

HIRING LOCAL ON TRANSPORTATION INFRASTRUCTURE PROJECTS IN PENNSYLVANIA

Employment, Economic, Fiscal, and Training Impacts

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REPORT SUMMARY

Over the next few years, historic investments in Pennsylvania’s roads, bridges, and public transit systems—including \$21 billion in planned state expenditures and \$16 billion in federal funding—will improve Pennsylvania’s competitiveness and grow the economy ([PennDOT, 2021](#); [White House Fact Sheet, 2021](#)). However, the economic, training, and fiscal benefits of these improvements will only be maximized if the projects are built using skilled local workers.

The Importance of Hiring Local

Constructing vital infrastructure systems is important for communities. Projects that source materials locally and employ skilled local workers maximize economic development. When taxpayer dollars are used to hire local contractors and local workers on construction projects, the effect of the government spending is amplified and multiplied as the wages are used to pay for rent, vehicles, groceries, and services that, in turn, generate demand and jobs for other residents from the community. This “multiplier effect” boosts the economy, augments employment, and grows the tax base.

There is a small body of economic research on the impacts of hiring local. The research finds that local hire programs do not affect total construction costs or reduce bid competition ([Veeder, 2021](#)). Local hire programs are most effective when they recruit workers from disadvantaged communities, clearly communicate and measure goals, have engaged contractors and unions, and are supported by registered apprenticeship programs, apprenticeship readiness programs, and job placement programs ([Herrera et al., 2014](#); [PolicyLink, 2002](#)). Recent studies on solar projects reveal that hiring local increases the economic impact of solar projects by at least 73% and generates more in state and local tax revenues ([Knapp, 2021](#); [Manzo, Wilson, and Kashian, 2022](#)). The City of Cincinnati offers a successful recent example of using a project labor agreement (PLA), 80% in-state residency requirement for employment, and 4% commitment to using minority business enterprises (MBE), women business enterprises (WBE), or small business enterprises (SBE) on solar projects ([Woodrum et al., 2021](#))

Planned Commonwealth and Federal Investments in Transportation Infrastructure

Transportation investments offer middle-class career opportunities for Pennsylvania residents earning locally prevailing wages and benefits while delivering great value for taxpayers. The Pennsylvania Department of Transportation (PennDOT) is in the midst of investing \$21.1 billion in roads, bridges, and public transit systems between 2021 and 2024. The federal Infrastructure Investment and Jobs Act (IIJA) is committing \$15.7 billion over five years to rebuild Pennsylvania’s transportation infrastructure, bringing total planned investments in the commonwealth up to \$36.8 billion before 2027 (figure A).

FIGURE A: TOTAL PLANNED COMMONWEALTH AND FEDERAL TRANSPORTATION INFRASTRUCTURE FUNDING

Pennsylvania	PennDOT STIP and TIP (2021-2024)	Federal IIJA (2022-2027)
Roads and Bridges	\$11.68 billion	\$12.90 billion
Public Transit	\$9.44 billion	\$2.80 billion
Totals	\$21.12 billion	\$15.70 billion

Source(s): Authors’ analysis of *Pennsylvania’s Statewide Transportation Improvement Program* documents ([PennDOT, 2020](#)) and “The Infrastructure Investment and Jobs Act will Deliver for Pennsylvania” fact sheet ([White House Fact Sheet, 2021](#)).

These historic investments will create good-paying, middle-class jobs because all public infrastructure projects in Pennsylvania are covered by the state’s Prevailing Wage Act, which establishes local minimum wage rates for different types of skilled construction workers on taxpayer-funded public works projects valued at \$25,000 or more (PA GA, 1961). Prevailing wages protect local construction standards in the competitive bidding process, ensuring that contractors compete based on core competencies and efficiencies rather than on undermining local compensation, area work standards, and contributions to training programs. Prevailing wages have been found to increase the hiring of local contractors on public projects by between 8% and 10% (Manzo, 2022; Manzo and Duncan, 2018).

Impacts of Hiring Local on Transportation Infrastructure Projects in Pennsylvania

According to the 2017 *Economic Census* from the U.S. Census Bureau, Pennsylvania-based construction contractors completed 85% of the total value of construction work in Pennsylvania (figure B). This in-state contractor share is on par with neighboring New Jersey (85%) but higher than Maryland (73%) and West Virginia (84%). New York (96%), Ohio (90%), and Delaware (86%) have greater shares of project value completed by in-state contractors.

FIGURE B: SHARE OF CONSTRUCTION VALUE COMPLETED BY IN-STATE CONTRACTORS, SELECTED STATES, 2017

State or Geography	Share of Construction Value Completed by In-State Contractors
Pennsylvania	85.0%
Delaware	86.4%
Maryland	73.2%
New Jersey	85.2%
New York	96.2%
Ohio	89.9%
West Virginia	83.6%

Source(s): Authors’ analysis of the 2017 *Economic Census* by the U.S. Census Bureau (Census, 2022).

The market share of in-state contractors is necessary to estimate the impacts of the historic investment in Pennsylvania’s transportation infrastructure (figure C). Based on a local hiring rate of 85%, economic activity will be boosted by \$64 billion. The investments will create 230,000 total “job-years,” or 46,000 jobs annually over five years, and total state and local tax revenues will grow by more than \$2 billion. Contributions into local apprenticeship training programs will increase by about \$84 million.

FIGURE C: ECONOMIC, FISCAL, AND TRAINING IMPACTS OF TRANSPORTATION INVESTMENTS IN PENNSYLVANIA

Total Impacts	Employment (Job-Years)	Economic Activity (Industry Output)	State and Local Tax Revenues	Apprenticeship Contributions
Estimates at 85% Local	230,200	\$63,670 million	\$2,277 million	\$84 million
Estimates at 95% Local	237,000	\$64,866 million	\$2,347 million	\$93 million
10% Local Hire Difference	+6,800	+\$1,196 million	+\$70 million	+\$9 million

*NOTES: Blue-collar construction workers account for 73,317 of the direct job-years. The remainder (31,245 job-years) is for white-collar professionals employed in the construction industry, such as engineers, architects, lawyers, office workers, and even CEOs. Source(s): Authors’ IMPLAN analysis (IMPLAN, 2022) using data from *Pennsylvania’s Statewide Transportation Improvement Program* documents (PennDOT, 2020), “The Infrastructure Investment and Jobs Act will Deliver for Pennsylvania” fact sheet (White House Fact Sheet, 2021), and the 2017 *Economic Census* by the U.S. Census Bureau (Census, 2022).

Impacts will be greater if a larger share of the construction work is performed by Pennsylvania-based contractors (figure C). A 10%age-point increase in the market share of in-state contractors would keep jobs and income local, spurring consumer demand as local workers spend money in their communities, and creating nearly 7,000 additional “job-years” (1,400 jobs per year). This increase in local hiring would boost local business sales by more than \$1 billion, increase state and local tax revenues by \$70 million, and add \$9 million in local apprenticeship training contributions.

Another reason to use Pennsylvania-based contractors who hire local workers is that they are much safer (figure D). Pennsylvania’s construction worksites have 32% fewer health and safety violations than the rest of the United States. Union worksites in Pennsylvania are particularly safe, averaging 67% fewer violations (0.5 per inspection) than the national average (1.6 per inspection).

FIGURE D: OSHA INSPECTIONS AND VIOLATIONS AT CONSTRUCTION WORKSITES IN PENNSYLVANIA AND THE REST OF THE UNITED STATES, AND BY UNION STATUS, 2019

Segment of Construction	2019 OSHA Data	Commonwealth of Pennsylvania	Rest of the United States	Pennsylvania Difference
All Worksites	OSHA Inspections	1,199	35,866	
	Violations Per Inspection	1.07	1.56	-31.6%
Union Worksites	OSHA Inspections	124	2,731	
	Violations Per Inspection	0.52	1.06	-51.5%
Nonunion Worksites	OSHA Inspections	1,075	33,111	
	Violations Per Inspection	1.13	1.60	-29.4%

Source(s): Authors’ analysis of Occupational Safety and Health Administration inspection data at establishments with construction industry NAICS codes (230000 to 239999) in 2019 (OSHA, 2021).

Case Study: PennDOT’s 7th Street Bridge Rehabilitation Project in Pittsburgh

A prime illustration of the value of hiring locally and the consequences of using out-of-state workers on taxpayer-funded infrastructure projects is the 7th Street Bridge rehabilitation project in Allegheny County. The 7th Street Bridge, also called the Andy Warhol Bridge, project was estimated to cost more than \$25 million, including around \$9 million for the painting portion of the project. The project was awarded to Brayman Construction Corporation in June 2016 (PennDOT, 2016). Brayman was one of six construction firms to bid on the project, and outbid the second-place bidder (Pittsburgh-based Mosites Construction Company) by about \$56,000, or 0.2% (figure E).

FIGURE E: 7TH STREET BRIDGE (ANDY WARHOL BRIDGE) REHABILITATION PROJECT BIDS, JUNE 9, 2016

Bid Tabulations	Bid Amount	Difference (Value)	Difference (Percent)
Brayman Construction Corporation	\$25,391,749	--	--
Mosites Construction Company	\$25,447,777	\$56,028	0.2%
Trumbull Corporation	\$25,811,993	\$420,243	1.7%
Joseph B. Fay Co.	\$26,867,705	\$1,475,956	5.8%
Mascaro Contracting L.P.	\$27,053,571	\$1,661,822	6.5%
Swank Construction LLC	\$28,454,244	\$3,062,495	12.1%

Source(s): Author’s reproduction of “#88541 Allegheny – SR 7301(0)” data from the PennDOT letting on June 9, 2016 produced by the Associated Pennsylvania Contractors and published online by PennDOT (PennDOT, 2016).

Brayman subcontracted out the painting portion of the bridge project to Florida-based Southern Road & Bridge, LLC, who employed 59 out-of-state workers (figure F). Fifty of these workers (85%) testified to a home residence outside of the Commonwealth of Pennsylvania. Another nine individuals either did not list their residence or put down the address of a Pittsburgh-area hotel. Not a single worker listed a Pennsylvania residential address. There were also reports of worker misclassification, wage theft, and payroll fraud on this project funded by Pennsylvania taxpayers.

FIGURE F: WORKERS ON THE PAINTING PORTION OF THE 7TH STREET BRIDGE AND THEIR HOME STATES OF RESIDENCE

Painting Portion: Workers' States of Origin	Number of Workers	Share of Workers
Pennsylvania	0	0.0%
Florida	16	27.1%
Louisiana	13	22.0%
Maryland	7	11.9%
New Jersey	5	8.5%
Texas	4	6.8%
Other States	5	8.5%
Unknown or Unlisted	9	15.3%
Totals	59	100.0%

Source(s): Author's analysis of data from an open records request of the Allegheny County Department of Public Works ([Allegheny County, 2022](#)).

