

# **An Economic Evaluation of Mark Douglas's Project Astra.**

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May 2019

## **Executive Summary**

Project Astra is a targeted poverty-reduction program that is based on three pillars. The first pillar calls for redirecting a portion of federal, state, and local infrastructure spending to high-poverty communities, designated as Opportunity Zones by the federal government. Additional workforce hiring policies would target construction jobs and training for local disadvantaged workers (living below the poverty line, veterans, formerly incarcerated, and aged-out foster care children, etc.). Project Astra's first infrastructure pillar is consistent with the practice and theory of regional economic and workforce development and is particularly relevant to the proposed Opportunity Zones. As a consequence, this review focuses on these aspects of the proposed policy. This review is based on the current theory and practice of regional economic and workforce development as well as on current research on construction labor market policies that are similar to Project Astra.

Project Astra is a broader application of local hire, apprenticeship, and apprenticeship readiness programs that have been adopted by numerous municipalities. Results of several studies illustrate that when local workers are employed on a local construction project, more of the jobs, incomes and spending associated with building activity remain in the area where the work is completed. Businesses that are unrelated to the construction industry benefit as local workers make purchases in local retail and service establishments. Increased local spending and economic activity increases local tax revenues. Project Astra would focus these benefits in the targeted communities most in need of economic stimulus and development.

Another way Project Astra would contribute to the economic development of targeted low opportunity communities is by providing opportunities to participate in apprenticeship and apprenticeship readiness programs. Benefits of these programs extend to trainees and to the overall construction industry. Those who complete apprentice programs, including construction apprenticeships, earn over \$300,000 more in average career compensation compared to similar individuals who do not participate in training programs. Construction workers who have completed apprenticeship programs are significantly less likely to suffer occupational injuries and fatalities. Due to the inherent instability of construction activity, there are few incentives to formally train workers. This training challenge contributes to recurring skilled labor shortages. For example, about 80% of contractors currently report difficulty in finding skilled employees. Apprenticeships address the challenge of formal training in the construction industry by stabilizing the supply of skilled workers. The training aspect of Project Astra would contribute to the stable, trained, and safe construction workforce that is needed to build the structures and infrastructures for a technologically advanced and competitive economy.

The first pillar of Project Astra complements other regional economic development efforts by creating additional opportunities for local residents and businesses. The proposed policy would also foster workforce development that is a key component of local economic development.

## About the Author

**Kevin Duncan**, Ph. D. is a Professor of Economics at Colorado State University-Pueblo where he teaches business and regional economics in the Hasan School of Business. He has also been a visiting scholar at the University of California, Berkeley. Duncan has been the Director/Senior Economist for the Center for Business and Economic Research at CSU-Pueblo. In this capacity he has conducted applied research for the local chamber of commerce, the economic development corporation, businesses, non-profits, various state and local policy proposals, and labor unions. He has also participated in economic forums sponsored by U.S. Bank. Duncan has written over 100 academic articles, technical reports, and other research papers. His research on construction labor market policy has been published in leading national and international academic journals including *Industrial & Labor Relations Review*, *Industrial Relations*, and *Construction Management and Economics*. His research has been used to inform construction labor market policy in 24 states and the U.S. House of Representatives. He received his Ph. D. in Economics from the University of Utah and his BA in Economics from the University of California, Riverside.

The author did not receive any compensation for this review.

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## Introduction

Project Astra is a targeted poverty-reduction program that is based on three pillars. The first pillar calls for redirecting a portion of federal, state, and local infrastructure spending to high-poverty communities, designated as Opportunity Zones by the federal government.<sup>1</sup> Additional workforce hiring policies would target construction jobs and training for local disadvantaged workers (living below the poverty line, veterans, formerly incarcerated, and aged-out foster care children, etc.) residing in ‘Opportunity Zones.’ The second pillar involves subsidies and tax reductions for affordable housing construction, homeownership, and increased business investment. The third pillar reduces business and personal taxes during the period of economic re-development. Many aspects of Project Astra, particularly the first infrastructure pillar are consistent with the practice and theory of regional economic and workforce development and are particularly relevant to the proposed Opportunity Zones. As a consequence, this review focuses on these aspects of the proposed policy.

