>
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<td>September 78, 2013 RFP</td>
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<td>G76 Subway Vehicles</td>
<td>$1,454,984,000.00</td>
<td>$1,277,888,000.00</td>
<td>$1,454,984,000.00</td>
<td>$1,277,888,000.00</td>
<td>Yes</td>
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<tr>
<td>12</td>
<td>G76 Railcars (Metro North)</td>
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<td>Yes</td>
<td>Kawasaki</td>
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<td>$1,454,984,000.00</td>
<td>$1,277,888,000.00</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Note: Bids for New York Law can be found here: New York Public Utilities Law Section 1286.
Appendix Item 3:
Reply letter from Acting General Secretary Moran to Professor Scott Cummings.

January 19, 2017

Via e-mail

Scott L. Cummings (Cummings@law.ucla.edu)
Robert Henryson Professor of Legal Ethics
UCLA School of Law
405 Hilgard Avenue
Los Angeles, CA 90024-1476

Re: Acknowledgement of Your Correspondence of December 7, 2016

Dear Professor Cummings:

I am writing to acknowledge your correspondence of December 7, 2016 to the U.S. Department of Transportation (DOT), whereby you shared an analysis of railcar procurement data collected from four state or local transportation agencies, the Los Angeles Metropolitan Transportation Agency, the Chicago Transit Authority, the Massachusetts Bay Transportation Authority and the New York Metropolitan Transportation Authority. In your correspondence, you presented railcar procurement data from the agencies and then expressed your opinion as to whether the inclusion of language creating incentives for firms to create good U.S. jobs unduly impacted full and open competition.

Information, such as this, is a helpful and necessary step in the consideration of this issue, which is the subject of DOT Secretary Anthony Foxx’s 2016 letter to transportation stakeholders as well as a memorandum from the Office of Legal Counsel (OLC) dated August 23, 2013, entitled Competitive Bidding Requirements Under the Federal-Aid Highway Program 2 [hereinafter OLC Memo].

In the OLC Memo, the Department of Justice clarified that state and local grantees conducting procurement with federal funds can use criteria in their competitive bidding process intended to encourage creation of good jobs, so long as that language has no more than an “incidental impact” on full and open competition. You expressed your opinion that, based on the relevant statutes, regulations and case law, the analysis of the impact of language like the U.S. Employment Plan on competition should be assessed by considering two questions: whether the language (1) has more than an incidental effect on the pool of potential bidders and 2) has a significant impact on bid price or the ultimate contract cost.
We appreciate your sharing of this information, which we will consider as we continue to evaluate the impacts of tools, such as the U.S. Employment Plan, on competition in Federally funded procurements.

Sincerely,

Molly J. Moran  
Acting General Counsel

Cc: Dorval Carter, CTA (d2580carter@transitchicago.org)  
Phillip Washington, LA Metro (washingtonp@metro.net)  
Jeffrey Gonneville, MBTA (jgonneville@mbta.com)  
Thomas Prendergast, NY MTA (e-mail)  
Madeline Janis, Esq, Jobs to Move America (mjanis@jobstomoveamerica.org)
Appendix Item 4:

DEPARTMENT OF ECONOMICS WORKING PAPER SERIES

Did PLAs on LA Affordable Housing Projects Raise Construction Costs?

Peter Philips
Scott Littlehale

Working Paper No: 2015-03
September 2015

University of Utah
Department of Economics
260 S. Central Campus Dr., Rm. 343
Tel: (801) 581-7481
Fax: (801) 585-5649
http://www.econ.utah.edu
Did PLAs on LA Affordable Housing Projects Raise Construction Costs?

