Estolano
ADVISORS

Construction Workforce Disparity Study

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY (METRO)

January 17, 2025

FINAL

Los Angeles | Bay Area | Portland
EstolanoAdvisors.com

TABLE OF CONTENTS

EXECUTIVE SUMMARY 3
1. INTRODUCTION 19
2. STATE OF FEMALE WORKERS IN CONSTRUCTION 26
Public and Private Sector Regional Construction Workforce Availability 29
Public Workforce Hiring Requirements and Goals 34
Public Sector Regional Construction Workforce Availability 37
Projected Female Construction Workforce Availability 48
Projected Female Construction Workforce Demand on Metro Projects 51
Projected Female Construction Workforce Gap 60
Female Workforce Training Pipeline Assessment 73
3. KEY BARRIERS FACING WOMEN IN CONSTRUCTION 92
Barriers to Recruitment 93
Barriers to Retention 98
4. EMERGING PRACTICES 104
Child Care 104
Changing Culture to Advance Gender Equity 118
Bid Preference and Other Procurement Levers to Advance Gender Diversity in the Construction Industry 127
5. RECOMMENDATIONS 137
Strengthen Accountability on Female Hire Goals and Build on What's Working 137
Invest in Supportive Services with an Effective Child Care Strategy 140
Enhance Procurement Levers to Support Female Hire 143
Establish a Regional Collaborative to Address Systems Change in the Construction Industry 146
Appendix A: Definition of Key Terms 151
Appendix B: Construction Workforce Hiring Requirements and Goals across LA County Agencies 153
Appendix C: U.S. Equal Employment Opportunity Commission Guidance on Preventing Harassment in the Construction Industry 156
Appendix D: City of Seattle Standard Specifications for Municipal Construction, Acceptable Work Sites 172
Appendix E: Regional Workforce Equity Agreement 174
Appendix F: King County Respectful Worksites Policy 177
Appendix G: Detailed Demand and Gap Analysis Documentation 180

EXECUTIVE SUMMARY

This Workforce Disparity Study (*study*) analyzes and aims to expand the availability and utilization of female construction workers on Metro projects and other infrastructure projects in the Greater Los Angeles Area.[1] The study consists of four main sections:

- **State of Female Workers in Construction (Pages 4-14 and 26-91):** This section evaluates female participation in the regional workforce since 2019, estimates female construction worker availability through 2033, and forecasts Metro's progress toward its goal of achieving 6.9% female participation in the workforce. This section also analyzes female participation in construction apprenticeship and pre-apprenticeship programs over the past five years.

- **Key Barriers Facing Women in Construction (Pages 14-15 and 92-103):** This section identifies barriers to female participation in construction, including barriers to recruitment and barriers to retention.

- **Emerging Practices (Pages 104-136):** This section highlights emerging practices for recruiting and retaining female construction workers related to child care, culture change, and procurement levers such as bid preference and cultural competency requirements.

- **Recommendations (Page 15-18 and 137-150):** This section recommends comprehensive strategies for Metro and its public agency partners to enhance female workforce participation.

Increasing the representation of women in construction would help address the industry's critical labor shortages, while providing women with access to high-paying, sustainable careers and building a more inclusive workforce across the region.

Background

In January 2012, Metro adopted a Project Labor Agreement (PLA) and Construction Careers Policy (CCP) Program (PLA/CCP) for projects with contract values over $2.5 million to encourage construction employment and training opportunities in economically disadvantaged geographic areas in the Greater Los Angeles Area. Metro construction projects covered by the PLA/CCP must comply with certain targeted hiring requirements based on the total number of work hours performed on the project.

[1] The Greater Los Angeles Area includes Los Angeles, Orange, Riverside, San Bernardino, and Ventura counties.

Metro currently implements programs and activities to support the attainment of the 6.9% female participation goal in partnership with the Los Angeles/Orange Counties Building and Construction Trades Council (LA/OCBCTC). These initiatives include hosting job fairs through Women Build Metro LA, providing career coaching through Workforce Initiative Now – LA, track progress through the Female Participation Score Card and Female Worker Transition Tracking Sheet, and conduct other internal and external outreach and monitoring activities. Other agencies and organizations, including LA County Public Works, Los Angeles World Airports (LAWA), and Women in Non-Traditional Employment Roles (WINTER), also lead a variety of construction workforce recruitment, training, and retention activities throughout the Greater Los Angeles Area.

The PLA/CCP encourages contractors to increase female workforce participation to exceed the nationwide female participation goal of 6.9% set by federal Executive Order (EO) 11246. Although this female and minority participation goal is from an Executive Order, compliance is based on good faith efforts because of California's Proposition 209, which prohibits public agencies to consider the use of race, sex, color, ethnicity, or national origin as criteria in any public contracting or employment decision. In 2019, Metro released a Workforce Disparity Study which analyzed female participation in the construction workforce across the Greater Los Angeles Area and recommended improvements to female worker recruitment and retention. In February 2023, Metro commissioned an update and expansion of the 2019 study.

State of Female Workers in Construction

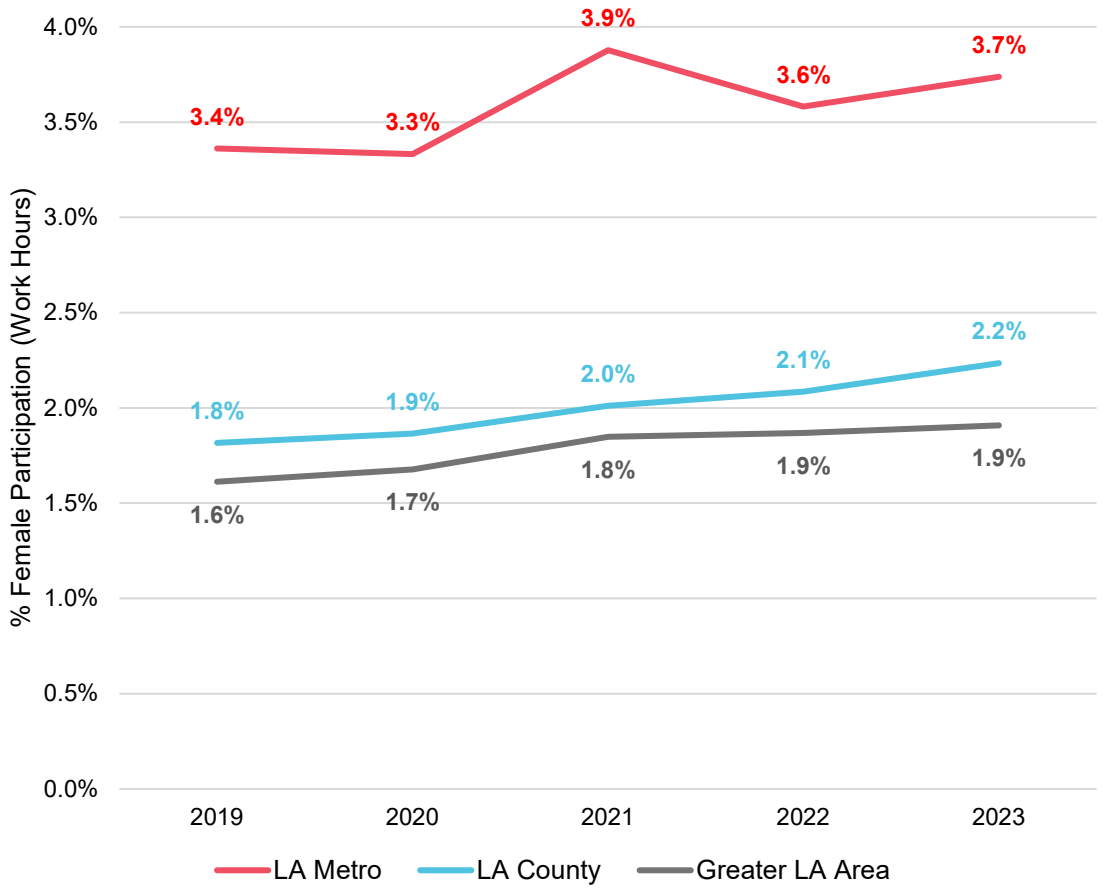
Female Construction Workforce Availability

To assess female worker availability, this study analyzes data from LCPtracker, a payroll system used by most public works construction projects in the Greater Los Angeles Area.[2] LCPtracker provided anonymized data on the number of work hours performed each year between 2019 and 2023 by gender, trade, and apprentice or journey-level status. This study also uses data from the U.S. Census Bureau Quarterly Workforce Indicators (QWI) to analyze age and gender in the construction workforce across both public and private sectors between 2008 and 2023.