Cost overruns caused the final cost of the 7th Street Bridge project to exceed its winning bid price (figure G). The final cost was nearly \$25.7 million, about \$270,000 (1%) over budget. Importantly, it was only the painting portion of the project that went over budget. Change orders caused the final contract for the painting portion to be \$622,000 (7%) over budget. The rest of the project—which was performed by local, union tradespeople—came in *under budget* by \$353,000 (2%). The final cost also exceeded the second-place bid, which was from a local contractor, by nearly \$214,000 (see figure E).

FIGURE G: 7TH STREET BRIDGE INITIAL BID PRICE AND FINAL CONTRACT AFTER CHANGE ORDERS, BY PORTION OF PROJECT

Breakdown of Initial and Final Cost	Initial Bid Price	Final Contract, with Change Orders	Cost Overruns (Dollar Value)	Cost Overruns (Percent)
Total Contract	\$25,391,749.45	\$25,661,470.75	+\$269,721.30	+1.1%
Painting Portion	\$8,790,100.00	\$9,412,440.34	+\$622,340.34	+7.1%
Non-Painting Portion	\$16,601,649.45	\$16,249,030.41	-\$352,619.04	-2.1%

Source(s): Author's analysis of data from an open records request of the Allegheny County Department of Public Works ([Allegheny County, 2022](#)).

FIGURE H: ECONOMIC, FISCAL, AND TRAINING IMPACTS OF 7TH STREET BRIDGE, ACTUAL VS. THE ALTERNATIVE

Economic Impact Analysis of the 7th Street Bridge	Total Employment	Local Economic Output	State and Local Tax Revenues	Apprenticeship Funding
Actual: Out-of-State Workers	86	\$15,605,036	\$477,323	\$0
Alternative: Local Workers	96	\$16,464,301	\$565,027	\$31,397
Difference	-10	-\$1,445,165	-\$87,704	-\$31,397

Source: Author's IMPLAN analysis ([IMPLAN, 2022](#)) using data from an open records request of the Allegheny County Department of Public Works ([Allegheny County, 2022](#)).

Use of an out-of-state subcontractor had real consequences (figure H). At the time of the letting, PennDOT appeared to save taxpayers about \$56,000. Instead, the use of out-of-state workers cost local businesses \$1.4 million in economic activity, generated \$88,000 less in taxes, and resulted in \$31,000 less contributed towards local apprenticeship training funds than with a 100% local workforce.

Potential Policy Options to Increase Local Hire in Pennsylvania

Pennsylvania residents both pay for transportation projects and reap their rewards. Maximizing the economic development from the historic investments in Pennsylvania's transportation infrastructure requires individual projects to be built by local contractors employing skilled local workers. There are strategies that state and local elected officials could pursue to increase the chances that taxpayer-funded construction projects are built locally. These include:

1. Implementing strong local or state hire standards, similar to Ohio's 80% in-state labor provision on major electric generation projects, so that most jobs created by federal and state infrastructure and other construction investment go to local workers.
2. Bolstering apprenticeship training programs to ensure in-state contractors have the workforce to bid on, win, and build the state's public infrastructure projects ([Manzo and Thorson, 2021](#)).
3. Expanding apprenticeship readiness programs to continue building pipelines into the unionized construction trades for workers from disadvantaged backgrounds ([Thandiwe and Polson, 2021](#)).
4. Strengthening prevailing wage in Pennsylvania by extending coverage, which would promote a level playing field for local contractors and boost apprenticeship training ([Bilginsoy, 2005](#)).
5. Implementing project labor agreements (PLAs), which are local pre-hire agreements covering all crafts on large construction projects that establish comprehensive employment terms and conditions and have been effective on wind projects in West Virginia ([Kotler, 2009](#)).
6. Passing local responsible contractor ordinances (RCOs) to establish objective criteria and verifiable standards for contractors bidding on public construction projects, such as participation in registered apprenticeship training programs ([Walter, 2022](#)).
7. Enacting local business preference programs to provide bid credits to local contractors bidding on taxpayer-funded public works projects (e.g., [City of Philadelphia, 2022](#)).
8. Continuing to combat misclassification, wage theft, and payroll fraud, which are rampant in Pennsylvania's construction industry.

Conclusion

Awarding road, bridge, public transit, and other taxpayer-funded and taxpayer-subsidized projects to in-state contractors who employ local workers boosts economic development, expands access to the middle class, promotes training opportunities, creates jobs in other industries unrelated to construction, and spurs state and local tax revenues. Conversely, as the 7th Street Bridge rehabilitation program in Pittsburgh demonstrates, efforts to cut costs in the competitive low-bid procurement process can appear penny-wise but turn out to be pound-foolish. Instead of saving about \$56,000 on a \$25 million project, use of out-of-state painters cost Pennsylvania more than \$1 million in local economic activity, an estimated \$88,000 in state and local tax revenues, and about \$31,000 in apprenticeship training funding.

Put simply, a strong Pennsylvania is built locally by highly trained workers.

ABOUT THE AUTHORS

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INTRODUCTION

Tens of billions of dollars will be invested to update, improve, and modernize Pennsylvania’s public infrastructure over the next five years. The Pennsylvania Department of Transportation—through the State Transportation Improvement Plan (STIP) and Transportation Improvement Program (TIP)—is currently spending almost \$21 billion on roads, bridges, and public transit improvements over four years ([PennDOT, 2021](#)). The bipartisan federal Infrastructure Investment and Jobs Act (IIJA), signed into law by President Joe Biden in November 2021, is adding another \$16 billion dollars over five years ([White House Fact Sheet, 2021](#)).

High-quality road, bridge, and public transit infrastructure is key to economic growth and business activity because it directly affects the efficiency of delivering goods and transporting people. However, decades of underinvestment and neglect have compounded infrastructure challenges with many systems functioning well below expected engineering standards. In 2018, the American Society of Civil Engineers (ASCE) gave Pennsylvania’s infrastructure a “C-” grade, including a “D+” grade for roads, a “D+” grade for bridges, and a “D” grade for transit ([ASCE, 2018](#)). These assessments underscore the need for historic investments in infrastructure and the increasing demand for skilled local workers who can productively and safely rebuild infrastructure to support a competitive state economy.

Constructing vital infrastructure systems has implications for communities. Projects that source materials locally and employ skilled local workers maximize economic development. When taxpayer dollars are used to hire local contractors and local workers on construction projects, the effect of the government spending is amplified and multiplied as the wages are used to pay for rent, vehicles, groceries, and services that, in turn, generate demand and jobs for other residents from the community. This “multiplier effect” boosts the economy, augments employment, and grows the tax base. By contrast, when work is done by nonlocal, out-of-state contractors who take their earnings back home with them upon project completion, jobs, income, spending, and economic activity all leak out of the local economy.

This report is conducted jointly by researchers at the Keystone Research Center (KRC), Penn State Abington, and the Illinois Economic Policy Institute (ILEPI). The report assesses the employment, economic, fiscal, and training impacts of hiring local on transportation infrastructure projects in Pennsylvania. The report first considers background research on local hiring. Then, planned state investments and expected federal funding are discussed before Pennsylvania’s construction industry—with good, middle-class career opportunities—is compared with other states. An impact analysis on upcoming infrastructure investments follows, estimating a range of economic effects based on the share of work that is performed locally. Apprenticeship training investments are also considered. A local case study of the \$25 million 7th Street Bridge (or “Andy Warhol Bridge”) restoration project built in the mid-2010s showcases the consequences of hiring out-of-state workers on public projects. Finally, potential policy options to increase local hiring and maximize the employment, economic, fiscal, and training benefits of public infrastructure investments are offered before a conclusion section recaps key findings.

BRIEF BACKGROUND RESEARCH ON HIRING LOCAL

There is a small body of economic research on the impacts of hiring local. Much of this research has analyzed programs and policies that leverage public funds to hire workers from the communities where construction projects are to be built. Supporters of these initiatives contend that they create job opportunities for local residents, with workers' earnings staying in the community and supporting the local economy. These programs can also be used to help address historic inequities by creating access points to worker training and good, in-demand jobs that can deliver middle-class careers.

The U.S. Department of Transportation's (USDOT) Local Hiring Labor Pilot Program was active from 2015 to 2017 and "was the first federal program to collect data on competitive bidding for construction projects using local hire" (Veeder, 2021). Research found that the local hire program did not affect total construction costs or reduce bid competition, and these results were consistent across projects of differing sizes and areas. In fact, the average number of bidders was higher for local hire projects (4.8 bids) than for nonlocal hire projects (4.0 bids) (Veeder, 2021). The positive outcomes among test sites showed the value of local hire on strong local economies and access to good jobs and demonstrated why elected officials could consider eliminating government regulations that prohibit local hire provisions in federal grants.

A number of best practices have been uncovered for local hire policies. Local hire programs garner public support for projects, recruit more workers from disadvantaged communities, and improve workforce tracking when goals are clearly communicated and measured, contractors and unions are engaged, and registered apprenticeship programs, apprenticeship readiness programs, and job placement and worker retention programs are supported (Herrera et al., 2014). Research on local hire programs across California found that the best programs created a "first source referral system" with clearinghouses to better connect workers and contractors, although attempts to use a "one size fits all" approach are not effective (Mulligan-Hansel, 2008). Local hire programs are most effective at growing community wealth when they pair increased opportunities for local journeyworkers with increased market share for local construction contractors, particularly for minority-owned and women-owned businesses (PolicyLink, 2002).

Another approach has been to use community benefits agreements (CBAs). These agreements are contracts between developers and community-based organizations representing the interests of local residents which spell out the benefits communities will receive in return for supporting projects. Community benefits agreements (CBAs) on U.S. Department of Energy projects have been found to promote local hiring, workforce inclusiveness, and enforceability of outcomes (Gross, LeRoy, and Janis-Aparicio, 2005). CBA usage on Community Development Block Grant (CDBG) funds in California and New York give communities more say and ownership over the reinvestment in their neighborhoods (Salkin, 2007). The Federal Reserve Bank of Boston notes that CBAs "share economic benefits and avoid displacement of neighborhood residents" (De Barbieri, 2017).

Two recent studies in Wisconsin also reveal the impact of hiring local on clean energy projects. Forward Analytics assessed the installation of solar projects and found that a 100% local workforce generates \$11.8 million in economic activity from a single 150-megawatt project compared with a maximum of \$6.8 million from a 100% out-of-state workforce (Knapp, 2021). Because nearly all of the disposable income earned

by local workers goes back into local communities versus only a fraction of the disposable income of nonlocal workers, hiring local increases the economic impact of the solar project by at least 73%. Similarly, researchers at the Midwest Economic Policy Institute and the University of Wisconsin-Whitewater found that Wisconsin may not fully capitalize on clean energy investments in the transition to 100% carbon-free electricity by 2050 if a substantial number of wind and solar projects are awarded to developers with nonlocal workers. An analysis of equal-sized solar projects found that use of out-of-state workers creates 63% fewer jobs for in-state residents, delivers 28% less in economic output, and generates 13% less in state and local tax revenues ([Manzo, Wilson, and Kashian, 2022](#)).