Peter Philips (corresponding author)
Professor of Economics, University of Utah
philips@economics.utah.edu

Scott Littlehale
Senior Research Analyst, Northern California Carpenters Regional Council

Abstract
The cost of building nine affordable housing projects in Los Angeles under the terms of a project labor agreement between the years 2008 and 2012 are compared to 121 affordable housing projects developed and built in the same time period and same area without project labor agreement requirements. We use three approaches to compare costs: 1) simple comparison of average square foot cost and average per unit cost, 2) a visual inspection of the cost data by increasing size of projects measured by square foot size and housing unit size, and 3) “nearest neighbor” analysis comparing the nine PLAs each to the four nearest comparisons along the dimensions of size, units, stories and targeted population. We break our sample down into a subsample for the City of Los Angeles excluding within-county but outside-the-city projects and into a subsample for prevailing wage projects only. Our conclusions are the same using all three statistical approaches to comparing costs and using all three samples: the nine PLA affordable housing projects were not more expensive to build than comparable projects not governed by project labor agreements.

Keywords: project labor agreements, affordable housing
JEL Classification: J41 labor contracts; J45 public sector labor markets; J 48, J 58 and R28 labor and housing public policy; J5 Labor–Management Relations, Trade Unions, and Collective Bargaining

Acknowledgements: The authors gratefully acknowledge Julie Solberg, who obtained and input Low Income Housing project data that came from the California Tax Credit Allocation Committee (TCAC). The authors also are grateful to TCAC staff for cooperation in fulfilling requests for public records associated with federal and state tax credit-supported Low Income Housing projects.
Introduction.

The City of Los Angeles Community Redevelopment Agency (CRA/LA) in 2008 linked its subsidies for the development of affordable housing to a project labor agreement ("PLA") that bound contractors on subsidized projects building 75 or more units to adhere to local collectively bargained compensation packages, to utilize union hiring halls, and to target construction employment opportunities to local residents. Some industry and government observers expressed concern in 2008 that this PLA would raise residential construction costs by as much as 10 percent and thereby would diminish the efficiency of available subsidy funds.

In this research note, we use a dataset of 130 affordable housing projects that were developed between 2008 and 2012 within the County of Los Angeles in order to compare the construction costs of nine PLA-covered affordable housing projects to 121 affordable housing projects that were not covered by the PLA. Of the nine PLA projects, one had only 66 units, despite policy’s 75-unit threshold. An additional 121 affordable housing projects were developed during this time period, 62 within the city and 59 outside the city but in Los Angeles County. Within Los Angeles County outside the City of Los Angeles, developers were free to build affordable-housing projects of any size without PLAs. Furthermore, within the city, affordable housing projects of any size were exempt from the CRA/LA policy if they had not been subsidized by the CRA/LA. In our time period, there were 18 affordable housing projects within the city that had 66 or more units and an additional 20 with 66 or more units outside the city in the county. The smallest PLA had 60,241 square feet. There were 36 non-PLA projects within the city and an additional 35 outside the city but in the county that were larger than this smallest PLA project.

Affordable housing projects can be subject to prevailing wage regulations that mandate the payment of specific wages and benefits to construction workers employed on projects funded with federal or state tax dollars. In Los Angeles city and county, mandated wages are often equivalent to collectively bargained wages. All of the PLA projects were also prevailing wage jobs. However, of the 130 projects in our sample, 29 were not prevailing wage projects including 4 within the City of Los Angeles. Of these non-prevailing-wage jobs, 18 were larger than 60,241 square feet (the smallest PLA project by square feet) and 12 had more than 66 units (the smallest PLA project by units). Thus, our sample provides a variety of non-PLA projects to compare with the nine PLA projects.

In addition to analyzing our overall sample, we divide our sample into two subsamples, one consisting of prevailing wage projects only and another consisting of within the City of Los Angeles projects only. The prevailing wage subsample consists of 101 projects, including 34 outside the city while the Los Angeles city subsample consists of 71 projects including four non-prevailing-wage projects. All nine PLA projects are prevailing wage projects and are located within the city.

- Utilizing three different statistical strategies to analyze all three of these samples, we fail to find any statistically significant cost differences between PLA projects and non-PLA projects.