- **Metro's female construction worker utilization rate exceeds the regional average but remains below the 6.9% female participation goal (Figure ES-1).**[3] Women performed 3.6% of construction work hours on Metro projects, but only 1.8% of construction work hours on all regional infrastructure projects in the Greater Los Angeles Area from 2019 to 2023. Despite nearly doubling the regional female utilization rate, Metro remains several percentage points below the EO 11246 goal of 6.9% female construction work hours.

[2] The Greater Los Angeles Area includes Los Angeles, Orange, Riverside, San Bernardino, and Ventura counties.
[3] See pages 37-47 for more details on Metro's female participation rates.

Figure ES-1: Female Participation on Construction Projects (Metro, LA County and Greater LA Area[4])

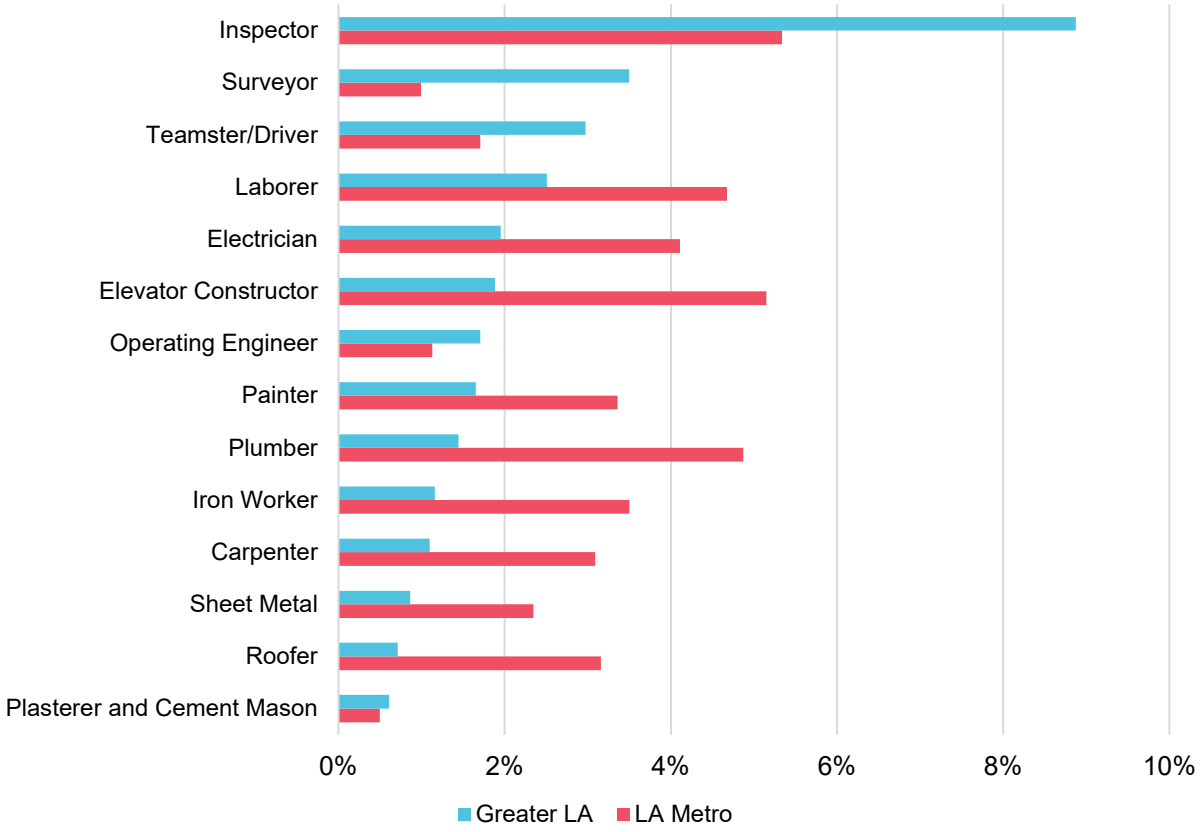


Source: LCPtracker

- **In 9 of Metro's 14 construction trades, the female utilization rate exceeds the regional average; however, Metro's female utilization falls short of the 6.9% goal in all 14 trades (Figure ES-2).** Compared to the region overall, Metro projects have higher female participation within the Laborer, Electrician, Elevator Constructor, Painter, Plumber, Iron Worker, Carpenter, Sheet Metal, and Roofer trades. The Inspector, Surveyor, Teamster/Driver, Operating Engineer, and Plasterer and Cement Mason trades have lower female participation on Metro projects than the regional average. The region only meets the 6.9% female utilization goal within the Inspector trade.

[4] The Greater Los Angeles Area includes Los Angeles, Orange, Riverside, San Bernardino, and Ventura counties.

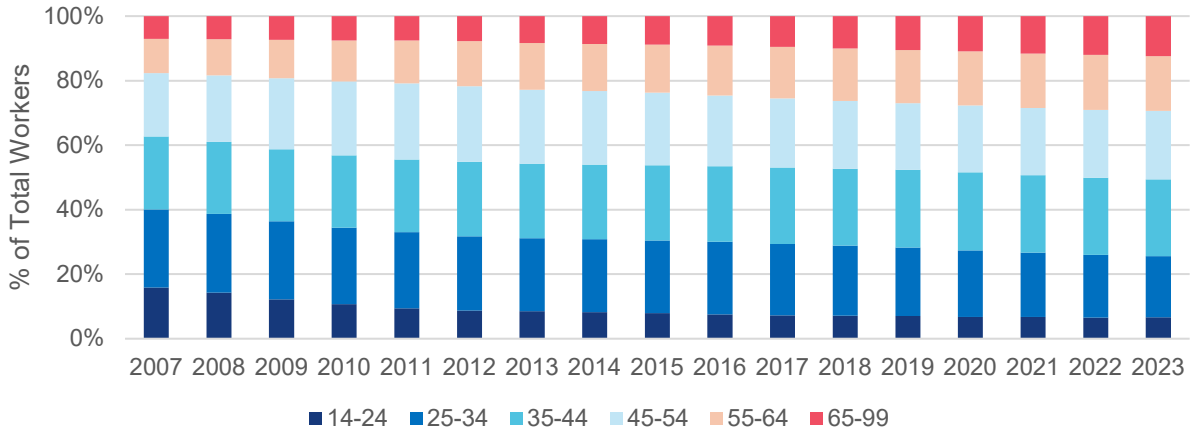
Figure ES-2: Female Work Hour Utilization on Construction Projects at Metro and in the Greater LA Area by Trade (2019-2023)



Source: LCPtracker

- **Over 20% of the region's female construction workforce, in both private and public sectors combined, is 55 years or older, indicating an overall trend toward an aging workforce (Figure ES-3).** Between 2008 and 2023, the share of younger female construction workers (ages 14 to 24) has declined by nearly 10 percent, while the share of older female construction workers (ages 55 and older) has increased by over 10 percent. To address the challenges of impending retirements, the region must focus efforts on significantly increasing the recruitment and retention of younger female construction workers. This includes expanding on current youth outreach initiatives in schools like Metro and LAWA.