Project Astra is an extension of local hire, apprenticeship, and apprenticeship readiness programs that have been adopted by numerous municipalities.<sup>2</sup> For example, the purpose of the HireLAX Program is to maximize the local economic impact of building activity at airports managed by the City of Los Angeles.<sup>3</sup> This program has a local hire goal of at least 30% for

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<sup>1</sup> Project Astra. Accessed at: <http://www.skillsbuildus.org/project-astra/>.

<sup>2</sup> See City of Boston. 2019. “Boston Residents Jobs Policy on Construction Projects” (Accessed at: <https://www.boston.gov/departments/economic-development/equity-and-inclusion-office/residents-jobs-policy-construction-projects>), Construction Dive. 2017. “NY (Erie) county enacts local hiring requirement” (accessed at: <https://www.constructiondive.com/news/ny-county-enacts-local-hiring-requirement/506111/>), Seattle.gov. “Priority Hire” (accessed at: <https://www.seattle.gov/city-purchasing-and-contracting/priority-hire>), and City of San Francisco. “CityBuild.” (accessed at: <https://oewd.org/city-build>).

<sup>3</sup> Los Angeles World Airports. “HireLAX” (accessed at <https://www.lawa.org/en/lawa-employment/lawa-hirelax/hirelax>).

participating contractors. HireLAX also provides opportunities for local residents to enroll in construction apprenticeship and pre-apprenticeship programs. Upon program completion, graduates are eligible for employment on airport construction projects. Veterans and women are strongly encouraged to participate in HireLAX.

These policies contribute to the local economy in several ways. When local workers are employed on a local construction project, more of the jobs, incomes and spending associated with building activity remain in the area where the work is completed. Businesses that are unrelated to the construction industry benefit as local workers make purchases in local retail and service industries. Increased local spending and economic activity contributes to local tax revenues.

Through apprenticeship and apprenticeship readiness programs, the skills of the local workforce are developed. Formal training not only increases career opportunities and incomes of local workers, but also provides the local construction industry with the stable, trained, and safe workforce that is needed to build the structures and infrastructures for a technologically advanced and competitive economy.

These types of policies complement other regional economic efforts by creating more opportunities for local residents and businesses. Additionally, these policies foster workforce development that is a key component of local economic development.

The remainder of this review contains a discussion of the basics of regional economic development and the roles of construction and construction labor market policies in fostering local economic growth. A review of the research on the economic impact of construction and construction labor market policies follows. The challenge of formal training in the construction

industry is discussed along with an explanation of the role of pre-apprenticeship and apprenticeship programs in overcoming this challenge. The effect of formal training on injuries in the construction industry and on construction worker incomes is also discussed.

### **The Basics of Regional Economic Development and the Role of Construction, and Construction Labor Market Policies**

It is helpful to think of a regional economy as an expandable barrel.<sup>4</sup> The size of this economic barrel at any particular time depends on the availability of local natural resources, workforce and managerial skills, and the extent of capital formation, etc. The barrel will expand or shrink depending on the flow of dollars (spending) into or out of the local economy. This simple idea is the basis of local economic development efforts aimed at attracting “export” employers. These employers produce a good locally that is sold outside of the region where exports increase the flow of dollars into the area. It is also important to reduce the leakage of dollars from the local economy. This is largely the economic development function of the local retail and service businesses. If these industries are well-developed, local consumers can avoid purchases outside of the region. Therefore, a local economy can grow with an increased flow of dollars and spending into the region and by the reduction of spending leakages out of the local economy.