We examine the question of hypothetical PLA construction cost impacts using three methods:

---

1 See “Construction Careers and Project Stabilization Policy,” 2008. Downloaded via http://www.crala.org/internet-site/Policies/Local_Hire_Policy_Programs.cfm on 11/3/2014. In addition to the 75-unit threshold, the policy was to be applied only if a CRA/LA loan or grant exceeded $1 million. The CRA/LA required one 66-unit project was to abide by the PLA.
First we simply compare construction costs per square foot and cost per unit for PLA projects versus non-PLA projects. We do a conventional statistical test of whether the average ("mean") cost per square foot and the average cost per unit for PLA projects differ meaningfully or statistically from the average costs for non-PLA projects.

Second, we visually examine PLA and non-PLA costs with scatter-graphs that show cost by the total structural size of the project and cost by the number of units in the project. Additionally, we use a simple statistical technique called ordinary least squares regression to draw lines that represent the relationship between increased project size and increased project construction costs. We again examine (1) the overall sample, (2) the LA city subsample and (3) the subsample of projects that required prevailing wages. We observe the extent to which PLA projects depart from each regression line compared to non-PLA projects.

Third, because affordable housing projects can differ not only by size, location and regulatory environment but also by the population targeted by these affordable housing projects and the year the project budget is finalized, we use a statistical technique called nearest neighbor analysis to identify the four closest non-PLA projects for each of the PLA projects. We then compare the percent difference in total construction costs by PLA and non-PLA projects between these matched projects which are similar along the dimensions of size, target population, and year. (Projects could be targeted at large families, seniors, special needs, other targeted groups or they could be non-targeted.)

**Sample.**

Figure 1 shows four measures of the size of the affordable housing projects within our overall sample--average direct construction cost of the project, project square-foot size, project unit size and the number of stories for the project. Breaking these measures down into PLA and non-PLA projects, we find that on average, the PLA projects were larger, taller, and had more units compared to the average for non-PLA projects. Not surprisingly, these larger PLA projects cost more, on average, to build. Finally, in Table 1 we will also see that the average square foot cost of PLA and non-PLA projects are within 2% of each other with PLAs being slightly higher in the overall sample and slightly lower in the prevailing wage and City of Los Angeles subsamples.

---

2 We used the *Engineering News Record* Building Cost Index for Los Angeles to adjust for inflation of material and labor costs. This cost index does not take into account fluctuation of mark-ups for overhead and profit charged to developers by contractors, architects, and other development consultants.

3 In this report we speak of statistical significance and also introduce the concept of a confidence interval. People are most familiar with the notion of statistical significance in interpreting opinion surveys. Say, for instance, that an opinion poll shows that 50% of the voters favor candidate A and 48% favor candidate B with 2% undecided. But the pollster reports that the margin of error for this survey of 1000 eligible voters is 4%. Because 48% and 50% are within 4% of each other, the pollster will say that statistically the result of the poll is a tie and the election is too close to call. Statistical significance identifies the margin of error of a point estimate obtained from a sample (in our case the cost of construction) and confidence intervals describe the range of possible results surrounding a point estimate within which the true outcome is likely to fall.
Table 1 describes our sample by number of projects, the average size of project, average construction cost and average unit cost, both for the overall sample and breaking the sample down first into LA-city-only and then into prevailing-wage-jobs-only (“PW Jobs”) subsamples.

Table 1: Comparison of size and cost of PLA and non-PLA projects

<table>
<thead>
<tr>
<th>Location</th>
<th>Project</th>
<th>Number of Projects</th>
<th>Average Square Feet</th>
<th>Average Number of Units</th>
<th>Average Number of Stories</th>
<th>Average Cost per Project</th>
<th>Average Square Foot Cost</th>
<th>Average per Unit Cost</th>
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<td>79,270</td>
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<td>114,987</td>
<td>98</td>
<td>4.7</td>
<td>$17,301,134</td>
<td>$171</td>
<td>$176,809</td>
</tr>
</tbody>
</table>

In our overall sample, the average square foot cost per project is similar with PLAs costing $171 per square foot and non-PLAs costing $168 per square foot. The projects were developed between 2008 and 2012, and we use the Engineering News Record Building Cost Index for Los Angeles to adjust for inflation over this period.\(^4\) There are 9 PLAs and 121 non-PLAs in our overall sample. There are also the same 9 PLAs present in each of the subsamples.\(^4\)

In the overall sample, on average, the PLA projects were larger by about 35,000 square feet; they had almost 40 more units and were almost one story higher. These larger PLA projects cost, on average, almost $5 million more to build; they cost on average $3 per square foot more than non-PLA projects and were $50,000 less expensive per unit. The subsample show similar differences, but in the subsamples, the square foot cost of PLAs is slightly lower than for non-PLAs.