Figure ES-3: Female Construction Workforce in Greater LA Area by Age (2007-2023)



Source: U.S. Census Bureau, Quarterly Workforce Indicators

- **The growth in the region's construction workforce, in both private and public sectors combined, has fluctuated and slowed in the past five years, particularly among men (Table ES-1).** From 2013 through 2018, the number of women in the overall construction sector increased by 45%, compared to a 33% increase among men. However, from 2019 through 2023 the number of women in the overall construction sector only grew by 8%, while the male construction workforce decreased by 1%.

Table ES-1: Construction Workforce Trend in Greater LA by Gender (2013-2023) [5]

Year	Total Workers	Female			Male		
		# of Workers	Annual % Growth	% of Total	# of Workers	Annual % Growth	% of Total
2013	281,351	55,267	N/A	20%	226,083	N/A	80%
2014	299,766	60,107	9%	20%	239,656	6%	80%
2015	318,645	65,028	8%	20%	253,616	6%	80%
2016	346,385	71,161	9%	21%	275,227	9%	79%
2017	357,838	74,878	5%	21%	282,957	3%	79%
2018	381,038	80,306	7%	21%	300,730	6%	79%
2019	394,600	83,983	5%	21%	310,618	3%	79%
2020	399,895	85,398	2%	21%	314,499	1%	79%
2021	389,085	85,250	0%	22%	303,837	-3%	78%
2022	395,557	88,236	4%	22%	307,322	1%	78%
2023	396,892	90,556	3%	23%	306,331	0%	77%
10-Yr Growth	**41%**	**64%**	N/A	N/A	**35%**	N/A	N/A

Source: U.S. Census Bureau, Quarterly Workforce Indicators

[5] This dataset includes all employees of businesses in the Construction Sector as defined by North American Industry Classification Code 23. This definition includes some office workers and others who do not regularly perform construction work as described elsewhere in this study.

- **Despite recent fluctuations in the construction workforce due to external factors, such as the COVID-19 pandemic and associated economic instability, the overall female work hours increased in the public works construction sector over the last five years.**[6] Although female work hours increased overall from 2019 through 2023, some trades experienced rapid growth while other trades experienced declines in the female workforce (Table ES-2). Based on these trends, the consultant team projected the future female workforce availability using four growth scenarios: Rapid Growth, Moderate Growth, No Growth, and Decline (Figure ES-4).

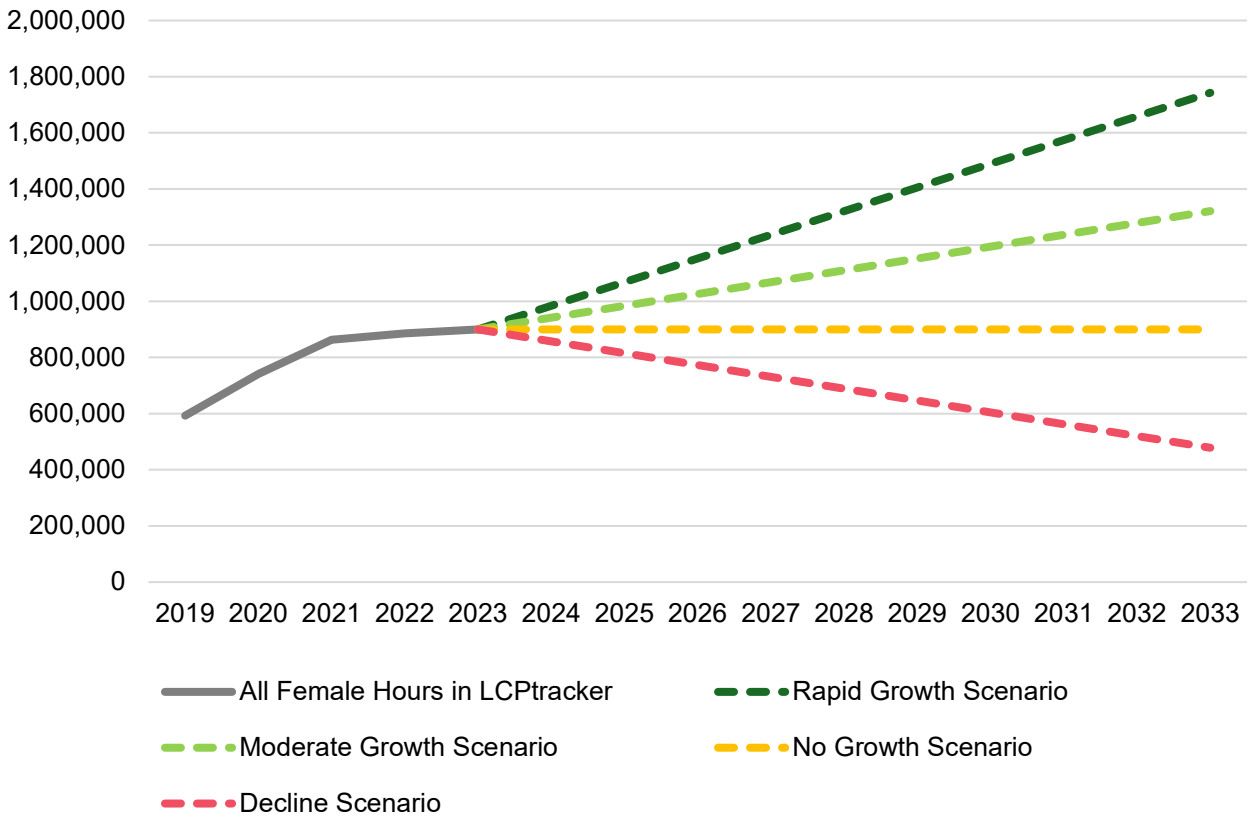
Table ES-2: Female Construction Work Hours by Trade in Greater LA (2019-2023)

Trade	Sum of Total Female Hours Worked					% Change 2019-2023
	2019	2020	2021	2022	2023	
Bricklayer and Tile Setter	3,429	4,177	3,591	3,354	3,088	-9.9%
Carpenter	79,401	104,018	116,537	108,414	87,911	10.7%
Electrician	121,450	110,626	137,719	129,044	131,511	8.3%
Elevator Constructor	3,112	2,160	5,672	9,140	9,344	200.2%
Inspector	15,005	32,645	63,015	81,982	78,680	424.4%
Iron Worker	30,027	45,860	24,907	26,497	31,804	5.9%
Laborer	211,938	289,527	283,627	254,213	281,304	32.7%
Operating Engineer	52,852	50,452	86,169	91,544	72,612	37.4%
Painter	21,600	25,716	34,189	38,632	42,035	94.6%
Plasterer and Cement Mason	7,728	7,666	15,106	15,287	10,369	34.2%
Plumber and Pipefitter	21,432	25,730	27,871	43,595	71,682	234.5%
Roofer	2,185	3,063	3,399	4,060	5,075	132.3%
Sheet Metal	7,560	12,424	13,199	16,377	14,939	97.6%
Surveyor	3,441	9,183	10,519	6,703	6,843	98.9%
Teamster/Driver	11,523	17,446	37,180	56,711	52,587	356.3%
Total	**592,684**	**740,692**	**862,700**	**885,554**	**899,786**	**51.8%**
Annual Percent Change	N/A	**25.0%**	**16.5%**	**2.6%**	**1.6%**	N/A

Source: LCPtracker

[6] See Section 2, pages 48-50, for more details on projected female construction workforce availability.