Local Hire Case Study: The Cincinnati Solar Procurement Project (2017)

Using the local purchasing power enabled by the State of Ohio's Community Choice Aggregation policy, the City of Cincinnati issued a Request for Proposals (RFP) for a 25-megawatt solar project to help meet the electricity demands of its small businesses and residents, while moving closer to the City's goal of becoming 100% renewable by 2035 while avoiding energy cost increases ([Woodrum et al., 2021](#)). The City provided a guarantee of energy purchase, and the RFP gave bidders the option to use City property or private property to meet its goal, making the project low-risk for investors.

The RFP required bidders to enter into a project labor agreement (PLA) with the City that would establish wages, health care, and retirement benefits as well as apprenticeship utilization standards. The project included an 80% Ohio resident requirement for employment. The RFP also required bidders to submit an "Inclusion Packet," or a notarized statement committing to inclusion goals and that at least 4% of the contract be performed by minority business enterprises (MBE), women business enterprises (WBE), or small business enterprises (SBE). Creekwood Energy Partners, in partnership with Hecate Energy and Generate Capital, bid successfully on the project and were awarded the development of 100 megawatts of solar ([Juech, 2020](#)).

PLANNED COMMONWEALTH AND FEDERAL INVESTMENTS IN TRANSPORTATION INFRASTRUCTURE

The Pennsylvania Department of Transportation (PennDOT) has two primary programs for investing in infrastructure. The Statewide Transportation Improvement Program (STIP) covers the entire commonwealth while the Transportation Improvement Program (TIP) represents the 23 individual Metropolitan Planning Organizations (MPO) and Rural Planning Organizations (RPO) within Pennsylvania.¹ Together, the STIP and the TIP outline the first four years of multimodal transportation improvements as part of PennDOT's 12-Year Transportation Program (TYP). Together, these programs are investing \$11.7 billion on highway and bridge improvements over four years, averaging about \$2.9 billion per year (figure 1). They are also investing \$9.4 billion in public transit improvements, or about \$2.4 billion per year (figure 2). STIP and TIP spending is consistent, reinforcing the importance and value of constant maintenance and

¹ Throughout this report, "state" and "commonwealth" are used interchangeably when referring to Pennsylvania.

investment in infrastructure. In total, PennDOT anticipated spending \$21.1 billion on these transportation improvement projects between 2021 and 2024 (PennDOT, 2021).

FIGURE 1: COMMONWEALTH HIGHWAY AND BRIDGE FUNDING IN STIP AND TIP PLANS, BY YEAR, 2021-2024

Commonwealth of Pennsylvania	2021 (\$ Million)	2022 (\$ Million)	2023 (\$ Million)	2024 (\$ Million)	Total (\$ Million)
Federal	\$1,879	\$1,869	\$1,859	\$1,880	\$7,487
State	\$923	\$935	\$979	\$1,031	\$3,868
Other	\$83	\$155	\$57	\$33	\$328
Total Funding	\$2,885	\$2,959	\$2,895	\$2,944	\$11,683

Source(s): Authors' analysis of Pennsylvania's Statewide Transportation Improvement Program documents (PennDOT, 2020). Estimates may not add up perfectly due to rounding.

Figure 3 uses Pittsburgh and surrounding Allegheny County to show an example of regional TIP investments. Pittsburgh and Allegheny County planned to invest \$2 billion in transportation infrastructure between 2021 and 2024. This included \$1.2 billion in roads, \$804 million in bridges, and \$102 million in public transit systems.

FIGURE 2: COMMONWEALTH PUBLIC TRANSIT FUNDING IN STIP AND TIP PLANS, BY YEAR, 2021-2024

Commonwealth of Pennsylvania	2021 (\$ Million)	2022 (\$ Million)	2023 (\$ Million)	2024 (\$ Million)	Total (\$ Million)
Federal	\$462	\$454	\$394	\$394	\$1,704
State	\$1,758	\$1,781	\$1,853	\$1,860	\$7,252
Other	\$175	\$110	\$102	\$98	\$485
Total Funding	\$2,395	\$2,345	\$2,349	\$2,352	\$9,441

Source(s): Authors' analysis of Pennsylvania's Statewide Transportation Improvement Program documents (PennDOT, 2020). Estimates may not add up perfectly due to rounding.

The Commonwealth's planned investments and Allegheny County's planned investments were both enacted before passage of the bipartisan federal Infrastructure Investment and Jobs Act (IIJA). PennDOT's 2021 TYP was enacted in August 2020, while the IIJA was signed into law in November 2021. This means that the value of infrastructure projects will significantly exceed the planned investments in figures 1 through 3.

FIGURE 3: ALLEGHENY COUNTY TRANSPORTATION IMPROVEMENT PROGRAM, 2021-2024

Allegheny County	Total (\$Million)	Percent
Roads and Highways	\$1,211	59.0%
Bridges	\$804	39.2%
Transit	\$102	1.9%
Total Funding	\$2,117	100%

Source(s): Authors' analysis of "Transportation Improvement Program" for County: Allegheny (02). (PennDOT, 2022). Estimates may not add up perfectly due to rounding.

The IIJA will invest a historic \$1.2 trillion over five years—from fiscal year 2022 through fiscal year 2026—including \$550 billion in new spending to repair and modernize roads, bridges, airports, public transit systems, railways, water infrastructure, and energy systems as well as to expand broadband internet

access and invest in climate resiliency (Ponciano, 2021). Overall, the Infrastructure Investment and Jobs Act is expected to increase U.S. employment by between 800,000 and 900,000 jobs, with many in indirect construction positions (Zandi and Yaros, 2021; Henney, 2021; Lombardo, 2021).

Pennsylvania will receive at least \$17.8 billion in total infrastructure funding from the IIJA (Davis, 2021). This includes \$11.3 billion in highway aid, \$1.6 billion for bridge replacement and repairs, and \$2.8 billion to improve public transportation (White House Fact Sheet, 2021). In total, the federal government is committing \$15.7 billion over the next five years to rebuild Pennsylvania’s transportation infrastructure, bringing total planned investments in the commonwealth up to \$36.8 billion before 2027 (figure 4). These investments will enhance the ability of Pennsylvania to support economic activity, lift worker wages, and increase state and local taxes while making the economy more competitive and resilient (White House Fact Sheet, 2021). However, these historic infrastructure investments require effective public policies to fully harness the benefits for local communities and the commonwealth.

FIGURE 4: TOTAL PLANNED COMMONWEALTH AND FEDERAL TRANSPORTATION INFRASTRUCTURE FUNDING

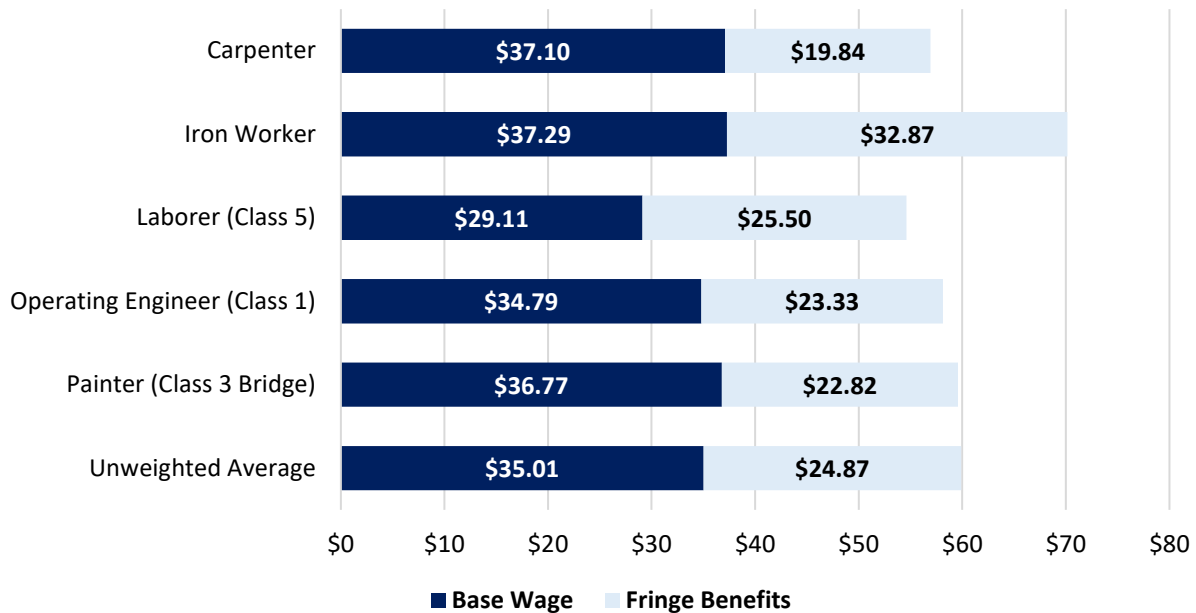
Pennsylvania	PennDOT STIP and TIP (2021-2024)	Federal IIJA (2022-2027)
Roads and Bridges	\$11.68 billion	\$12.90 billion
Public Transit	\$9.44 billion	\$2.80 billion
Totals	\$21.12 billion	\$15.70 billion

Source(s): Authors’ analysis of *Pennsylvania’s Statewide Transportation Improvement Program* documents (PennDOT, 2020) and “The Infrastructure Investment and Jobs Act will Deliver for Pennsylvania” fact sheet (White House Fact Sheet, 2021). Estimates may not add up perfectly due to rounding.

MIDDLE-CLASS WAGES AND BENEFITS PAID ON TRANSPORTATION PROJECTS IN PENNSYLVANIA

Public infrastructure projects in Pennsylvania are covered by the state’s Prevailing Wage Act, which establishes local minimum wage rates for different types of skilled construction workers on taxpayer-funded public works projects valued at \$25,000 or more (PA GA, 1961). The main purpose of a prevailing wage law is to protect local construction standards in the competitive bidding process, ensuring that contractors compete based on core competencies and efficiencies rather than on undermining local middle-class compensation, area work standards, and investments into apprenticeship training programs. Prevailing wage laws have been found to increase the hiring of local contractors on public projects by between 8% and 10% (Manzo, 2022; Manzo and Duncan, 2018).

Figure 5 provides base wage and fringe benefits rates for five construction trades on heavy and highway projects in Allegheny County—carpenters, ironworkers, laborers, operating engineers, and painters. For these occupations involved in roads, bridges, and other major public works projects, hourly wages range from \$29 per hour to \$37 per hour and fringe benefits range from \$20 per hour to \$33 per hour. The unweighted average is about \$35 per hour in base wages and \$25 per hour in fringe benefits (figure 5).

FIGURE 5: EXAMPLE PREVAILING WAGE AND BENEFITS RATES ON BRIDGE PROJECTS IN ALLEGHENY COUNTY IN JUNE 2022

Source(s): Authors' reproduction of job classifications on bridge projects in Allegheny County as of June 1, 2022 from "Search Prevailing Wage Projects" by the Pennsylvania Department of Labor and Industry (DLI, 2022).

Labor costs comprise only a small share of total costs on construction projects in Pennsylvania, according to 2017 *Economic Census* data from the U.S. Census Bureau (figure 6). In 2017, blue-collar construction workers in Pennsylvania earned a total of \$10.5 billion in cumulative wages and \$3.3 billion in fringe benefits, resulting in \$13.8 billion in labor costs. The net value of all construction work in Pennsylvania was \$56.2 billion. Accordingly, blue-collar labor costs accounted for just 25% of total construction costs in Pennsylvania in 2017.