Construction and construction labor market policies contribute to local economic development by increasing the flow of spending into a region and by reducing spending leakages out of the local economy. Construction activity that is funded by the federal or state government represents a flow of dollars into the region where the work is performed. Construction labor

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<sup>4</sup> This concept is illustrated in Hustedde, R., Shaffer, R., and Pulver, G. 1993. “Community Economic Analysis: A How to Manual.” Accessed at: <http://www2.econ.iastate.edu/classes/crp274/swenson/CRP566/Readings/Community%20Economic%20Analysis%20Workbook%20HSP.pdf>.

market policies such as local hire, prevailing wage, project labor/community workforce agreements, directly or indirectly result in more work completed by resident construction workers.<sup>5</sup> In doing so, these policies retain more construction jobs, incomes, and spending that would otherwise leak out of the area when non-local workers are employed. Local workers spend a portion of their incomes at local retail and services businesses. As a consequence, businesses that are unrelated to the construction industry benefit.

With policies that encourage local employment, communities are better positioned to capture more of the overall economic benefits associated with publicly funded construction. To the extent that public funds are used to finance building activity, local hire policies mean that taxpayer dollars are used to employ area residents, create opportunities for local businesses, and contribute to economic activity that generates additional local tax revenues. Without construction labor market policies that encourage local employment, taxpayer dollars are used to employ non-local workers and to stimulate businesses and economies in other regions.

Applying these concepts to Project Astra means that Opportunity Zones, through local-hire provisions and focused infrastructure spending, will receive the maximum economic development stimulus.

## **Research on the Economic Impact of Construction and Construction Labor Market Policies**

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<sup>5</sup> Prevailing wage laws establish location and job-specific minimum compensation rates for construction workers employed on publicly funded building activity. These minimum wage rates provide local contractors with a bid advantage that contributes to more work for local contractors and their employees. The requirements of project labor and community workforce agreement typically support local builders.

Numerous studies have examined the economic impact of increased construction activity and construction labor market policies on local and national economies. For example, Mark Zandi estimates that another dollar of infrastructure spending increases national economic activity by approximately \$1.60.<sup>6</sup> Others examine the effect of construction labor market policies on local economies. The author of this study estimated that a local hire policy added to Los Angeles County's planned \$72 billion expenditure on transportation infrastructure starting in 2008 would increase the economic impact of the project by \$2.8 billion, create over 18,000 jobs in local healthcare, retail, and food services industries, etc., and increase county sales tax approximately \$65 million.<sup>7</sup>

Another study by the author of this report examined library construction in Santa Clara County, California and found that 39% of contractor establishments involved in this work were located in the county when location-specific, minimum prevailing wages were required. When the wage policy did not apply, only 23% of contractors had county business addresses. If all 16 libraries built in the county between 2003 and 2009 had not been covered by prevailing wage requirements, economic activity in the county would have decreased by over \$7 million, over 100 jobs would have been lost, and combined sales and property tax revenue would have decreased by over \$125,000.<sup>8</sup> This impact is based on a total construction cost of \$177 million.

## **The Challenge of Formal Training and Recurrent Labor Shortages in the Construction Industry**

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<sup>6</sup> Zandi, Mark. 2008. "assessing the Macro Economic Impact of Fiscal Stimulus 2008. Accessed at: <https://www.economy.com/mark-zandi/documents/Stimulus-Impact-2008.pdf> .

<sup>7</sup> Results are reported in LAANE. 2011. Moving Forward Promoting Construction Careers at Metro." Accessed at: <https://www.laane.org/wp-content/uploads/2011/08/Construction-Report-January-2011-web-2.pdf>.

<sup>8</sup> Working Partnerships USA. 2011. Economic, Fiscal and Social Impacts of Prevailing Wage in San Jose, California. Accessed at: [https://www.wpusa.org/5-13-11%20prevailing\\_wage\\_brief.pdf](https://www.wpusa.org/5-13-11%20prevailing_wage_brief.pdf).