Figure ES-4: Projected Availability of All Female Work Hours (2019-2033)



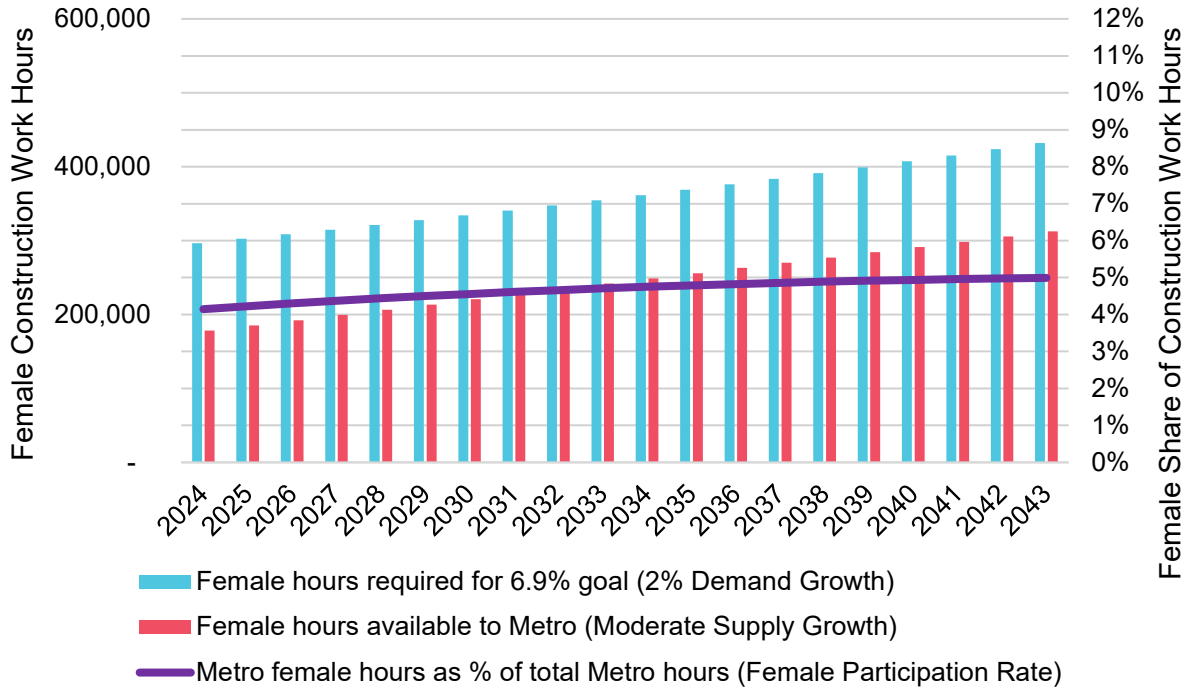
Source: LCPtracker and Estolano Advisors

Female Construction Worker Demand and Gap

- **Under a "2% Annual Workforce Demand Growth and Moderate Supply Growth" scenario, Metro's female construction workforce utilization would remain below 6% of work hours between 2024 and 2043 (Figure ES-5).**[7] Metro can anticipate a 2% annual increase in workforce demand based on historical trends.[8] Under this demand scenario, female construction worker availability must increase rapidly to meet the 6.9% goal within the next 20 years. Metro's female construction workforce utilization would reach 6.9% **annually** by 2040 under a "2% Annual Workforce Demand Growth and Rapid Supply Growth" scenario (Figure ES-6).

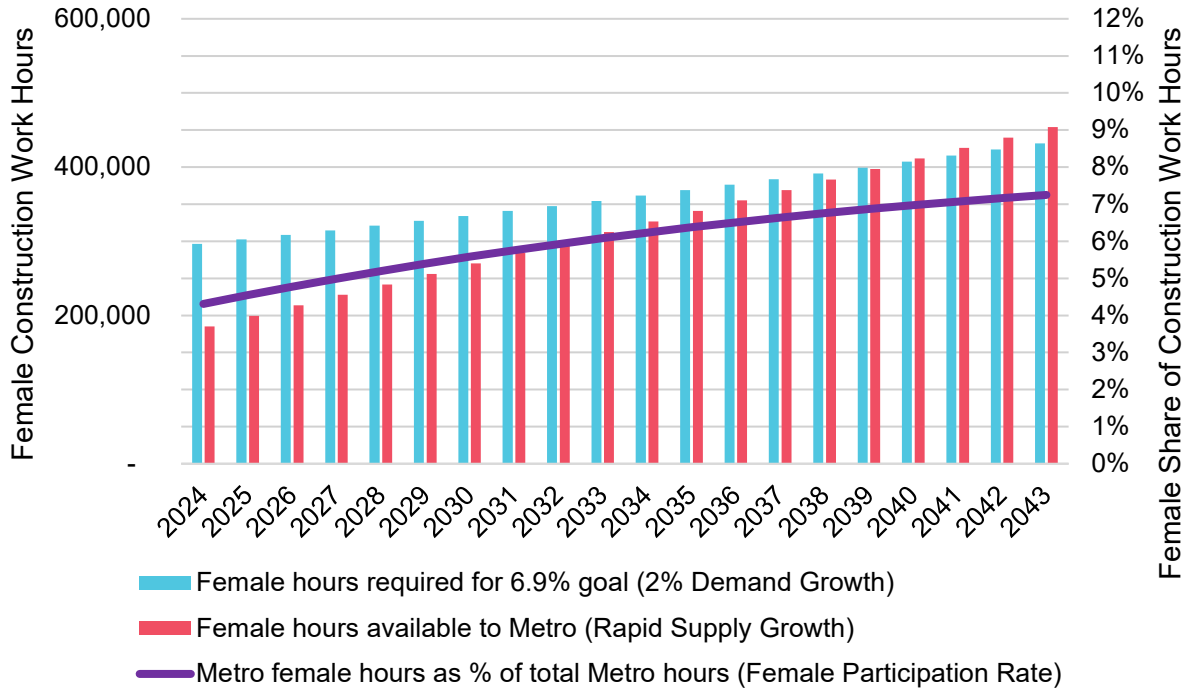
[7] These utilization scenarios do not include unprecedented events such as pandemics or recessions.
[8] See Section 2, page 51, for more details on projected construction workforce demand.

Figure ES-5: Projected Female Workforce Utilization on Metro Construction Projects, 2% Demand Growth, Moderate Supply Growth (2024-2043)