FIGURE 6: LABOR COSTS AS A SHARE OF TOTAL CONSTRUCTION COSTS IN PENNSYLVANIA AND THE UNITED STATES, 2017

2017 <i>Economic Census</i> Construction Metrics		Math	Pennsylvania	United States
A	Net Value of Construction Work*	--	\$56.23 billion	\$1,023.60 billion
B	Blue-Collar Construction Worker Wages	--	\$10.53 billion	\$184.71 billion
C	Wages for White-Collar Employees	--	\$4.71 billion	\$81.74 billion
D	Blue-Collar Worker Share of Wages	$B \div (B + C)$	69.1%	69.3%
E	Total Fringe Benefits	--	\$4.74 billion	\$78.84 billion
F	Blue-Collar Worker Fringe Benefits	$E \times D$	\$3.27 billion	\$54.65 billion
G	Labor Costs as Share of Total Costs	$(B + F) \div A$	24.5%	23.4%

Source(s): Authors' analysis of the 2017 *Economic Census* by the U.S. Census Bureau (Census, 2022). *The "Net Value of Construction Work" is the total value of construction work less the cost of construction work subcontracted out to others. Estimates may not add up perfectly due to rounding.

IMPACTS OF HIRING LOCAL ON TRANSPORTATION INFRASTRUCTURE PROJECTS IN PENNSYLVANIA

The U.S. Census Bureau reports both the total value of all construction work in a state as well as the total value of construction work performed in every state by the home location of a construction establishment ([Census, 2022](#)). For example, according to the 2017 *Economic Census*, construction establishments based in Pennsylvania completed 85% of the total value of construction work in Pennsylvania (figure 7). Contractors from other states accounted for the remaining 15% of the market. Pennsylvania contractors also performed work in other states; among Pennsylvania-based contractors, the next-highest states by value of construction projects were neighboring New Jersey (\$3.0 billion), Maryland (\$1.5 billion), New York (\$0.9 billion), West Virginia (\$0.8 billion), and Ohio (\$0.7 billion). This affects the market share of in-state contractors in those states.

The 85% of all construction work performed by in-state contractors in Pennsylvania is on par with neighboring New Jersey (85%) but higher than Maryland (73%) and West Virginia (84%). New York (96%), Ohio (90%), and Delaware (86%) have greater shares of project value completed by in-state contractors than Pennsylvania. Pennsylvania is also behind the national average (90%). The in-state contractor share in states with prevailing wage laws is 91%, which is 3% higher than the 88% of work performed by in-state contractors in states that do not have prevailing wage laws (figure 7).

FIGURE 7: SHARE OF CONSTRUCTION VALUE COMPLETED BY IN-STATE CONTRACTORS, SELECTED STATES, 2017

State or Geography	Share of Construction Value Completed by In-State Contractors
Pennsylvania	85.0%
Delaware	86.4%
Maryland	73.2%
New Jersey	85.2%
New York	96.2%
Ohio	89.9%
West Virginia	83.6%
United States	89.9%
States with Prevailing Wage Laws	90.7%
States without Prevailing Wage Laws	88.3%

Source(s): Authors' analysis of the 2017 *Economic Census* by the U.S. Census Bureau ([Census, 2022](#)).

Knowing the market share of in-state contractors is necessary to understanding the historic investment in transportation infrastructure and its effects on the Pennsylvania economy (figure 8). Put simply, when in-state contractors and workers do more of the work on construction projects, more of the economic activity (or “multiplier effects”) of the public spending are felt locally in Pennsylvania. This analysis utilizes IMPLAN, an industry-standard economic modeling software, to assess these impacts.²

² IMPLAN inputs U.S. Census Bureau data, accounts for the interrelationship between households and businesses, and follows dollars as they cycle throughout the economy ([IMPLAN, 2022](#)). In IMPLAN, economic impact analyses are broken down into categories: direct effects, indirect effects, and induced effects. “Direct” effects include impacts on construction workers and professional employees employed in the construction industry, “indirect” effects are business-to-business purchases in the supply

Figure 8 shows the estimated impacts of the \$36.8 billion in planned road, bridge, and public transit infrastructure investments in Pennsylvania over the next few years. These impacts include the creation of 104,600 direct “job-years” for workers in the construction industry, including 73,300 “job-years” for blue-collar construction workers—of whom 85%, or 62,300 “job-years,” are estimated to be performed by skilled workers who live in Pennsylvania. One “job-year” equals one job per year. In annual terms, this equates to 20,900 direct construction industry jobs, including 12,500 jobs for blue-collar construction workers from Pennsylvania and 2,200 jobs for tradespeople from out-of-state, over five years (figure 8).

About half of the impact on jobs comes from the supply chain (“indirect”) effects and consumption (“induced”) effects (figure 8). Transportation infrastructure expenditures will save or create 67,400 job-years for suppliers, or about 13,500 jobs per year until 2027. Because thousands of workers in construction and related industries in the supply chain will be employed due to these investments, consumer demand rises and produces another 58,200 additional “job-years,” or 11,600 jobs per year for Pennsylvania residents at restaurants, retail shops, car dealerships, and other local businesses. In total, the investments would save or create more than 230,000 total “job-years,” or about 46,000 jobs annually over five years. Total compensation earned by workers is projected to be \$21.2 billion over five years, which is equivalent to about \$92,000 in wages and fringe benefits per job, demonstrating how investments in public infrastructure support good-paying, middle-class careers in Pennsylvania (figure 8).

FIGURE 8: EMPLOYMENT, ECONOMIC, AND FISCAL IMPACTS OF TRANSPORTATION INVESTMENTS IN PENNSYLVANIA

All Impacts*	Employment (Job-Years)	Income (Total Compensation)	Economic Activity (Industry Output)	State Tax Revenues	Local Tax Revenues
<u>Fixed Impacts</u>					
Direct	104,600	\$12,887 million	\$36,820 million	\$404 million	\$172 million
Indirect	67,400	\$4,910 million	\$16,764 million	\$467 million	\$638 million
<u>85% Local</u>					
Induced	58,200	\$3,371 million	\$10,095 million	\$265 million	\$330 million
Totals at 85%	230,200	\$21,168 million	\$63,670 million	\$1,136 million	\$1,141 million
<u>95% Local</u>					
Induced	65,100	\$3,768 million	\$11,283 million	\$296 million	\$369 million
Totals at 95%	237,000	\$21,565 million	\$64,866 million	\$1,168 million	\$1,179 million
<u>75% Local</u>					
Induced	51,358	\$2,975 million	\$8,908 million	\$234 million	\$291 million
Totals at 75%	223,343	\$20,772 million	\$62,491 million	\$1,105 million	\$1,102 million

*NOTES: Blue-collar construction workers account for 73,317 of the direct job-years. The remainder (31,245 job-years) is for white-collar professionals employed in the construction industry, such as engineers, architects, lawyers, office workers, and even CEOs. Similarly, in the direct effect line, total compensation (\$12.9 billion) divided by industry output (\$36.8 billion) is 35.0%. This is higher than the 24.5% labor cost share of total construction costs reported in figure 6 because it includes white-collar professionals. “Totals” include the direct impact (fixed), the indirect impact (fixed), and the induced effect (variable based on rates of local hiring). Estimates may not add up perfectly due to rounding. Source(s): Authors’ IMPLAN analysis (IMPLAN, 2022) using data from *Pennsylvania’s Statewide Transportation Improvement Program* documents (PennDOT, 2020), “The Infrastructure Investment and Jobs Act will Deliver for Pennsylvania” fact sheet (White House Fact Sheet, 2021), and the 2017 *Economic Census* by the U.S. Census Bureau (Census, 2022).

chain for construction inputs, and “induced” effects represent the increase in consumer demand that occurs as workers spend disposable income locally in the economy.

In addition to these strong employment effects, historic investments in transportation infrastructure will generate substantial economic and fiscal effects (figure 8). The \$36.8 billion spent on roads, bridges, and public transit is expected to grow economic activity by a total of \$63.7 billion, a multiplier effect of \$1.73 per dollar invested. As workers earn more and spend more, they contribute more in income tax revenues and sales tax revenues. They also contribute more to property taxes and various user fees. As a result, the investments are expected to boost state tax revenues by \$1.1 billion and local tax revenues by \$1.1 billion. Annually, these investments will increase state tax revenues by an average of \$227 million per year and local tax revenues by \$228 million per year over five years (figure 8).

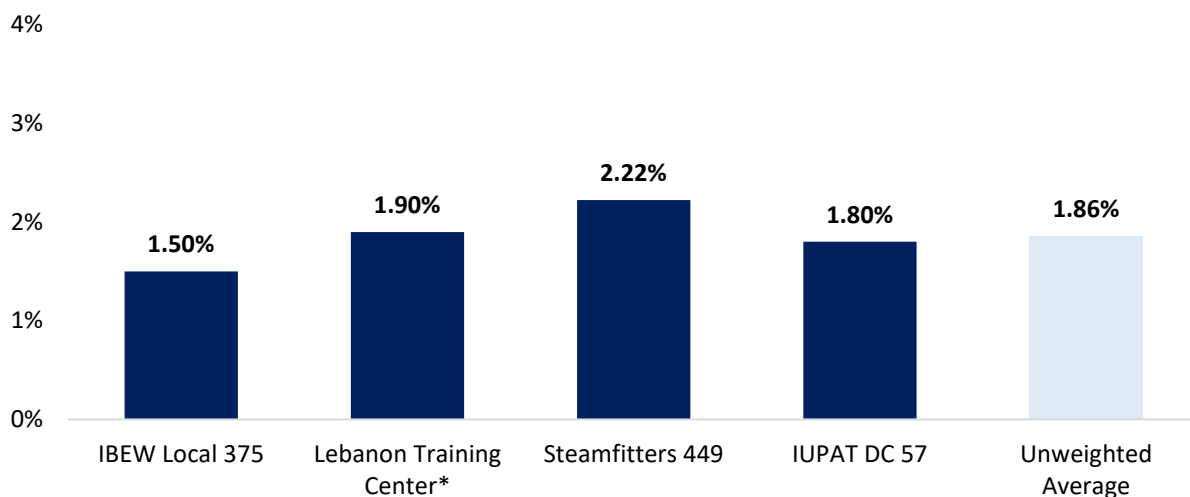
Effects on workers, the economy, and tax revenues would be significantly altered depending on whether more—or fewer—local workers are employed on these projects (figure 8). Direct effects are assumed to be the same regardless of whether the project is built locally or by out-of-state workers because the projects are subject to either Pennsylvania’s Prevailing Wage Act or the federal Davis-Bacon Act. Accordingly, all workers employed on these taxpayer-funded infrastructure projects are paid local market-competitive wages and benefits, stabilizing labor costs and leveling the playing field for all contractors. Indirect effects are also assumed to be the same because projects need the same materials and input through the supply chain regardless of the home location of the contractor. This is a *conservative* assumption because out-of-state contractors may be more likely to rely on equipment vendors in their home states. However, induced effects from changes in consumer spending differ substantially depending on whether the work is completed by skilled local tradespeople or by migratory out-of-state workers.