\(^4\) Other indices such as the Case-Shiller housing cost index for Los Angeles yields similar results.
non-PLAs. In the next section, we will test whether these differences in average costs per square-foot and cost per unit are significantly different from each other by conventional statistical measures.

Location, Regulation and Targets Matter: A Comparison of Averages

Figure 2 shows the average square-foot and average unit costs for PLA projects and non-PLA projects along with the high-low range indicated by the 95% confidence intervals around these averages. A 95% confidence interval indicates that while the average from a sample is a single-point estimate of the true cost of construction, given the variation around each average, the high-low range will encapsulate the true cost with a 95% chance of being right. Confidence intervals around average construction cost vary in breadth based on how much each specific project’s cost varies around the group average of all the projects within the selected sample or subsample. When the averages of two groups are compared, odds are that they will not be exactly the same number. If the confidence intervals of the two groups overlap, then statistically we conclude that the two averages are essentially the same. When the confidence intervals of the two groups do not overlap, then we conclude that the two averages statistically are significantly different from each other. We can then look at the point estimates and ask whether the two statistically significantly different averages are meaningfully different. (So for instance, one might conclude that there is a statistically significant 1/2% difference in cost but that difference might not be meaningful from a practical standpoint.)

In the left-hand panel in Figure 2, the average square foot cost of PLA projects are compared to non-PLA projects in three samples—the total sample of 130 affordable housing projects, the subsample of 71 projects in LA city only and the subsample of 101 prevailing wage projects only. The average for non-PLA square foot costs are shown in black circles with black high-low lines indicating the 95% confidence interval around each non-PLA average. The average for PLA square foot costs are shown with gray squares. The confidence interval for the PLA average is shown with a single gray high-low line on the far-right of each panel. The PLA average construction cost confidence interval applies to all samples because the same nine PLAs are in each of the samples.
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Figure 2: Comparison of averages: square foot cost and unit cost by PLA and non-PLA with 95% confidence interval for non-PLA average

The confidence interval shown in gray is wider for PLA projects because our number of PLA projects is small and because there is considerable variation in square foot costs among these 9 PLA projects. However, the average for these nine projects is always within the much narrower 95% confidence interval for non-PLA projects. Because the average square foot costs for PLA and non-PLA projects are within a couple of dollars of each other, and because the PLA and non-PLA confidence intervals overlap, and because the average square foot cost for PLA projects is always within the confidence intervals for the non-PLA projects regardless of sample, we conclude that there is no statistically significant difference in the square foot cost of PLA affordable housing projects as a group compared to non-PLA affordable housing projects as a group. Given these averages are statistical ties, there is also no meaningful difference in PLA vs. non-PLA costs.

The same cannot be said for costs per unit. In the right hand panel in Figure 2, average PLA per unit costs are systematically lower regardless of sample. The PLA average per unit cost is always outside of the 95% confidence interval for non-PLA projects. And the confidence intervals for PLAs and non-PLAs do not overlap regardless of sample. The conclusion is that in our data, per unit costs were statistically significantly lower for PLAs. This is also a meaningful difference. But the meaning of this difference lies in the fact that PLA affordable housing projects were disproportionately targeted to seniors. When the average per-unit cost of PLA and non-PLA senior-target projects are compared, the 5 PLA projects are less expensive ($15,700 less per unit) but this difference is not statistically significant because it falls within the margin of error (that is, the two confidence intervals overlap). Thus, in addition
to where the projects were built, and whether projects were regulated by prevailing wages, we must consider the projects’ targeted populations. We will further analyze this issue below. But first let us visually examine the data with respect to the size of projects.