Source: LCPtracker, Metro, Estolano Advisors, and ICF

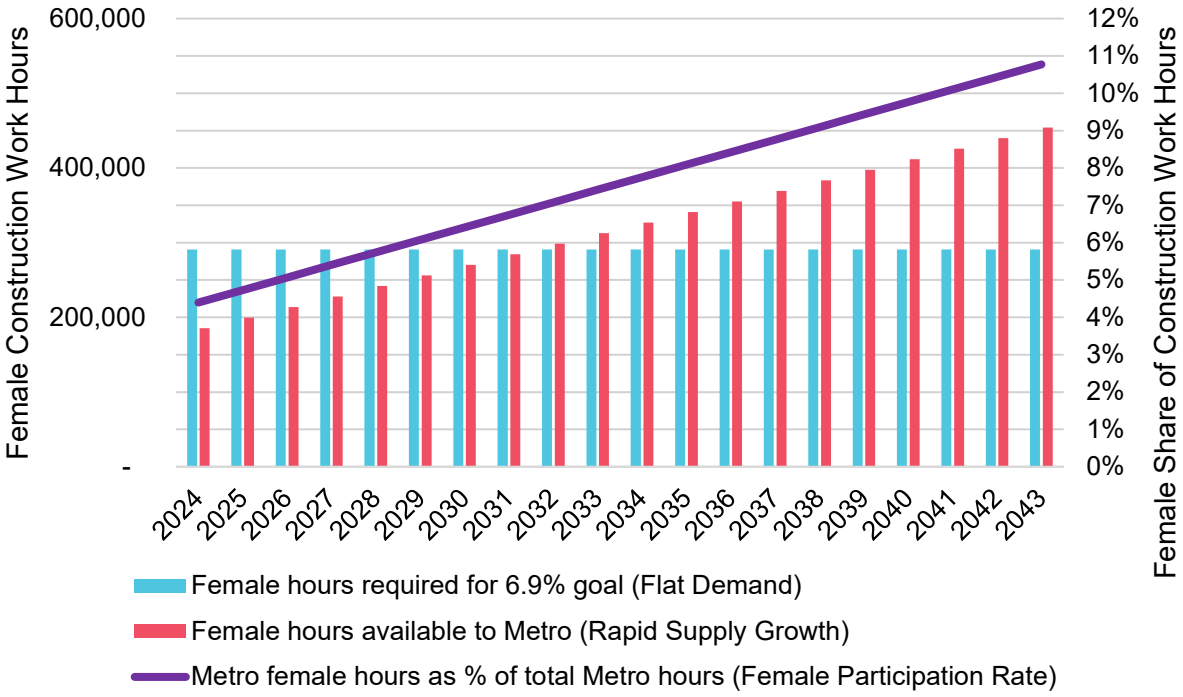
Figure ES-6: Projected Female Workforce Utilization on Metro Construction Projects, 2% Demand Growth, Rapid Supply Growth (2024-2043)



Source: LCPtracker, Metro, Estolano Advisors, and ICF

- **If annual workforce demand is flat (0% growth), Metro could surpass the 6.9% goal for female utilization by 2032 annually under the "Rapid Supply Growth" scenario (Figure ES-7).** However, when including hours from 2012 through 2023, in which female utilization did not exceed 3.6%, the cumulative female utilization would remain below 5% by 2033. Under this "Flat Demand (0% Demand Growth) and Rapid Supply Growth" scenario, the Laborer and Electrician trades would exceed 6.9% female utilization by 2033, but Metro's other largest trades would fall short without major improvements to female recruitment and retention. Among the next three largest trades, Iron Workers have the highest female utilization projections (3.8% to 6.5%), followed by Carpenters (2.7% to 4.2%) and Operating Engineers (1.5% to 2.5%) across scenarios.

Figure ES-7: Projected Female Workforce Utilization on Metro Construction Projects, 0% Demand Growth, Rapid Supply Growth (2024-2043)

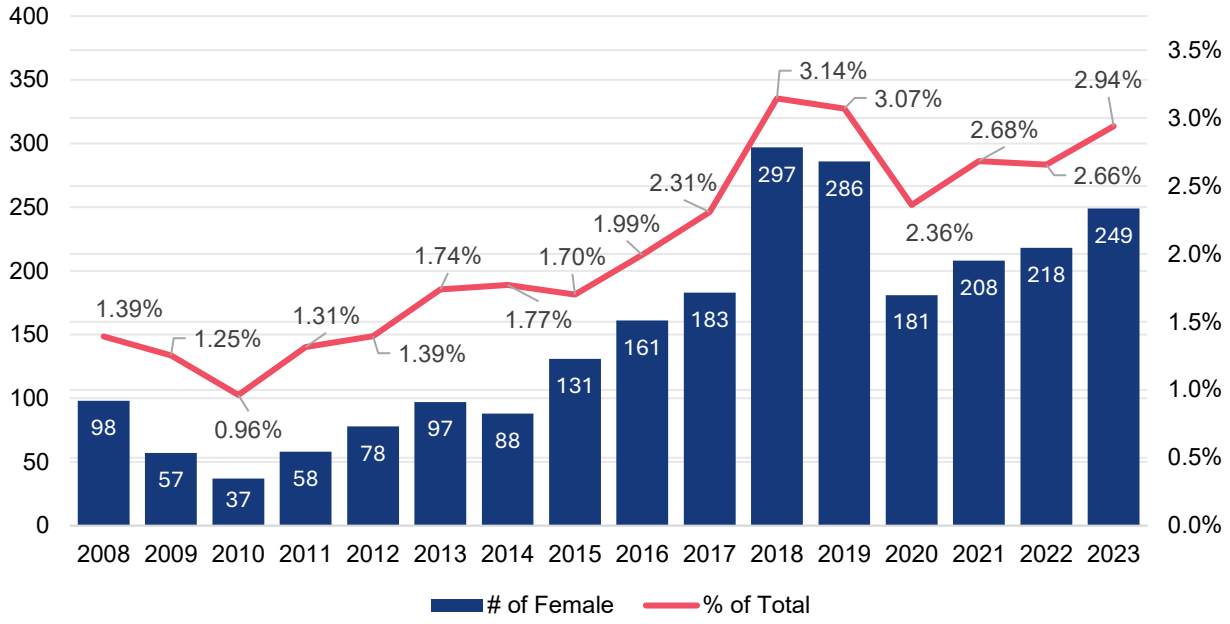


Source: LCPtracker, Metro, Estolano Advisors, and ICF

Female Apprentice Training and Recruitment

- **The number of female apprentices has increased substantially in recent years; however, the region must continue increasing female apprenticeships to meet Metro's 6.9% female utilization goal.** Annual enrollment of women in building trades apprenticeship programs has more than doubled since 2008 in the Greater Los Angeles Area (Figure ES-8). However, female apprentices still account for less than 3% of all apprenticeships in the Greater Los Angeles Area, and the region's female apprenticeship participation remains below other regions, such as the San Francisco Bay Area. This trend highlights the need to focus on both female enrollment and retention in apprenticeship programs.

Figure ES-8: Female Apprenticeship Participation in Greater LA (Start Year 2008-2024)

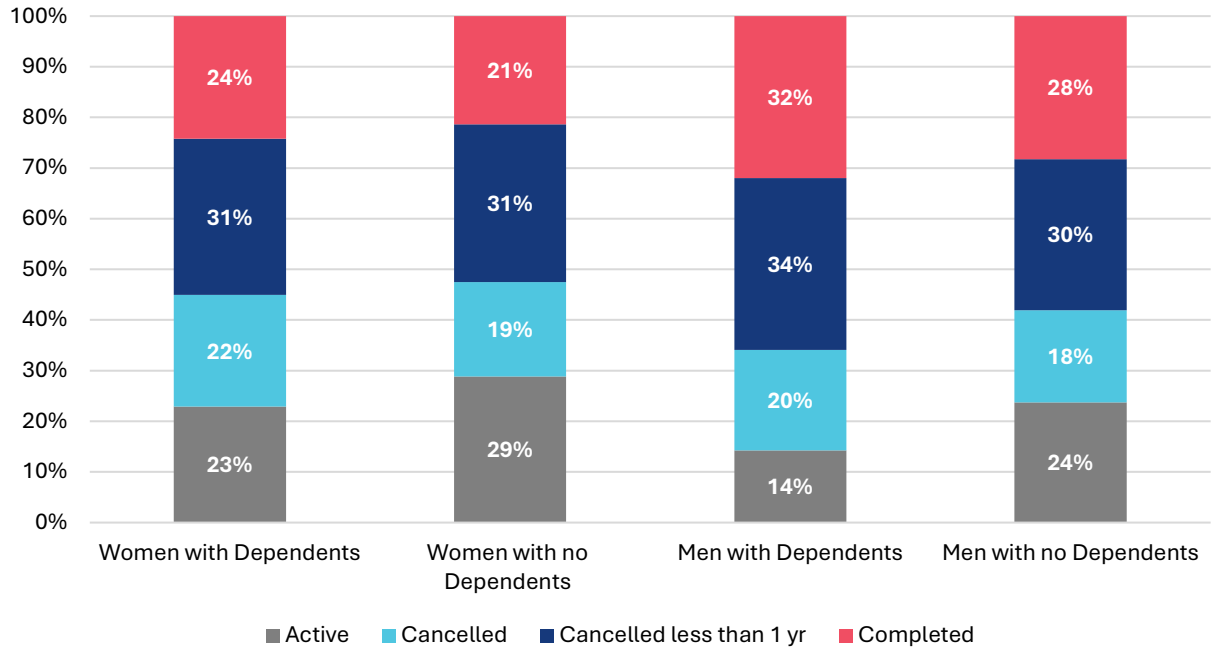


Source: California Department of Industrial Relations Division of Apprenticeship Standards (June 2024)