Economic and fiscal impacts would be greater if the share of construction value performed by Pennsylvania-based contractors were instead 95% (figure 8). A 10%age-point increase in the market share of local contractors would put Pennsylvania on par with New York, where 96% of construction work is done by in-state contractors (see figure 7). By keeping jobs, income, and spending local, the induced effects would increase to 65,100 “job-years” (13,000 jobs per year), a gain of 6,800 “job-years” (1,400 jobs per year) over baseline expectations. Total employment would thus increase to about 237,000 “job-years” for workers. Overall sales at restaurants, stores, car dealerships, and other local businesses in Pennsylvania would also increase by \$1.2 billion over five years, boosting economic activity to \$64.9 billion. The government spending multiplier would increase to \$1.76 per dollar invested. Both state and local tax revenues would increase to nearly \$1.2 billion in total as well. A 10%age-point increase in the market share of in-state contractors is thus associated with a 12% increase in induced jobs, a 3% increase in total jobs, a 2% increase in economic activity, a 3% increase in state tax revenues, and a 3% increase in local tax revenues (figure 8).

Conversely, if more out-of-state contractors are awarded transportation infrastructure projects than is typical, then economic, and fiscal impacts would be muted (figure 8). A 10%age-point decrease in market share for local contractors would reduce their share of construction work to 75%, which is closer to Maryland’s in-state contractor share of 73% (see figure 7). This would reduce the induced effect to 51,400 “job-years” (or 10,300 jobs per year) and would lower total employment to 223,300 “job-years,” total economic activity to \$62.5 billion (a multiplier of \$1.70 per dollar invested), state tax revenues by \$31 million, and local tax revenues by \$39 million (figure 8).

When public bodies award projects to in-state contractors, they not only keep tax dollars in the state and spur local economic development, but they also help ensure that the next generation of Pennsylvania construction workers is trained. When Pennsylvania-based contractors are awarded public projects that pay prevailing wage and benefits rates, they generally contribute to local apprenticeship training programs on a per-hour basis. Pennsylvania trades often contribute to local apprenticeship funds at a rate between 1.5% and 2.2% of the hourly wage (figure 9). Note that this is *in addition to* a blue-collar construction worker’s base wage earned per hour. Out-of-state contractors must pay their workers the same total compensation package, but do not have to pay into Pennsylvania training programs and can instead contribute to apprenticeship funds in their jurisdictions or give their nonlocal workers cash or other benefits.

FIGURE 9: APPRENTICESHIP CONTRIBUTIONS AS A% OF THE BASE WAGE, SELECTED TRADES IN PENNSYLVANIA

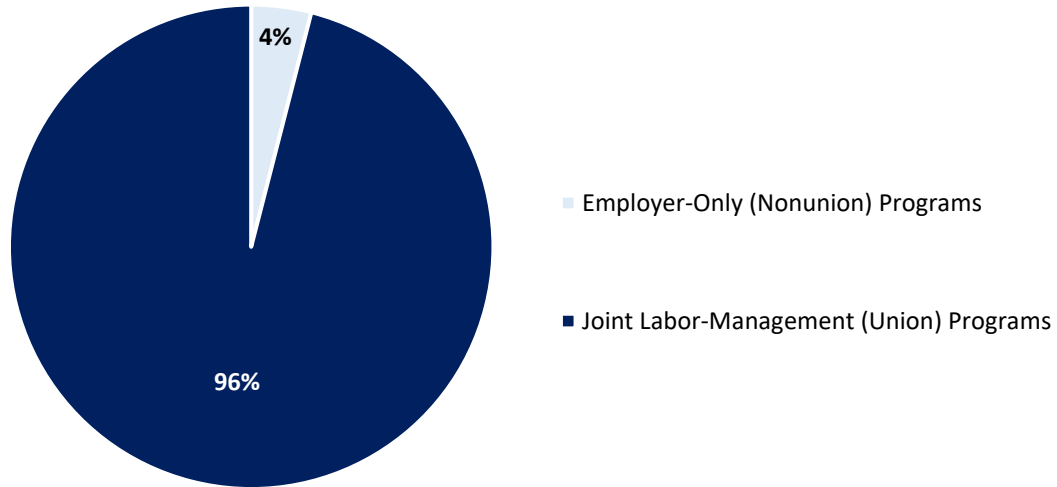


Source(s): Authors’ reproduction of “Table 1: A Profile of Four Joint Construction Apprenticeship Programs” from *Construction Apprenticeship and Training in Pennsylvania* (Herzenberg, Polson, and Price, 2018) and the International Union of Painters and Allied Trades District Council 57 collective bargaining agreement (IUPAT DC 57, 2022). *NOTE: The Lebanon Training Center is affiliated with the Keystone Mountain Lakes Regional Council of the United Brotherhood of Carpenters and Joiners of America.

Comprehensive data show that joint labor-management construction apprenticeship programs account for a large majority of apprenticeship training in the southwest Pennsylvania construction industry (figure 10).³ Using data extracted from the Registered Apprenticeship Partners Information Management Data System (RAPIDS), it is revealed that there are 22 joint labor-management construction apprenticeship programs and 44 employer-only programs in southwest Pennsylvania. However, the 22 joint programs currently train 96% of the active construction apprentices in southwest Pennsylvania counties, 24 times as many as nonunion construction apprenticeships in the region (DOLETA, 2021). Furthermore, over the past 20 years, joint labor-management apprenticeship programs have accounted for 96% of all nonwhite and Hispanic male apprentices in the region and 98% of female apprentices. Completion rates in joint programs (58%) also exceed those in employer-only programs (43%) (DOLETA, 2021). With completion rates that are 15 percentage points higher, joint labor-management programs are more effective at delivering contractors with skilled workers, helping to combat labor shortages.

³ Southwest Pennsylvania counties included are Mercer, Lawrence, Beaver, Butler, Armstrong, Allegheny, Washington, Westmoreland, Greene, Fayette, and Somerset.

FIGURE 10: SHARE OF ACTIVE APPRENTICES IN SOUTHWEST PENNSYLVANIA* BY TYPE OF PROGRAM



*NOTES: Southwest Pennsylvania Counties included are Mercer, Lawrence, Beaver, Butler, Armstrong, Allegheny, Washington, Westmoreland, Greene, Fayette, and Somerset. Source(s): Authors’ analysis of Registered Apprenticeship Partners Information Management Data System data from the U.S. Department of Labor Employment and Training Administration (DOLETA, 2021).

Figure 11 displays the estimated impact of the historic level of highway, bridge, and public transit infrastructure funding on apprenticeship training programs located in Pennsylvania. The investments are expected to save or create 62,300 “job-years” for Pennsylvania’s blue-collar construction workers, amounting to more than 128 million total hours of work for skilled tradespeople. Apprenticeship training contributions average about 1.9% of the base wage and prevailing wage rates typically produce base hourly wages of about \$35 per hour, resulting in local contractors investing about 65 cents per hour worked towards relevant apprenticeship training programs by their skilled tradespeople. At 65 cents in training contributions per hour worked, the Commonwealth’s planned transportation infrastructure projects would produce an estimated \$84 million in revenue for local apprenticeship training programs over five years (figure 11).

FIGURE 11: APPRENTICESHIP TRAINING IMPACTS OF UPCOMING TRANSPORTATION INVESTMENTS IN PENNSYLVANIA

Construction Industry Metrics and Economic Impact Analysis Outputs		Estimates
A	Total Direct Job-Years Created (From Figure 8)	104,600
B	Total Blue-Collar Construction Job-Years Created (70.1% of Line A)	73,300
C	Blue-Collar Construction Job-Years Created for Pennsylvania Workers (85% of Line A)	62,300
D	Hours Worked by Pennsylvania Construction Workers (62,300 Workers x 2,058 Hours)	128.26 million
E	Unweighted Average Prevailing Wage Rate: Hourly Wage	\$35.01
F	Unweighted Apprenticeship Contributions As Share of Base Wage	1.9%
G	Unweighted Apprenticeship Contributions Per Hour (Line E x Line F)	\$0.65
H	Total Expected Apprenticeship Training Contributions (Line D x Line G)	\$83,525,896

Source(s): Authors’ analysis using estimates from “Table 1: A Profile of Four Joint Construction Apprenticeship Programs” from *Construction Apprenticeship and Training in Pennsylvania* (Herzenberg, Polson, and Price, 2018) and the International Union of Painters and Allied Trades District Council 57 collective bargaining agreement (IUPAT DC 57, 2022), data from *Pennsylvania’s Statewide Transportation Improvement Program* documents (PennDOT, 2020), “The Infrastructure Investment and Jobs Act will Deliver for Pennsylvania” fact sheet (White House Fact Sheet, 2021), and the 2017 *Economic Census* by the U.S. Census Bureau (Census, 2022), and economic impact analysis outputs from IMPLAN (IMPLAN, 2022).

In sum, funding for Pennsylvania’s apprenticeship training programs would increase if a larger share of the transportation infrastructure projects were performed by in-state contractors (figure 12). If, similar to the national average, 90% of the work is done locally, then total apprenticeship training contributions would rise to more than \$88 million over five years. At 95% local hire, the investment in worker training would become larger than \$93 million, a gain of more than \$9 million. On the other hand, if Pennsylvania goes the other way and less work is completed by in-state contractors and workers, apprenticeship training would suffer. At 75% local hire, contributions to apprenticeship training funds in Pennsylvania would fall to less than \$74 million (figure 12).

FIGURE 12: SUMMARY OF EMPLOYMENT, ECONOMIC, FISCAL, AND TRAINING IMPACTS BY IN-STATE MARKET SHARE

In-State Contractor Share Scenario	Pennsylvania Blue-Collar Construction Job-Years	Economic Activity (Sales Output)	Estimated State and Local Tax Revenues	Estimated Local Apprenticeship Contributions
95%	69,700	\$64,866 million	\$2,347 million	\$93 million
90%	66,000	\$64,273 million	\$2,312 million	\$88 million
85%	62,300	\$63,679 million	\$2,277 million	\$84 million
80%	58,700	\$63,085 million	\$2,242 million	\$79 million
75%	55,000	\$62,491 million	\$2,207 million	\$74 million

Source(s): Authors’ analysis using estimates from “Table 1: A Profile of Four Joint Construction Apprenticeship Programs” from *Construction Apprenticeship and Training in Pennsylvania* (Herzenberg, Polson, and Price, 2018) and the International Union of Painters and Allied Trades District Council 57 collective bargaining agreement (IUPAT DC 57, 2022), data from *Pennsylvania’s Statewide Transportation Improvement Program* documents (PennDOT, 2020), “The Infrastructure Investment and Jobs Act will Deliver for Pennsylvania” fact sheet (White House Fact Sheet, 2021), and the 2017 *Economic Census* by the U.S. Census Bureau (Census, 2022), and economic impact analysis outputs from IMPLAN (IMPLAN, 2022).