Due to fluctuations in seasons and economic activity, construction is the most unstable sector of the U.S. economy. Much of construction is outdoor activity and as a result, construction employment varies with the season. For example, comparing employment during the four peak summer months to the slowest-four winter months indicates that construction employment decreased by 8.1% in the United States over the 2017-2018 period. This rate outpaced employment fluctuations in other seasonally-sensitive industries. A similar comparison of peak and off-peak trends in employment over the same period indicates that jobs in the leisure and hospitality industry and in retail trade fluctuated by 5.3% and 3.4%, respectively.<sup>9</sup>

The end result of instability in the construction industry is a loose attachment between contractors and their employees. When work is available, contractors take on additional workers, but typically shed employees when a project is completed, the season comes to an end, or the economy slows. As a consequence, there is little incentive for contractors to incur the expenses associated with training. There is no guarantee that the trained worker will be retained and it is likely that at some point a trained employee may work for a competing contractor. From the worker's perspective, there is also little incentive to incur the costs of training due to intermittent spells of unemployment between projects, transitions to work in other industries, and seasonal layoffs.<sup>10</sup>

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<sup>9</sup> These data are for all blue and white collar employees in the industry. The peak months in construction employment are typically June-September across the nation. December-March is marked by the lowest levels of employment. Peak employment in the leisure and hospitality industry typically occurs between May and August with the lowest employment between November-February. Peak employment in the retail industry occurs between October and January with low months between February and March. Data obtained from the Quarterly Census of Wages and Employment of the Bureau of Labor Statistics, U.S. Department of Labor. Accessed at: <http://www.bls.gov/cew/>.

<sup>10</sup> For a detailed explanation see Philips, Peter, "Dual Worlds: The Two Growth Paths in U.S. Construction," in *Building Chaos: An International Comparison of the Effects of Deregulation on the Construction*, (Peter Philips and Gerhard Bosch, eds.) Routledge Press, London, 2003.



Economic fluctuations exacerbate the training problem, with downturns resulting in fewer jobs for trainable young people followed by a shortage of skilled workers when the economy expands. The industry is currently experiencing a skilled labor shortage in construction with 78% of surveyed contractors reporting difficulty finding skilled workers during the first quarter of 2019.<sup>11</sup> This shortage is rooted in the instability of the industry and the attendant disincentives for workers and contractors to incur the cost of the training that is that basis of a career-commitment in construction.

### **Apprenticeships and Pre-Apprenticeships in Construction**

The challenge associated with training workers exists alongside the need for a skilled labor force that can build customized projects. Unlike manufacturing where the product and the production process are uniform, the majority of construction “output” is not standardized. Outside of residential construction, the majority of building sites, designs, and logistics vary from project to project. Broadly trained craft workers are needed to adjust to the non-routine aspects of customized construction.

The industry has responded to the mismatch between strong disincentives to train and the need for a skilled, safe, and sustained workforce by creating formal apprenticeship training programs. The Office of Apprenticeships at the U.S. Department of Labor works in conjunction with approved State Apprenticeship Agencies to set basic standards for programs that meet federal requirements for formal apprenticeship and prevailing wage work.<sup>12</sup> Within this

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<sup>11</sup> See Associated General Contractors. January 2019. “2019 Sage Construction Hiring and Business Outlook Survey. Accessed at: <https://www.agc.org/news/2019/01/02/2019-sage-construction-hiring-and-business-outlook-survey>.

<sup>12</sup> See “What is Registered Apprenticeship?” ApprenticeshipUSA, Employment and Training Administration, U.S. Department of Labor. Accessed at: <https://www.doleta.gov/OA/apprenticeship.cfm>.

framework, sponsors have freedom to determine program content, applicant qualifications, and other aspects of the program. Apprenticeships typically involve a mix of on-the-job training and in-class theoretical education that covers the basic and specialized skills of a particular craft (for carpenters, electricians, and plumbers, etc.). Length of training varies by trade. For example, apprentice laborers in California can expect to spend 3,000 hours of on-the-job training, plus class time. On the other hand, apprentice electricians in California are required to complete 8,000 of on-the-job training, plus 800 hours of class instruction over a 5-year training period.<sup>13</sup>

During the on-the-job component of training, the apprentice earns less than the fully-trained journeyworker.<sup>14</sup> With this arrangement the cost of training workers is shared between the apprentice and the employers who are sponsoring the training. Upon successful completion of the program, the apprentice becomes a certified journey worker with higher earnings that contribute to a career in the industry. In this way apprenticeship programs address the disincentives that discourage employers and workers from pursuing training. Apprenticeships in construction result in a relatively homogenous skilled workforce in an industry that is otherwise largely free of certifications that reveal worker quality.