**Size Matters: Graphical Inspection and Simple Regression Analysis**

This section visually examines our data first from the perspective of the overall sample. Here we will notice that there is one 2008 PLA project that seems to be more expensive than the others. But when we focus on this one PLA-governed project, we find that its construction costs were based on 2008 prices, just as the Great Recession was beginning. We find that the affordable housing projects as a group in this year tended to be more expensive than the later affordable housing projects which began after the effects of the Great Recession on construction prices took hold. We then break our sample down into the subsamples for Los Angeles city only and prevailing wage projects only. In these subsamples, PLAs tend to be less expensive per unit and clustered around the general cost tendencies by size. In the prevailing wage sample, the one 2008 PLA outlier has two nearby non-PLA neighbors while in the LA city sample, this outlier does not have a close nearby neighbor along the dimension of square foot size. The general pattern is that 1) PLA projects tend to be near or below the cost-by-size pattern for all affordable housing projects. The outlier pattern in the case of the one 2008 PLA is that it can be found with nearby non-PLA outlier projects of similar size.

![Construction Cost by PLA & non-PLA](image)

*Note: at about 100,000 square feet, 3 PLA projects overlap showing only 2 dots.*

Nine PLA projects. Costs adjusted for inflation. PLA=PLA project.
Figure 3 shows the cost of each project in the total sample of 130 projects with PLAs indicated as large red circles and non-PLA projects as gray circles. In the left-hand panel, project cost on the vertical axis is related to the square foot size of the project on the horizontal axis. In the right hand panel, project cost on the vertical axis is related to the number of units in the project on the horizontal axis. A dashed linear regression line is drawn for each panel showing in the left panel the rise in construction costs associated with larger square-foot project-size, and in the right panel the rise in construction cost associated with greater numbers of units in the sample’s projects. The regression lines reflect the best fitting straight line relationship between costs and the two different project scale variables. The extent to which data points do not lie on the straight lines indicate individual “errors” of the simple linear model’s estimated association between project scale and project cost.

The regression lines have different slopes because they are based on different relationships. On the left, costs rise with increased square-foot-size: on the right, costs rise with increased number of units. One possible reason why costs appear to be less responsive to increases in numbers of units relative to increases in total square foot size could be that residential developments with larger numbers of units tend to include a greater range of unit-types (from 3-bedroom units to studios) as compared to projects with smaller numbers of units. The simple bivariate relationships explored here do not take differences in residential unit-types into account. We do address that additional layer of complexity in our “Nearest Neighbor Analysis” section.

In both panels, PLA projects fall on either side of the regression line. Visually, most PLA projects are close to the line and within the scattering of non-PLA projects of comparable size and units. There appears to be an exception in the panel comparing costs by total square foot size.
While most of the PLA projects are close to the regression line showing the general relationship between increased size and units and increased costs, Error! Reference source not found. focuses on the one PLA project that appears to be an exception to this pattern. In both panels the potential outlying case is indicated with a large red diamond marker. This potential outlier is the only PLA project that was shovel-ready & tax-credit-approved in 2008, when the effects of the Great Recession on construction prices was only beginning to take hold. We see in Error! Reference source not found. that 2008 affordable housing projects tended to be more expensive relative to projects built later in the recession and subsequent slow expansion.

The 2008 PLA project was more expensive per square foot, but – in comparison to other 2008 projects – it definitely was not more expensive per unit and had several nearby neighbors in terms of square foot size that had comparable or even higher total costs. Figure 5 brings the questionable “outlier” status of the PLA project into even sharper focus on the panel on the right, where the comparison is limited to non-PLA projects that also were “shovel-ready” & tax-credit approved in 2008.

The insight to be derived from these graphs is that the stage within the business cycle that a project was developed needs to be taken into consideration when assessing the relative costs of PLA versus non-PLA projects. Available construction price indices – which we use throughout this study to adjust for construction wage trends and selected building materials price trends – clearly fail to capture significant difference between affordable housing construction...
costs in 2008 and the other years in our sample. We incorporate this insight into the “Nearest Neighbor Analysis” section of this paper.