Another reason to use Pennsylvania-based contractors that hire local workers is that they are much safer (figure 13). An analysis of all the Occupational Safety and Health Administration (OSHA) inspections conducted at construction worksites across the United States in 2019 shows that OSHA inspected nearly 1,200 construction worksites in Pennsylvania. Construction worksites in Pennsylvania averaged 1.1 violations per inspection while similar worksites in the rest of the country averaged 1.6 violations per inspection. Pennsylvania worksites had 32% fewer violations. Moreover, union worksites in Pennsylvania are particularly safe, averaging only 0.5 violations per inspection, which is 51% fewer violations than other union worksites across the United States (1.1 violations per inspection) and 67% fewer than the national average regardless of unionization. Pennsylvania’s nonunion worksites are also cited with fewer violations than other nonunion worksites across the country (figure 13).

Pennsylvania residents both pay for the cost of road, bridge, and public transit projects and reap their rewards. Clearly, the economic benefits of these historic investments can only be maximized if the projects employ skilled local workers. The greater the share of work performed by in-state contractors, the more Pennsylvania residents are put to work, the larger the effects on economic development, the more tax revenues are collected, the greater the investment in training the next generation of skilled tradespeople, and the safer the projects are likely to be.

FIGURE 13: OSHA INSPECTIONS AND VIOLATIONS AT CONSTRUCTION WORKSITES IN PENNSYLVANIA AND THE REST OF THE UNITED STATES, AND BY UNION STATUS, 2019

Segment of Construction	2019 OSHA Data	Commonwealth of Pennsylvania	Rest of the United States	Pennsylvania Difference
All Worksites	OSHA Inspections	1,199	35,866	
	Violations Per Inspection	1.07	1.56	-31.6%
Union Worksites	OSHA Inspections	124	2,731	
	Violations Per Inspection	0.52	1.06	-51.5%
Nonunion Worksites	OSHA Inspections	1,075	33,111	
	Violations Per Inspection	1.13	1.60	-29.4%

Source(s): Authors' analysis of Occupational Safety and Health Administration inspection data at establishments with construction industry NAICS codes (230000 to 239999) in 2019 (OSHA, 2021).

CASE STUDY: PENNDOT'S 7TH STREET BRIDGE REHABILITATION PROJECT IN PITTSBURGH

A prime illustration of the value of hiring locally and the consequences of using out-of-state workers on taxpayer-funded infrastructure projects is the 7th Street Bridge rehabilitation project in Allegheny County. The 7th Street Bridge, also called the "Andy Warhol Bridge," is a major access point across the Allegheny River into and out of downtown Pittsburgh. The 7th Street Bridge project cost was estimated at \$25 million to upgrade and maintain this essential transportation artery of the city.

One important element of the project was repainting. This portion of the project was estimated to cost around \$9 million, about 36% of the total cost of the project. Bridges are not painted for aesthetic appeal. The primary purpose of industrial bridge painting is to prevent the steel from corroding or rusting and thus to ensure the bridge does not collapse. Over their lifespan, bridges face wind, waves, daily vehicle traffic, and other factors that can cause structural damage. This type of painting is a complex process that requires skilled workers with knowledge of materials, chemistry, and specific protocols to avoid structural damage. KTA-Tator, a consulting and engineering firm in Pittsburgh, notes that, if done properly, protective coatings can last up to 20 years before touch-ups and maintenance are needed, with full repaints not necessary until year 37 (KTA, 2018). However, projects done poorly can lead to another restoration job sooner than expected, costing taxpayers millions of dollars.

The 7th Street Bridge project was awarded to Pittsburgh-based Brayman Construction Corporation, a heavy civil and geothermal contractor, on June 9, 2016 (PennDOT, 2016). Brayman was one of six construction firms to bid on the project, and it outbid the second-place bidder (Pittsburgh-based Mosites Construction Company) by about \$56,000. At the time of the letting, PennDOT appeared to save Pennsylvania taxpayers about \$56,000, or less than one-quarter of 1% (0.2%). Furthermore, the third-place bidder (Pittsburgh-based Trumbull Corporation) was less than 2%, or about \$420,000, more expensive than the winning amount by Brayman. Each of these three bids came in between \$25 million and \$26 million. Three other bids on the project all came in above \$26 million (figure 14). Construction work began in August 2016 and ended in November 2017.

FIGURE 14: 7TH STREET BRIDGE (ANDY WARHOL BRIDGE) REHABILITATION PROJECT BIDS, JUNE 9, 2016

Bid Tabulations	Bid Amount	Difference (Value)	Difference (Percent)
Brayman Construction Corporation	\$25,391,749	--	--
Mosites Construction Company	\$25,447,777	\$56,028	0.2%
Trumbull Corporation	\$25,811,993	\$420,243	1.7%
Joseph B. Fay Co.	\$26,867,705	\$1,475,956	5.8%
Mascaro Contracting L.P.	\$27,053,571	\$1,661,822	6.5%
Swank Construction LLC	\$28,454,244	\$3,062,495	12.1%

Source(s): Author's reproduction of "#88541 Allegheny – SR 7301(0)" data from the PennDOT letting on June 9, 2016 produced by the Associated Pennsylvania Contractors and published online by PennDOT ([PennDOT, 2016](#)).

Despite being a Pittsburgh-based company, Brayman subcontracted out the painting portion of the bridge project to Florida-based Southern Road & Bridge, LLC, who employed out-of-state workers. Our research team made open records requests to obtain "Records of Employee Interview" wage affidavits during the construction phase from the Pittsburgh City Controller's Office and found that Southern Road & Bridge employed 59 workers for the painting portion of the project (figure 15). Fifty of these workers (85%) testified to a home residence outside of the Commonwealth of Pennsylvania. Half (29 of 59) came from Florida, Louisiana, and Maryland. Another nine individuals (15%) either did not list their residence or put down the address of a Pittsburgh-area hotel. Even with these nine workers with unknown or unlisted addresses, at least 76% of the workers (45 workers) on the painting portion of the 7th Street Bridge rehabilitation project—and likely more—came from states with lower average annual incomes for blue-collar construction workers than Pennsylvania, according to data from the 2017 *Economic Census* from the U.S. Census Bureau (figure 15).

FIGURE 15: WORKERS ON THE PAINTING PORTION OF THE 7TH STREET BRIDGE AND THEIR HOME STATES OF RESIDENCE

Painting Portion: Workers' States of Origin	Number of Workers	Share of Workers	Average Annual Wages (2017)
Pennsylvania	0	0.0%	\$53,708
Florida	16	27.1%	\$41,042
Louisiana	13	22.0%	\$52,915
Maryland	7	11.9%	\$51,151
New Jersey	5	8.5%	\$59,866
Texas	4	6.8%	\$52,463
Ohio	2	3.4%	\$52,052
Tennessee	1	1.7%	\$46,118
New Mexico	1	1.7%	\$41,858
North Carolina	1	1.7%	\$43,458
Unknown or Unlisted	9	15.3%	--
Totals	59	100.0%	--

Source(s): Author's analysis of data from an open records request of the Allegheny County Department of Public Works ([Allegheny County, 2022](#)) and the 2017 *Economic Census* by the U.S. Census Bureau ([Census, 2022](#)).

An open records request submitted to the Allegheny County Department of Public Works revealed that cost overruns caused the final cost of the 7th Street Bridge project to exceed its winning bid price (figure

16).⁴ In total, the final cost was nearly \$25.7 million, which was about \$270,000 (1%) over budget. Importantly, it was only the painting portion of the project that went over budget. Southern Road & Bridge’s original contract with Brayman was for just under \$8.8 million. Change orders and additional subcontracting from Southern Road & Bridge caused the final contract for the painting portion to increase to more than \$9.4 million, overruns of more than \$622,000. In fact, the rest of the project—which was performed by local, union tradespeople—was expected to cost \$16.6 million and came in under budget at \$16.2 million. This means that the portion of the project done by nonlocal workers from lower-paying states came in 7% over budget while the portions of the project completed by local, union tradespeople came in 2% under budget (figure 16). It is also worth noting that the final cost of the project exceeded the second-place bid, which was from a local contractor, by nearly \$214,000 (figure 14).

FIGURE 16: 7TH STREET BRIDGE INITIAL BID PRICE AND FINAL CONTRACT AFTER CHANGE ORDERS, BY PROJECT PORTION

Breakdown of Initial and Final Cost	Initial Bid Price	Final Contract, with Change Orders	Cost Overruns (Dollar Value)	Cost Overruns (Percent)
Total Contract	\$25,391,749.45	\$25,661,470.75	+\$269,721.30	+1.1%
Painting Portion	\$8,790,100.00	\$9,412,440.34	+\$622,340.34	+7.1%
Non-Painting Portion	\$16,601,649.45	\$16,249,030.41	-\$352,619.04	-2.1%

Source(s): Author’s analysis of data from an open records request of the Allegheny County Department of Public Works ([Allegheny County, 2022](#)).

Use of an out-of-state subcontractor had real consequences for Pennsylvania residents (figure 17). Whether the bridge painting was performed locally or by out-of-state workers, the workers were owed prevailing wages and the rehabilitation project itself was going to be completed. However, because migratory out-of-state workers only spend a small portion of their wages back into the local economy, 10 fewer Pittsburgh-area residents had jobs than would have if the painting portion of the project had been instead performed by skilled local tradespeople. In total, the use of out-of-state workers cost local businesses \$1.4 million in economic activity and generated nearly \$88,000 less in state and local tax revenue than would have occurred if the workforce was 100% local (figure 17).

FIGURE 17: EMPLOYMENT, ECONOMIC, AND FISCAL IMPACTS OF 7TH STREET BRIDGE, ACTUAL VS. THE ALTERNATIVE

Economic Impact Analysis of the 7th Street Bridge	Total Employment	Local Economic Output	State Tax Revenues	Local Tax Revenues
Actual: Out-of-State Workers	86	\$15,605,036	\$253,812	\$223,511
Alternative: Local Workers	96	\$16,464,301	\$292,993	\$272,034
Difference	-10	-\$1,445,165	-\$39,181	-\$48,523

Source: Author’s IMPLAN analysis ([IMPLAN, 2022](#)) using data from an open records request of the Allegheny County Department of Public Works ([Allegheny County, 2022](#)).

By using an out-of-state contractor who employed nonlocal workers, the 7th Street Bridge project also resulted in fewer contributions into local painters’ apprenticeship funds (figure 18). According to the open records request fulfilled by the Allegheny County Department of Public Works, total non-salary labor costs

⁴ See the Appendix for complete information.

were \$2.7 million on the painting portion of the project, accounting for 31% of the initial bid price.⁵ If the project had used local union painters affiliated with the International Union of Painters and Allied Trades District Council 57, which covers western Pennsylvania, the workers would have earned wages of \$33.68 per hour plus \$17.58 per hour in fringe benefits, per the terms of the collective bargaining agreement as of June 1, 2016 (IUPAT DC 57, 2022). This includes \$0.60 per hour in contributions to FTI of Western PA, the local apprenticeship fund. The apprenticeship contributions represent 1.2% of the total compensation per hour. Applying these contribution rates to the \$2.7 million in total labor costs reveals that more than \$31,000 in local apprenticeship training funds would have been invested if the work had been performed by local workers.