Pre-apprenticeship programs are designed to prepare participants who do not possess the basic skills needed to meet the entry qualifications of a complete apprenticeship program. Preparation includes review of the basic academic skills and hands-on training needed for work in the industry.<sup>15</sup> Apprenticeship readiness programs often receive assistance and guidance from

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<sup>13</sup> Cal Apprenticeship.org. Accessed at: [http://www.calapprenticeship.org/programs/laborer\\_apprenticeship.php](http://www.calapprenticeship.org/programs/laborer_apprenticeship.php).

<sup>14</sup> Compensation varies with the program, but usually starts at 50% of the hourly rate for the corresponding journey worker and increases with progression through the training program. See Bilginsoy, Cihan. 2007. "Delivering Skills: Apprenticeship Program Sponsorship and Transition from Training." *Industrial Relations*, Vol. 46, No. 4, pp. 738-763.

<sup>15</sup> See U.S. Department of Labor. Apprentice Toolkit. "What is pre-apprenticeship?" Accessed at: <https://www.dol.gov/apprenticeship/toolkit/toolkitfaq.htm#1f>.

established apprenticeship programs. For features of an existing program see HireLAX Apprenticeship Readiness Program Orientation.<sup>16</sup>

## **Apprenticeship Training and Construction Worker Safety and Income**

Research indicates that construction workers who have completed apprenticeship training programs are less likely to suffer injuries or fatalities on construction sites. The relation between training and safety can be illustrated by comparing injury rates between union and nonunion construction workers. Union construction workers have all completed apprenticeship programs. These programs indirectly contribute to safe work practices through the emphasis on skills development and proficiency that is associated with proper, safe work performance. These programs also direct safety training. For an example of the integration of safety into apprenticeship training see LIUNA.<sup>17</sup> Apprenticeship training is not a requirement of nonunion construction workers where apprentices are relatively rare. Rather than formal, structured training that incorporates both direct and indirect safety training, the nonunion side of the industry more commonly includes unstructured and informal, on-the-job training.<sup>18</sup>

Numerous studies examine the effect of union membership on injuries and fatalities in construction. A study conducted by the University of Michigan examines the effect of unions on construction occupation fatalities in the U.S. between 2003 and 2009.<sup>19</sup> Results indicate that a

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<sup>16</sup> The Los Angeles Post. 2018. "HireLAX Apprenticeship Readiness Program (ARP) Orientation." Accessed at: <http://lapost.us/?p=8708>.

<sup>17</sup> Laborers International Union of North America. "Apprentice Program." Accessed at: <http://www.nwliuna.org/apprenticeship-program>.

<sup>18</sup> For an illustration of the relation between training opportunities and construction injuries and fatalities, see, Workers Defense Fund. 2013. "Build a Better Texas." Accessed at: [http://www.workersdefense.org/Build%20a%20Better%20Texas\\_FINAL.pdf](http://www.workersdefense.org/Build%20a%20Better%20Texas_FINAL.pdf).

<sup>19</sup> See Zullo, Rolland. 2011. "Right-to-Work Laws and Fatalities in Construction." Ann Arbor, MI: Institute for Research on Labor, Employment, and the Economy, University of Michigan. Accessed at: <http://irlee.umich.edu/?page=publications>.

one-percent increase in a state's construction unionization rate is associated with a decrease in fatalities per thousand workers of 0.223 percent. When the effect of this one-percent change in unionization is evaluated at the average number of construction worker deaths over the period, the average falls from 8.757 deaths to 6.804 per 100,000 workers. The effect of unionization on the construction occupation fatality rate is statistically significant and the analysis takes into consideration the type of work conducted, worker productivity, year, and whether or not the state has an OSHA-approved health and safety program.