**Figure 4**: Identifying apparent PLA project outlier: Costs, scale, and year tax credits approved

*Note: Costs adjusted for inflation. Some dots overlap.*
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Figure 5: PLA Project Outlier? Construction Cost by Total Square Feet and Year Tax Credits Approved
We now turn to visually inspect our subsamples first LA city projects only then prevailing wage projects only. Figure 6 shows the same data as

*Construction Cost by PLA & non-PLA*

*All 130 Projects, 2008-2012*

*by Square Foot Size of Project*

*by Number of Units*

Nine PLA projects. Costs adjusted for inflation. PLA=PLA project.

*Figure 3* but for the subsample restricted to the City of Los Angeles only. Not surprisingly the PLA projects tend to be larger due to the CRA/LA policy being applied only to projects with 75 units or larger. Still, there are several non-PLA projects as large as or larger than the PLA affordable housing projects. In the left-hand panel showing
square foot size against construction cost, results are similar to the left-hand panel in.

\[ \text{Construction Cost by PLA & non-PLA} \]

All 130 Projects, 2008-2012

by Square Foot Size of Project

by Number of Units

Note: at about 100,000 square feet, 3 PLA projects overlap showing only 2 dots.

Nine PLA projects. Costs adjusted for inflation. PLA=PLA project.
Figure 3 except the one PLA outlier project has fewer nearby neighbors with comparable construction costs. In the right-hand panel showing number of units against total cost, results are also similar to the right-hand panel in

Figure 3 except that the PLA projects are a bit farther below the line—that is, on balance, PLAs appear a bit less expensive in this subsample comparison.
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Figure 6: LA City Sample: Construction cost by square foot size of project and cost by number of units per project with linear regression lines show the general relationship between size and cost.

Figure 7 looks at 101 projects located anywhere within the County of Los Angeles that included a requirement to pay construction workers a “prevailing wage,” as defined either by the state or the federal government. This subsample includes all nine PLA projects. Again, results are similar. There is one PLA outlier project in the square foot size against total cost left-hand panel with two nearby non-PLA neighbors in terms of cost and square foot size. Most of the PLAs are below the line in the right-hand number-of-units against total cost panel. Taken together, these visual inspections using a linear regression line as a benchmark do not indicate that PLA projects are more expensive.
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Figure 7: Prevailing Wage Projects sample: Construction cost by square foot size of project and cost by number of units per project with linear regression lines show the general relationship between size and cost.

We have visually inspected our cost data from the perspective of project size, location and regulatory environment. Along these dimensions, the cost of PLAs appear similar to the cost of non-PLA affordable housing projects. The one outlying exception in 2008 reflects the higher cost of all 2008 affordable housing projects compared to the cost of these projects in 2009 and thereafter when the effects of the Great Recession on costs took hold. Furthermore, this 2008 outlier has non-PLA nearby neighbors in terms of cost and size except in the LA city sample. But these affordable housing projects can also vary along the dimension of targeted population. We look at this variation and then introduce a more formal nearest neighbor analysis to address these differences.

Other Ways Affordable Housing Projects Vary

Affordable housing projects can differ in ways other than square foot size and number of units. In our data, the major additional difference is the population targeted by the affordable housing project.
Figure 8 shows that PLAs were targeted more towards seniors (56%) while non-PLA projects were targeted more towards large families (55%). If affordable housing projects aimed at large families had larger units compared to units designed for seniors, this could help explain the result reported above that the per unit cost of PLA projects were statistically significantly lower than non-PLA projects.

**Figure 8: Comparing project targets for PLA and non-PLA projects**

**Nearest Neighbor Analysis**

Affordable housing projects in our sample can vary based on square foot size, number of stories, number of units, targeted population, year of construction, prevailing wage status and whether the project is within the city of Los Angeles or in the country but outside the city. Nearest neighbor analysis provides a method for scaling these multiple dimensions of potential differences along a single metric measuring the similarity of one project with the next. We report results using a standard Mahalonobis metric and we will see that results are similar using other metrics identifying comparable projects. Our nearest neighbor analysis matches each PLA in our sample with a set of four similar non-PLA projects.