FIGURE 18: APPRENTICESHIP TRAINING LOSS FROM THE PAINTING PORTION OF THE 7TH STREET BRIDGE PROJECT

7th Street Bridge and IUPAT DC 57 Values		Estimates
A	Final Painting Contract, Less Subcontracted Out (Initial Bid Price)	\$8,790,100
B	Total Non-Salary Labor Costs for Painting Portion	\$2,682,320
C	IUPAT DC 57: Apprenticeship as a Share of Total Package (June 1, 2016)	1.2%
D	Potential Loss of Local Apprenticeship Program Funding (Line B x Line C)	\$31,397

Source: Author's analysis using data from an open records request of the Allegheny County Department of Public Works (Allegheny County, 2022), the International Union of Painters and Allied Trades District Council 57 collective bargaining agreement (IUPAT DC 57, 2022), and the 2017 *Economic Census* by the U.S. Census Bureau (Census, 2022).

Finally, there were reports of worker misclassification on the painting portion of the 7th Street Bridge rehabilitation project. In addition to the out-of-state employees claiming Pennsylvania hotels as their home addresses, as many as 17 workers were misclassified as laborers and were paid a total prevailing wage and benefits package of just under \$45 per hour, about \$6 per hour less than they were owed as painters. Another five salaried employees were not paid prevailing wages even though they were performing work covered under Pennsylvania's Prevailing Wage Act. Finally, there was at least one discrepancy in which two workers of different names shared the same Social Security Number. These issues, documented in certified payrolls and "City Controller's Office Record of Employee Interview" wage affidavits, suggest that the out-of-state contractor may have committed wage theft and payroll fraud, paying both workers and the Commonwealth of Pennsylvania less than the legally-required amounts.

The 7th Street Bridge rehabilitation project of 2016 and 2017 is a cautionary tale about the costs of not hiring local. The competitive low-bid model resulted in PennDOT awarding the contract to a company that artificially appeared to "save" taxpayers more than \$56,000. However, the actual result was 59 fewer jobs for Pittsburgh-area painters, 10 fewer jobs for other Pennsylvania residents, \$1.4 million less in sales for restaurants, retail stores, car dealerships, and other local businesses, \$88,000 less in state and local tax revenues, and \$31,000 less in apprenticeship program funding to train the next generation of skilled painters from the Pittsburgh area (figure 18 and figure 19). Evidence suggests that workers may have been misclassified, further dampening local economic development and reducing tax revenues by even more than these estimated amounts.

⁵ The initial bid price is used because the final cost included three change orders amounting to more than \$622,000 and these overruns were subcontracted out. The \$2.7 million in labor costs only refer to Southern Road & Bridge workers, so this keeps the labor cost share consistent with only the work performed by Southern Road & Bridge.

A Misclassification Case Study: The Glenn O. Hawbaker, Inc. Case (2021)

A large body of research shows that while state prevailing wage laws do not raise construction costs, they do improve training, workforce experience, and safety. Research also shows, however, that many contractors violate prevailing wage benefit standards and commit prevailing wage benefits fraud (Ormiston, Belman, and Erlich, 2020; Herzenberg and Ormiston, 2019). One example: A major Pennsylvania contractor that received an estimated \$1.7 billion in contracts from the Commonwealth of Pennsylvania between 2003 and 2018, Glenn O. Hawbaker, Inc., reached a plea agreement in 2021 for theft relating to violations of the Pennsylvania Prevailing Wage Act and the federal Davis-Bacon Act (Office of Attorney General, 2021). The company agreed to pay more than \$20 million in stolen wages to nearly 1,300 Pennsylvania workers, the largest prevailing wage criminal case in U.S. history.

POTENTIAL POLICY OPTIONS TO INCREASE LOCAL HIRE

Maximizing the economic development from the historic investments in Pennsylvania’s transportation infrastructure requires the individual projects to be built by local contractors employing skilled local workers. This keeps resources in Pennsylvania, anchors wages to local communities, ensures strong apprenticeship training programs, creates pathways into Pennsylvania’s middle class, and supports health and retirement benefits that improve residents’ quality of life. There are strategies that state and local elected officials could pursue to maximize the chances that taxpayer-funded construction projects are built locally. These strategies promote industry resiliency, and can be effective both in economic expansions with labor shortages as well as in economic downturns with high levels of unemployment.

Implement Strong Local or State Hire Standards to Keep Jobs in Pennsylvania

The simplest way to avoid heavy reliance on out-of-state labor as occurred on the repainting of the Andy Warhol Bridge is to enact strong local hire and in-state hire standards on all publicly funded infrastructure and other construction projects. One example of such a provision is an Ohio provision that 80% of the labor on large-scale electricity generation projects come from Ohio (Warnock et al., 2022). Montana, to take a second example, has a requirement that at least 50% of all workers performing labor under contract for public works are “bona fide” citizens of Montana (Montana DLI, 2022). This local hire component increases employment of Montana residents on public works projects funded by Montana taxpayers. Local hire provisions can also be built into Project Labor Agreements.

Bolster Registered Apprenticeship Training Programs

Registered apprenticeship training is particularly important in the construction industry (Olinsky and Ayres, 2013). Construction apprenticeship programs are sponsored either jointly by labor unions and employers who are signatories to collective bargaining agreements (joint labor-management programs) or solely by employers. Joint labor-management programs are cooperatively administered with standards, trainee wages, apprentice-to-worker ratios, and “cents per hour” contributions established in collective

bargaining agreements. Funding for employer-only programs relies on voluntary contributions from contractors, who have financial incentives to forgo long-term workforce training investments and slash labor costs to win project bids. Nearly all of the investment in construction worker training, however, comes from joint labor-management programs. Joint labor-management programs account for 97% of all construction apprentices in Illinois, 93% in Minnesota, 86% in Pennsylvania, 82% in Ohio, 81% in Wisconsin, 79% in Kentucky, 79% in Michigan, and 73% across the United States (Manzo and Bruno, 2020; Manzo and Duncan, 2018; DOLETA, 2021; Onsarigo et al., 2017; Manzo, Goodell, and Bruno, 2021; Duncan and Manzo, 2016; Bilginsoy, 2017; Stepick and Manzo, 2021; Bilginsoy et al., 2022). In Pennsylvania, graduation rates are 15 percentage points higher for joint labor-management apprenticeship programs (58%) than nonunion programs (45%) (DOLETA, 2021).

At a time when more than 40% of construction firms are reporting that they have turned down work due to labor shortage issues, Pennsylvania can improve the supply of skilled tradespeople by expanding U.S. Department of Labor-approved registered apprenticeship programs to ensure in-state contractors have the workforce to bid on, win, and build the state’s public infrastructure projects (Swanek, 2021). Registered apprenticeship programs enhance worker skills, improve productivity and safety, and reduce construction worker poverty (Manzo and Thorson, 2021). Any outside federal or state government support for registered apprenticeship programs—including grants distributed by the Pennsylvania Apprenticeship and Training Office—should reward successful programs with high graduation rates, acceptable levels of diversity and inclusion, and family-sustaining wage standards (Bilginsoy et al., 2022). Spending public funds on ineffective or unproven programs would be an inefficient use of taxpayer dollars.

Expand Apprenticeship Readiness Programs

Pennsylvania can also continue building pipelines for diverse workers into the unionized construction trades (Thandiwe and Polson, 2021). In the 20th century in southwest Pennsylvania and the Ohio River Valley, the unionized building and construction trades were overwhelmingly white and male. In the last decade, a growing number of “apprenticeship readiness” programs in the region have created opportunities for male workers of color and for women in unionized construction firms. Expanding apprenticeship readiness programs in conjunction with strong labor and local hire requirements can ensure significant community benefits wherever infrastructure projects take place, including opportunities for Black, Hispanic, and women workers.

For example, the Construction Workforce Partnership (CWP) in Pittsburgh brings together Partner4Work (P4W) and seven providers of construction training and support services. The CWP aims to place a diverse workforce from low-income communities into good-paying careers in construction, including the unionized building trades. The CWP is one of two key components in the Pittsburgh area’s construction workforce development ecosystem, meeting industry needs on the supply side of the labor market. CWP does this by recruiting, screening, selecting, and training candidates who are unemployed, underemployed, and low-income workers, with the goal of increasing the number of women and people of color who access jobs, apprenticeships, and careers in construction. The Construction Industry Partnership (CIP) is the other key component of the ecosystem, meeting business needs on the demand side. The CIP includes large, unionized construction companies in Pittsburgh and the surrounding county.

In addition to establishing the CIP, Partner4Work (P4W) took other steps to enable the CWP to place community members in good construction jobs. P4W developed a model for “First Source Hiring Agreements” with large developers and established the first one with PAR on a 28-acre development site in Pittsburgh’s Hill District. Provisions of the agreement include commitments to collaborate on filling construction and end-use jobs and related training. Furthermore, the Builders Guild, a labor-management partnership, operates a pre-apprenticeship program called “Introduction to the Construction Trades.” The pre-apprenticeship program includes a proprietary screening system to select participants with the best chance of success and pre-employment training for about six weeks, adapted from an apprenticeship readiness curriculum developed by the national building trades called the Multi-Craft Core Curriculum (or “MC3”). On the back end, the Builders Guild’s strong relationships with construction contractors and unions guarantees successful graduates interviews. Many are placed into joint labor-management apprenticeship programs or land careers in the unionized construction trades.

Introduction to the Construction Trades has achieved success by avoiding the pitfalls that other programs have previously identified. When training programs do not have good access to unionized construction jobs and take people up front who cannot meet entry requirements for apprenticeships or construction careers, they are set up for failure—employers do not get qualified candidates and workers do not get jobs. By addressing these issues, the CWP trained 12 cohorts and 162 total participants as of late 2021. Fully 80% identified as African American or Black, 44% were under the age of 26, and 76% were placed in unsubsidized employment ([Thandiwe and Polson, 2021](#)). These outcomes are consistent with similar apprenticeship readiness programs across the United States ([Bilginsoy et al., 2022](#)).

Other Apprenticeship Readiness Case Studies: Ohio and Kentuckiana

The Building Futures Program is a pre-apprenticeship program run as a partnership between Franklin County, Ohio, the Columbus/Central Ohio Building and Construction Trades Council, and the Columbus Urban League ([Woodrum et al., 2021](#)). The program runs for 12 weeks and helps individuals from low-income backgrounds overcome barriers of access to achieving middle-class careers in construction. The program recruits, screens, and pre-tests women, minorities, and other targeted disadvantaged populations. It includes credit and non-credit classroom programming that includes basic skills, life skills, and employability skills, as well as supplemental services such as access to transportation, childcare, emergency housing, and work clothing or uniforms. The program delivers trade-specific paid internships. Upon completion of the program, participants can join an affiliated trade, which includes bricklaying, carpentry, cement masonry, drywall finishing, electricians, glaziers, and others.