A case study by the U.S. Department of Labor found that deaths of unionized workers were disproportionately low compared to overall union representation in the industry. Results of the study indicate that between 2011 and 2013 union workers represented 10% of fatalities in construction in Massachusetts. Over this period, unionized construction workers represented about 17% of Massachusetts' construction labor force.<sup>20</sup>

Numerous reports by the New York Committee for Occupational Safety and Health provide overwhelming evidence of differences in injuries and fatalities between union and nonunion construction sites. For example, of the 30 investigated construction fatality citations in 2017, 86.7% of workers who died on private worksites statewide were non-union.<sup>21</sup> In New York City, 92.9% of the 2017 construction workers who died on private worksites were non-union. Of the 36 investigations of construction fatality citations in 2016, 94.7% of workers who

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<sup>20</sup> U.S. Department of Labor, Bureau of Labor Statistics. Collecting Union Status for the Census of Fatal Occupational Injuries: A Massachusetts Case Study. Accessed at: <https://www.bls.gov/opub/mlr/2019/article/collecting-union-status-for-the-census-of-fatal-occupational-injuries.htm>.

<sup>21</sup> New York Committee for Occupational Safety and Health . 2019. NYCOSH Construction Fatality Report, "Deadly Skyline." Accessed at: <https://nycosh.org/2019/01/nycosh-construction-fatality-report-deadly-skyline-released-today-reveals-increasing-trend-in-new-york-state-construction-fatalities/>.

died on private worksites state-wide were non-union.<sup>22</sup> In New York City, 93.8% of construction workers who died on private worksites in 2016 were non-union. In 2012, 79% of fatal fall construction accidents investigated by OSHA in New York occurred at nonunion construction sites. Ninety percent of construction companies in OSHA’s Severe Violator Enforcement Program in New York are nonunion.<sup>23</sup>

Apprenticeships importantly reduce injury rates among construction workers. These programs are also associated with increased earnings. For example, apprentice programs, including those in the construction industry, increase the average career compensation (wages and fringe benefits) of those who completed training by over \$300,000, compared to similar individuals who did not participate in training programs.<sup>24</sup>

### **Expected Impact of Project Astra Policies on Construction Costs**

Research indicates that construction labor market policies similar to those proposed by Project Astra do not significantly add to construction costs.<sup>25</sup> One reason is that labor costs are a low percent of total construction costs. According to information from the U.S. Census Bureau, labor costs (wages and fringe benefits) average 23% of total construction costs.<sup>26</sup> Therefore, any

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<sup>22</sup> New York Committee for Occupational Safety and Health . 2018. NYCOSH Construction Fatality Report, “Deadly Skyline.” Accessed at: <https://nycosh.org/2018/01/nycosh-construction-fatality-report-deadly-skyline-released-today-reveals-alarming-increases-in-new-york-state-construction-fatalities/>.

<sup>23</sup> New York Committee for Occupational Safety and Health . 2015. “The Price of Life: 2015 Report on Construction Fatalities in NYC.” Accessed at: <https://nycosh.org/resource/the-price-of-life-2015-report-on-construction-fatalities-in-nyc/>.

<sup>24</sup> Mathematica. 2012. “An Effectiveness Assessment and Cost-Benefit Analysis of Registered Apprenticeship in 10 States.” Accessed at: <https://www.mathematica-mpr.com/our-publications-and-findings/publications/an-effectiveness-assessment-and-costbenefit-analysis-of-registered-apprenticeship-in-10-states>.

<sup>25</sup> See Duncan, Kevin and Ormiston, Russell. 2019. “What does the Research Tell us About Prevailing Wage Laws?” *Labor Studies Journal*, vol. 44, issue 2, pp. 139-160. Accessed at: <https://journals.sagepub.com/doi/abs/10.1177/0160449X18766398>.

<sup>26</sup> U.S. Census Bureau. 2012. *Economic Census of Construction*, Construction: Geographic Area Series: DetailedStatistics for Establishments, accessed at: [http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ECN\\_2012\\_US\\_23A1&prodType=table](http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ECN_2012_US_23A1&prodType=table).

cost impact Project Astra may have is expected to be small and less than the economic benefits to targeted Opportunity Zones.

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