- **Both male and female[9] apprentices with dependents are more likely to cancel apprenticeships compared to apprentices without dependents (Figure ES-9).** Male apprentices are 6% more likely to cancel their apprenticeship contracts if they have dependents, and female apprentices are 3% more likely to cancel if they have dependents. The share of active apprentices with dependents is also lower than the share of active apprentices without dependents, implying that apprenticeship programs struggle to retain parents and other caregivers.

[9] Due to the very small number of workers that selected "Other" or did not respond to the gender identification question (less than 0.1% of all apprentices), the consultant team only analyzed data for "Male" and "Female" in this study.

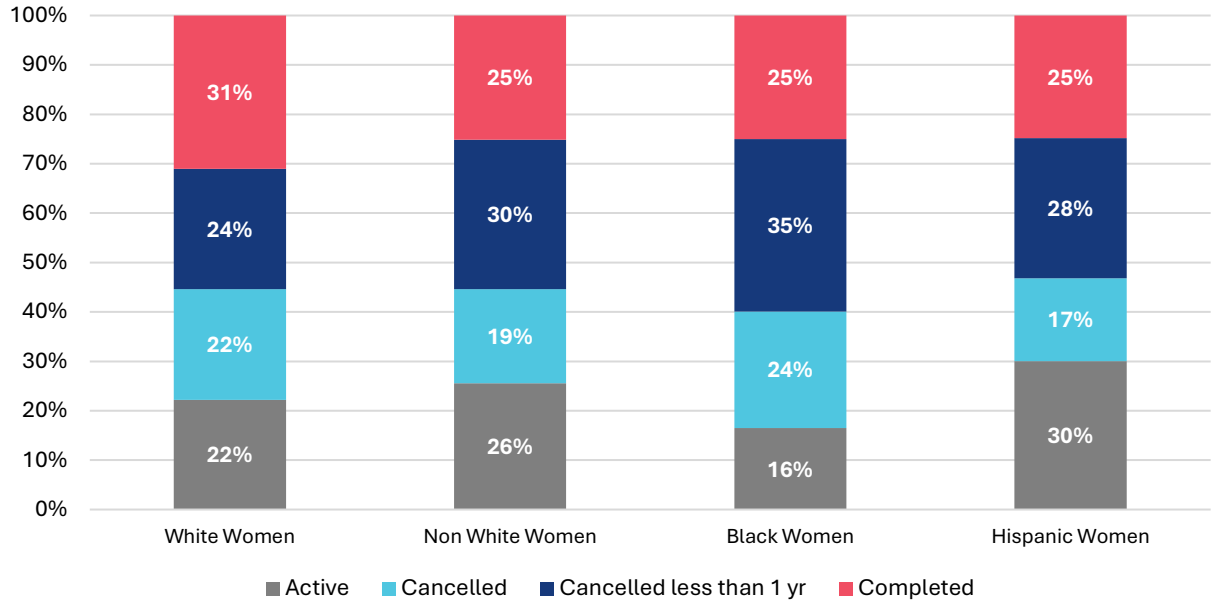
Figure ES-9: Apprentice Status by Gender and Dependent Status (Start Year 2008-2023)



Source: California Department of Industrial Relations Division of Apprenticeship Standards (June 2024)

- **While overall cancellation rates are similar across genders, disparities in apprentice retention rates by race signal inequitable program design and a need for targeted retention efforts.** White women have a 6% higher graduation rate than non-white women in apprenticeship, and Black women are 11% more likely than white women to cancel their apprenticeship within one year (Figure ES-10).

Figure ES-10: Female Apprentice Status by Ethnicity (Start Year 2008-2023)



Source: California Department of Industrial Relations Division of Apprenticeship Standards (June 2024)

- **Gender-specific apprenticeship readiness programs, such as Women in Non-Traditional Employment Roles (WINTER), prepare women to enter union apprenticeship.** Approximately 10% of the 1,622 female apprentices recruited in the Greater Los Angeles Area since 2017 have completed WINTER's pre-apprenticeship training.

Table ES-3: Female Apprentice Status by Ethnicity (Start Year 2008-2023)

Status	FY 2017-2018	FY 2018-2019	FY 2019-2020	FY 2020-2021	FY2021-2022	FY 2022-2023	FY 2023-2024	Total
# Attended Orientation	130	150	149	270	186	207	323	**1,415**
Enrolled	70	74	26	30	22	39	55	**316**
Graduated	65	56	20	26	16	25	43	**251**
Placed in Union	50	25	11	15	9	20	30	**160**

Source: WINTER

Barriers for Women in Construction

Barriers to Recruitment

- **Public agencies do not demand enough women workers or female work hours:** Project Labor Agreement projects outline efforts for contractors to address female workforce utilization on Metro projects, but these actions are often not required by other large-scale public sector construction projects in the region. Demand from project owners drives contractors to deploy women workers on jobsites.

- **Lack of social connections limit awareness of construction careers:** Recruitment into construction careers is most commonly done through word of mouth. Women are less likely to receive referrals to careers in the trades.

- **Financial hardship for Pre-Apprentices and Apprentices:** When workers move into apprenticeships, they frequently encounter a "benefits cliff," where they earn too much to qualify for public assistance but too little to afford child care, housing, and other necessary expenses.

Barriers to Retention: Supportive Services

- **Access to and the availability of child care deter parents from entering and staying in the construction industry:** The limited hours and high costs of child care, and the lack of nearby child care facilities often prevent many parents—both men and women—from completing apprenticeship programs or continuing their careers in construction.

- **Construction workers need access to reliable transportation to travel between various worksites:** Construction workers in the region are required to commute to different worksite locations, and the costs of transportation can be a financial burden. For parents working in construction, the added challenge of commuting to and from child care services before and after work creates an additional barrier to retention.

- **Mental health services are in high demand, especially for women in construction:** The limited availability of mental health services and support groups for female workers may contribute to more burnout and lead to higher dropout rates from apprenticeship programs.

Barriers to Retention: Workplace Culture

- **On-site harassment and a hostile job site culture push women out of construction jobs:** Women in construction continue to face workplace harassment and discrimination, and they frequently experience retaliation after reporting these incidents.

- **Isolation of female workers perpetuates unsafe jobsites:** Women on construction sites are often vastly outnumbered by men, leading many to feel isolated and unsafe due to the lack of other female tradeswomen. This sense of isolation frequently drives women to leave the industry altogether.

Recommendations

Strengthen Accountability on Metro's Female Hire Goals

- **Continue regional leadership in setting goals:** Set clear, measurable goals for female participation on public construction projects and stronger accountability measures for contractors. Encourage other public agencies to set equity standards as a critical element of public contracting. Share best practices regarding growing family-sustaining careers for low-income women workers in the LA region.