Building Futures was featured at a White House virtual summit in July 2022 along with Louisville’s Kentuckiana Builds pre-apprenticeship program ([White House Fact Sheet, 2022](#)). The latter is run by the Louisville Urban League and has helped over 350 diverse residents access good construction jobs, including apprenticeships with the International Brotherhood of Electrical Workers (IBEW) and the Carpenters Unions. Across the country, the North American Building Trades Unions (NABTU) have helped established more than 190 apprenticeship readiness programs.

Strengthen Prevailing Wage in Pennsylvania

Prevailing wage laws establish minimum wages for different types of skilled construction workers on taxpayer-funded and taxpayer-subsidized projects based on wages, benefits, and training investments that are actually paid in local communities. By preventing public bodies from awarding bids to contractors that pay less than the privately negotiated local market rate, prevailing wage laws ensure that workers can afford to live in the communities where they are building roads, bridges, paths, parks, schools, and other public projects.

Economic research has found that prevailing wage laws create a level playing field for contractors by ensuring that public expenditures reflect local market standards of compensation and craftsmanship. In-state contractors are 8% more likely to be awarded federal highway projects that pay Davis-Bacon prevailing wages compared to similar projects that do not pay prevailing wages (Manzo, 2022). Local contractors account for a 10% higher market share when prevailing wages are paid on public school projects and county-resident businesses account for 16% higher market share when prevailing wages are paid on library construction projects (Manzo and Duncan, 2018; Duncan, 2011). Reflecting local market-based standards for wages, benefits, and training contributions in the communities where projects are being built also bolsters the apprenticeship system, with apprenticeship enrollments being up to 8% higher in states with prevailing wage laws (Bilginsoy, 2005). With prevailing wages, more labor income, more consumer spending, more apprenticeship funding, and more tax dollars remain in local communities.

Strengthening prevailing wage in Pennsylvania—for example, by extending coverage to ratepayer-funded wind, solar, and broadband infrastructure projects—would increase funding for apprenticeship training programs and increase the chances of local Pennsylvania-based contractors winning the work.

Implement Project Labor Agreements

Project labor agreements (PLAs) are local pre-hire agreements covering all crafts on large and complex construction projects that establish comprehensive employment terms and conditions for construction projects. A PLA “operates as a ‘job-site constitution,’ establishing safe working conditions and rules, project execution and accountability on the job, and protocols for resolving labor disputes without resorting to strikes and lockouts” (Waheed and Herrera, 2014). The principal aim of a PLA is to promote stability and productivity while managing large projects (Kotler, 2009). A PLA can also include local hire provisions to ensure that a majority of workers on a project reside in the local community (PFWF, 2015). For project owners, PLAs include provisions for eliminating strikes and lockouts during construction, providing access to local pools of skilled labor, and instituting uniform work rules and consistent shift work to improve efficiency.

A PLA Case Study: Creating Good Jobs in West Virginia’s Wind Industry

Over the past decade, several major wind power construction projects have been undertaken in West Virginia. As a result, electricity generated by wind power in West Virginia has doubled from less than 1 million megawatt-hours in 2010 to 1.9 million in 2020 (EIA, 2021). New projects since 2020 promise further increases.

All the state’s major wind projects recently have been governed by project labor agreements (PLA) and built by union workers. Each project starts with a “Memorandum of Agreement” in which the developer agrees to the use of a PLA. As with other private sector PLAs, the skills of workers available through union referral services make a PLA attractive. Steve White of the West Virginia Affiliated Construction Trades observes that wind projects “...are high skill. They involve crane operators working, by definition, in some of the windiest parts of the state. It’s very tricky work. You also need millwrights, iron workers, and electricians with high skills.” Another benefit of the PLA is the assistance that building trades unions can bring during a variety of administrative permits needed by the developers, such as state sitting approvals and changes to local zoning. Developers value support from local West Virginia trades workers who can vouch for the benefit of the project to local economies.

In states where wind power construction takes place without strong labor standards, jobs typically pay about one-third less in wages than jobs in unionized fossil fuel power plants. But in West Virginia, wind construction jobs pay wage rates above \$30 per hour and family-supporting benefits, close to the compensation on fossil fuel jobs. This is especially important because the quality of jobs and compensation of workers are often the most important determinant of whether renewable energy projects benefit the local community.

Enact Local Responsible Contractor Ordinances

Responsible contractor ordinances (RCOs) are being utilized by more and more communities across the nation, from California to Florida and Illinois to Alabama (Walter, 2022). Bucks County, Lehigh County, and Northampton County are three jurisdictions with RCOs in Pennsylvania (Reinhard, 2022). RCOs establish objective criteria and verifiable standards for contractors bidding on public construction projects. These provisions typically require proof of participation in apprenticeship training programs among other items like proof of certificates of insurance, prequalification surveys, and compliance with all local, state, and federal laws. As a result, RCOs often serve as a sort of “insurance policy” for project owners, ensuring that projects are built by professional, competent contractors with proven track records. Case studies from across the country have found that RCOs promote higher quality and more reliable services and reduced back-end reconstruction costs (Sonn and Gebreselassie, 2010). RCOs have also been found to encourage 8% more bid competition, particularly from local contractors who contribute to apprenticeship training programs (Manzo, 2020). RCOs are “effective way[s] to improve employment conditions and living standards of construction workers without significantly raising costs for taxpayers” (Waddoups and May, 2014).

Enact Local Business Preference Programs

Local business preference programs could support local contractors, prevent high unemployment, and increase tax revenues in Pennsylvania. Local business preference programs provide bid credits to local contractors bidding on taxpayer-funded public works projects (e.g., [LAWA, 2022](#); [City of Philadelphia, 2022](#); [Montgomery County, 2020](#)). The City of Philadelphia has a 5% bid preference for certified local vendors ([NCHRP, 2013](#)). Local businesses are usually classified as those who occupy permanent office space or construction yards within the state or city where at least 50% of employees work for most of their annual hours. For example, if an out-of-state contractor underbids a local contractor by 1% on a public project and the local business bid preference credit is 5%, then the local contractor's bid is received by the public body as if it had been submitted for 5% less than the original bid amount. The public body would thus award the project to the local contractor, helping to ensure that local workers are building and repairing the roads, bridges, and public transit systems in their own communities. Only law-abiding local contractors who comply with local, state, and federal laws and who are up to date on their taxes, licenses, and fees qualify for the local business preference credits.

Continue to Combat Misclassification, Wage Theft, and Payroll Fraud

Publicly funded federal and state construction work are not immune from fraudulent practices, including benefits fraud among contracts subject to prevailing wage standards. On prevailing wage contracts, it is not uncommon for unscrupulous contractors to engage in fraud by claiming that they are providing the level of fringe benefits that are legally owed under prevailing wage laws while the actual costs to the employer for those fringe benefits are lower than what the contractor claims ([McClatchyDC, 2014](#); [Ormiston and Juravich, 2022](#); [Gerstein, 2021](#)). Misclassification, wage theft, and payroll fraud harm the integrity of the construction industry and negatively impact construction workers.

An analysis of illegal practices in Pennsylvania's construction industry found that labor law and labor standards are routinely violated by many construction contractors ([Herzenberg and Ormiston, 2019](#)). For example, in 2021, Pennsylvania's attorney general recovered more than \$20 million in stolen wages for nearly 1,300 employees of Glenn O. Hawbaker, Inc., between 2003 and 2018. This was the largest documented case of prevailing wage theft in U.S. history ([Office of Attorney General, 2021](#)). Wage theft violations like the Hawbaker case victimize workers and their families, taxpayers, and law-abiding contractors as well as the Commonwealth, local governments, and other project owners. Combatting misclassification, wage theft, and payroll fraud through strong policy and enforcement can help reduce this type of "destructive" competition from fly-by-night contractors from out-of-state who may be more prone to steal worker wages and neglect investments in worker training ([Herzenberg and Ormiston, 2019](#)).

CONCLUSION

Awarding road, bridge, public transit, and other taxpayer-funded and taxpayer-subsidized projects to in-state contractors who employ local workers boosts economic development, expands access to the middle class, promotes training opportunities, creates jobs in other industries unrelated to construction, and spurs state and local tax revenues. It also allows local construction workers to stay home and build the public infrastructure in their communities—rather than traveling across the country to work on other projects away from their families.

Conversely, as the 7th Street Bridge rehabilitation program in Pittsburgh demonstrates, efforts to cut costs in the competitive low-bid procurement process can appear penny-wise but turn out to be pound-foolish. Instead of saving about \$56,000 on a \$25 million project, use of out-of-state painters cost Pennsylvania more than \$1 million in local economic activity, an estimated \$88,000 in state and local tax revenues, and about \$31,000 in apprenticeship training funding.

A strong Pennsylvania is built locally by highly trained workers. Elected officials and policymakers can increase the chances of local hire and improve industry resiliency by implementing strong local hire standards, bolstering the state's apprenticeship training programs, expanding apprenticeship readiness programs, strengthening the Pennsylvania Prevailing Wage Act, implementing project labor agreements, enacting local responsible contractor ordinances or local business preference programs, and continuing to combat worker misclassification, wage theft, and payroll fraud in the construction industry. The economic value generated by Pennsylvania's historic investments in transportation infrastructure will only be maximized if the projects employ skilled local workers.

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APPENDIX

From: [REDACTED]
Sent: Wednesday, March 16, 2022 2:55 PM
To: [REDACTED]
Cc: [REDACTED]
Subject: 7th St Bridge Numbers

[REDACTED]

Here are the first couple numbers you asked for. Brayman was the prime and all totals were paid directly to them. Brayman was then responsible for paying their subcontractors within 7 calendar days per the payment provisions in the contract.

Brayman Construction Company

Original Contract - \$25,391,749.45

Final Contract including all Change Orders - \$25,661,470.75

Southern Road and Bridge (Painting Sub-contractor)

Original Contract w/ Brayman - \$8,790,100.00

Final Contract 2/ Brayman including all Change Orders - \$9,412,440.34

Southern Road and Bridge also had 3 companies perform work for them as sub-contractors to a sub-contractor which we do allow as long as it is submitted and approved before the work takes place. That work totaled \$622,340.34 and is included in the \$9.4 million figure above. Those subs were:

Adams Petroleum Products, Inc. - \$213,756.04

Cooper Trading, Inc. - \$383,584.30

MB Environmental Consulting, Inc. - \$25,000.00

\$2.68M see page 3

Certified Payrolls are submitted by week and only total each individual employee for that week. We do have those records, but Southern Road and Bridge had an average of about 10 employees on site per week and have 92 weeks of payrolls submitted so there are about 900 lines we are going to have to total up to get that final number pulled together. We will work on it, but it might take a little time.

As I said on the phone, both the Federal and State Departments of Labor have already requested a lot of this information and we have turned it over to them. Let me know if you need any of the backup for these.

Thanks,

[REDACTED]

Assistant Deputy Director
Allegheny County Department of Public Works

[REDACTED]

 ALLEGHENY COUNTY