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5 "The Mahalanobis distance is a measure of the distance between a point P and a distribution D, introduced by P. C. Mahalanobis in 1936. It is a multi-dimensional generalization of the idea of measuring how many standard deviations away P is from the mean of D. This distance is zero if P is at the mean of D, and grows as P moves away from the mean: Along each principal component axis, it measures the number of standard deviations from P to the mean of D. Mahalanobis distance is thus unitless and scale-
Figure shows the nearest neighbor point estimate for the percentage difference in total project cost on nine PLA projects compared to similar non-PLA projects. These point estimates are shown by dots while the 95% confidence interval for each point estimate is shown as a line on either side of the dot.

Again we report to total sample result and the results for two subsamples--LA city only and prevailing wage projects only. In the overall sample, nearest neighbor analysis estimates that the nine PLA projects were 2.3% more expensive than their comparable counterparts. In the subsamples for prevailing wage and LA city projects only, nearest neighbor analysis estimates that PLA projects were 3.8% and 2.5% less expensive.

\[ \text{Point Estimates} \]
- All Projects
- Prevailing Wage Projects
- LA city Projects

Nearest neighbor analysis using mahalanobis metric and selecting for similarities in square foot size, number of stories, number of units, targeted population (i.e. large families, seniors, special needs, other target, no-target) and 2008 vs. 2009-12. Same nine PLA projects in each sample. No point estimate is statistically significantly different from zero. Note: confidence interval shows the range within which there is a 95% chance that the true value lies.

\[ \text{Figure 9: Nearest neighbor analysis: percent construction cost difference PLA projects vs. non-PLA projects} \]
However, in all cases, these results were not statistically significant. This is visually shown by the fact that the 95% confidence intervals overlap the dashed line set at zero. This graphically represents the result that the plus-minus range around the point estimate is wide. Even if the point estimate is positive, the true result might be negative and visa versa. Thus we cannot say with any certainty that PLA requirements had any effect on construction costs one way or the other. This result which takes in the multiple dimensions in which one PLA might differ from another is is consistent both with our visual inspection of the data and the simple approach of taking an average square foot cost and average per unit cost and comparing the PLA with the non-PLA averages.

Our nearest neighbor analysis may be sensitive to the distance metric used to determine each PLA's four nearest neighbor non-PLA projects for comparison. In Figure 60 we compare the Mahalonobis metric to two alternative metrics of distance between nearest PLA-non-PLA neighbors. We can see that the results are similar. In all cases the point estimate of percent difference in costs between PLA and non-PLA projects are close to zero and more importantly, in all cases, the point estimates are not statistically significantly different from zero. So regardless of the metric chosen, the conclusion remains the same: there is no statistically significant effect of having applied PLA requirements on these nine PLA projects compared to non-PLA projects built in similar places, similar time periods, of comparable scale and targeted at similar populations.

**Figure 60: Comparing nearest neighbor results for three distance metrics**

Conclusions and Future Research
We have analyzed construction costs for the nine new affordable housing development projects in Los Angeles that were covered by the CRA/LA’s “Construction Careers and Project Stabilization” policy by comparing them to a group of 121 non-PLA new affordable housing developments in Los Angeles county and city. We performed multiple statistical tests on different intra-regional sub-samples. Our conclusion is that there is not even weak evidence to support claims made at the time of adoption of the Construction Careers & Project Stabilization policy that the PLA would increase housing developments’ construction costs.

Construction projects are heterogeneous by nature, as are regional markets and institutions that shape the construction industry’s economics. The results of this study apply to affordable housing projects between 2008 and 2012 in the Los Angeles metropolitan area. Further research testing the robustness of our findings will require more cases of PLA-covered housing projects in different regions and/or different time periods.

Analysis of data collected for a recent state-sponsored study of affordable housing costs found that in addition to a project’s location, the business cycle timing of the project and project scale, local governmental project approval processes that require multiple meetings and substantial design revisions can significantly influence affordable housing total development costs. Future research into the variability of land-use approval processes could complement our research and improve knowledge about the sources of cost differences of Los Angeles affordable housing projects.