- **Strengthen contractor accountability and good faith efforts:** Require contractors to submit records demonstrating their good faith efforts toward meeting female participation goals. Promote effective communication between contractors, agency staff, compliance teams, and oversight committees to support goal attainment. Assist contractors in building partnerships with community organizations and training providers to support inclusive hiring practices.

- **Continue to allocate resources for training and support:** Continue hosting pre-bid orientation sessions and other existing training to support contractors with workforce equity policies and expectations from project initiation and project implementation. Foster a shared understanding among all unions, workforce and community partners.

- **Expand workforce utilization monitoring efforts through existing and new channels:** Expand the existing Labor-Management Committee process to also review project-level female worker utilization rates and engage unions on strategies to address shortfalls and gaps. Enhance the scope and capacity of the existing job site monitoring program to include respectful workplace practices that support the retention of women and other underrepresented workers.

- **Provide financial support for community partners:** Ensure women-serving organizations have a role to play to support contractor and union efforts. Provide necessary funding to those helping place low-income women and people of color on the job sites. Invest in partnerships over the life of projects with prolonged completion periods.

Invest in Supportive Services with an Effective Child Care Strategy

- **Fund child care costs and tuition for early years of apprenticeships:** To address the true cost of child care for apprentices and stabilize support for their families, establish funding for the cost of child care for early year apprentices, especially funding for infants and toddler care. Invest directly in supportive services for apprentices on Metro projects and partner with other regional public project owners to ensure apprentices across the region can access this funding. Building on the successful model of California's Equal Representation in Construction Apprenticeship (ERiCA) grants, this approach would involve joint investments from contractors and unions, providing direct payments to the child care providers of the workers' choice. Also, incentivize local child care providers to expand hours.

- **Establish a child care fund:** Institute a contractual performance requirement to mandate contractors' contributions in a child care fund. This fund will cover child care costs for apprentices in the trades. Co-design fund goals with input from female apprentices and journey-level workers as well tradeswomen-supporting organizations, unions, and child care organizations.

- **Build on existing regional child care systems by partnering with child care organizations, public sector partners and with those engaging providers and workers.** Leverage existing systems and programs to advance its own child care goals. Utilize local initiatives like subsidy programs to grow the supply of child care providers and address the issue of low wages and minimal benefits for child care workers. Collaborate with child care experts, such as the Los Angeles County Child Care Planning Committee, the Policy Roundtable for Child Development, the LA County Office for the Advancement of Early Care and Education, and child care worker union Service Employees International Union (SEIU) Local 99, to co-plan and invest in solutions that expand the regional child care sector.

Enhance Procurement Levers to Support Female Hire

- **Institute new contractor requirements on policies, procedures, and training programs to combat harassment and discrimination in the workplace.** Require contractors to develop a Respectful Workplace Policy posted and made visible at every Metro worksite for the duration of the contract. Require contractors to implement respectful workplace training programs to prepare participants to recognize harassment and discrimination and equip them with tools to intervene when it occurs.

- **Revise Cultural Competency Plan requirement to include distinct Community Benefits and Workforce Equity components:** Should the Cultural Competency Plan requirement become standard practice in Metro's construction procurement process, ensure any workforce development activities funded and implemented through Cultural Competency Plans align with and advance Metro's workforce equity goals and programs. Refine the Cultural Competency Plan framing to establish and clarify distinct community benefit and workforce equity requirements, including a "Community Benefit Component" and a separate "Workforce Equity Component." Responses to the Workforce Equity Component should include a contractor's past experience meeting workforce utilization goals for Metro's and other public projects in the region and describe partnerships, especially with tradeswomen groups, they have built.

- **Make female hire goals an explicit part of Metro's procurement process for Jobs Coordinators:** Before the next Jobs Coordinator solicitation opens, revise the RFIQ to include reference to Metro's female hire goals. In the proposal content and evaluation criteria, incorporate language that speaks to proposer's past experience working with tradeswomen groups and outreach methods used on past projects to promote the recruitment and retention of women.

Establish a Regional Collaborative to Address Systems Change in the Construction Industry

- **Establish a regional collaboration of public agencies and partners interested in increasing the number of women in the construction sector**: Build upon active and proposed multi-jurisdictional initiatives like Infrastructure LA and the City of LA Workforce Infrastructure Network, led by the LA Mayor's Office and the Economic and Workforce Development Department (EWDD), which have established goals to address gender gap in high growth sectors. Use these partnerships to close child care funding gaps and partner with stakeholders to increase outreach efforts. Support the formation a regional woman in trades advisory group to work alongside the regional collaboration.

- **Invest in and grow the regional supply of child care:** Encourage other public agencies to co-invest in child care funding to support apprentices. Engage child care experts and unions to inform them about this fund. Through robust investments, a regional child care fund can help offset start-up costs and facility development expenses for family child care homes and center-based care in child care deserts and help expand hours to serve construction workers.

- **Align demand and supply strategies across jurisdictions and projects to send clear market signals that women belong in the construction sector:** By sharing best practices, aligning recruitment and retention strategies, and co-investing in supportive services, governments across the region will bolster their efforts to diversify the workforce. A coordinated approach will also improve data collection and contractor compliance through better communication and shared tools across jurisdictions.

1. INTRODUCTION

Background

In January 2012, the Los Angeles County Metropolitan Transportation Authority (Metro) adopted a Project Labor Agreement (PLA) and Construction Careers Policy (CCP) Program (PLA/CCP) with the Los Angeles/Orange Counties Building and Construction Trades Council (LA/OCBCTC). Metro's PLA/CCP encourages construction employment and training opportunities for members from economically disadvantaged areas throughout Los Angeles and Orange Counties. The PLA/CCP applies to certain construction projects with a contract value above $2.5 million. In January 2017, the Metro Board of Directors approved the renewal of the PLA/CCP until 2027.

Under the 2017 PLA/CCP renewal, contractors working on applicable PLA/CCP Metro construction projects must comply with certain targeted hiring requirements based on the total number of work hours performed. To comply with Executive Order 11246, the Metro Board adopted a program-wide goal of a 6.9% female-participation in applicable PLA/CCP covered projects.[10] Executive Order 11246 establishes contractor participation goals for the total hours of minority and female employment and training on federally-funded or federally-assisted construction projects in each construction trade as 6.9%.

Although this female and minority participation goal is from an Executive Order, compliance is based on good faith efforts because of California's Proposition 209, which prohibits public agencies to consider the use of race, sex, color, ethnicity, or national origin as criteria in any public contracting or employment decisions. Therefore, the 2017 PLA/CCP renewal encourages contractors to increase women's workforce participation to meet or exceed the nationwide 6.9% female participation goal. In 2019, Metro staff initiated a workforce disparity study to determine the availability and utilization of female construction workers to meet the demand of future infrastructure projects in the region. This study identified the average female participation rate between 2014 and 2018 on Metro construction projects as 3.5%. Other non-Metro public works construction projects in the region had an average of 1.9% female participation rate during the same period. The top three trades in terms of female participation on Metro projects were: (1) Inspector; (2) Laborer; and (3) Carpenter. The 2019 study suggested Metro's female participation rate is influenced by a shortage of female workers rather than an underutilization of their existing female workforce.[11]

[10] Metro Project Labor Agreement & Construction Careers Policy Website https://www.metro.net/about/placcp/#female-participation

[11] Los Angeles County Metropolitan Transportation Authority. *Metro Workforce Disparity Study*. May 2019, https://media.metro.net/about_us/pla/images/Metro_WDS_Report_2019-0628.pdf.

The 2019 Construction Workforce Disparity Study also identified the following barriers to the recruitment and retention of female workers in the construction industry:

- Lack of Awareness and Exposure to Trades
- Lack of Mentorship and Kinship Networks
- Hiring Practices and Poor-On-The-Job Training
- Hostility and Sexual Harassment
- Scheduling and Child Care

As recommended in the 2019 study, Metro has maintained and expanded women-focused programs such as Women Build Metro LA (WBMLA), the Women in Trades Resource Guide, and Workforce Initiative Now-Los Angeles (WIN-LA) while also developing new workforce programs and services. Upon recognizing that few PLA/CCP projects were meeting the Agency's Female Utilization Goal (6.9%) as of September 2022, Metro Board approved a motion in February 2023 to commission a refresh on the 2019 Workforce Disparity Study.

The purpose of the 2024 Construction Workforce Disparity Study is to provide an overview of the current state of the construction workforce, including forecasting the workforce supply and demand within the Greater Los Angeles Area and identifying the availability of female construction workers to meet demand and participation goals. Additionally, this updated study broadens the research on recruitment and retention barriers by incorporating findings from interviews and emerging practices. It also examines the potential use of cultural competency plan requirements and bid preference incentives as strategies to increase the participation of women in Metro funded construction projects. The 2024 Construction Workforce Disparity Study aims to support Metro's existing race conscious contracting goals with new findings and recommendations.

Current Economic and Workforce Conditions in LA County

While Los Angeles County is steadily recovering from work dislocations and business closures caused by the COVID-19 pandemic, the County now faces other issues such as inflation, population decline, an aging workforce, growing income inequality, limited affordable housing, increased homelessness, increased costs for operating a business, and a struggling commercial real estate market. As such, people of color and vulnerable populations continue to face economic and social disparities. Many residents living in low-income areas in Los Angeles struggle to access high wage jobs in high-growth sectors. Additionally, homelessness continues to disproportionately impact Black, Latino, Indigenous, immigrant, female, and LGBTQ+ communities. Women continue to earn less than their male counterparts in every age group and are more likely to hold jobs paying hourly rates at or below minimum wage.[12] There are current and upcoming opportunities for Los Angeles to support businesses and uplift workers in need.

[12] City of Los Angeles. *Year 25 Annual Plan for Program Year 2024-25 – DRAFT*. Los Angeles Economic & Workforce Development Department, accessed November 12, 2024, https://ewdd.lacity.gov/images/reports/ap25/APy25_draft1PlanOverview.pdf.

For example, there is historic federal funding for infrastructure from the Infrastructure Investment and Jobs Act, Inflation Reduction Act, and CHIPS and Science Act. Additional upcoming federal and state investments are projected to further bolster economic and workforce activity in the region and across industries. Significant federal investments in transportation and infrastructure will directly create construction and manufacturing occupations wherein two out of every three jobs created will be in either occupation. Los Angeles is also uniquely positioned to leverage its extensive sporting infrastructure to support businesses and workers, including the 2026 FIFA World Cup and the LA28 Olympic and Paralympic Games. While Los Angeles leverages upcoming economic opportunities, it is critical for the region to continue to improve its leading economic drivers and generators of jobs, such as Metro, Port of Los Angeles, Los Angeles World Airport, and others.[13]

Metro Programs Focused on Women in Construction

In partnership with the Los Angeles/Orange Counties Building and Construction Trades Council (LA/OCBCTC), Metro currently implements several programs and activities to support the attainment of and track its female utilization goal. These initiatives are summarized below.

Women Build Metro Los Angeles

Women Build Metro Los Angeles (WMBLA), a collaboration between community advocates and agency leadership, has hosted job fairs and "boot camps" to recruit women into construction careers. The collaboration aims to increase female participation in the construction sector and improve career development for female apprentices and journey workers in various trades.[14] WMBLA programs cover career pathways and assistance programs available for women interested in construction.[15] In 2016, in collaboration with Los Angeles Trade Technical College, WMBLA hosted their first all-female "construction boot camp" to introduce women to construction careers.[16] In 2021, WMBLA hosted a virtual apprenticeship readiness program.

[13] City of Los Angeles. *Year 25 Annual Plan for Program Year 2024-25 – DRAFT*. Los Angeles Economic & Workforce Development Department, accessed November 12, 2024, https://ewdd.lacity.gov/images/reports/ap25/APy25_draft1PlanOverview.pdf.
[14] LACMTA and WIN-LA, "Metro's Project Labor Agreement and Construction Careers Policy."
[15] Progressive Railroading, "LA Metro recruiting women for transportation construction careers," May 2019, https://www.progressiverailroading.com/labor/news/LA-Metro-recruiting-women-for-transportation-construction-careers--57551
[16] Jose Ubaldo and LACMTA, "Twenty one women graduate from Metro/L.A. Trade Tech construction boot camp," The Source, July 15, 2016, https://thesourcearchives.metro.net/2016/07/15/twenty-one-women-graduate-from-metrol-a-trade-tech-construction-boot-amp/.

Workforce Initiative Now – LA

Launched in 2017, Workforce Initiative Now-LA (WIN-LA) is a regional collaboration between Metro and several workforce, education, and community partners focused on creating career pathways in the transportation industry. These career pathways include construction, operations/maintenance, administration, and professional services. The construction sector program focuses on priority populations, including women, community college students, residents in economically disadvantaged areas, and veterans.[17] WIN-LA connects participants with a career coach and develops a career plan pathway to connect them to training, education, and workforce opportunities.[18]

Female Participation Score Card

In November 2017, the Metro Board of Directors approved a female participation score card for Metro construction projects to evaluate progress toward the Executive Order 11246 female construction workforce participation goal of 6.9%.[19] Contractors report female participation rates on the Score Card, which provides a standardized format to compare performance across Metro projects.

Women in the Trades Resource Guide

In Fall 2018, Metro published the Women in the Trades Resource Guide, a toolkit developed for contractors to recruit, employ, and retain women workers and promote a diverse workforce. The document includes guidance on outreach, recruitment, training resources, and worksite best practices. The guide recommends resources and services related to child care, gender sensitivity training, women's healthcare, and family support.

The Guide also encourages contractors to use the Female Worker Transition Tracking Sheet when a project reaches 80% completion to connect female workers to other Metro construction jobs and reduce gaps in employment between project assignments.[20] The Female Worker Transition Tracking Sheet helps contractors gather and share female worker contact information with Metro staff and contractors on other projects.[21]

[17] LACMTA, "WIN-LA Program Dashboard."
[18] LACMTA, "WIN-LA Program Dashboard: The Benefits."
[19] LACMTA and WIN-LA, "Metro's Project Labor Agreement and Construction Careers Policy."
[20] LACMTA, "Women in the Trades Resource Guide," Fall 2018, https://media.metro.net/about_us/pla/images/pla_women_trade_guide.pdf
[21] LACMTA, "Female Worker Transition Tracking Sheet," September 2018, https://media.metro.net/about_us/pla/images/jc_female_worker_transition_tracking_92018.pdf

Women Breaking Ground
In March 2024, Metro and LA/OCBCTC launched a new recruitment website, Women Breaking Ground, for women in construction.[22] Women Breaking Ground showcases success stories of women in construction and highlights their experiences on Metro projects.[23] The website also describes the benefits of construction careers, the unique characteristics of various trades, and the construction career path.[24]

Youth Outreach
Metro staff perform outreach to schools in the area to encourage infrastructure and construction careers.[25] These efforts are in collaboration with LA/OCBCTC, with whom Metro is preparing a pilot pre-apprenticeship program at LAUSD schools. This project is expected to begin in Spring 2025.

Local Workforce Development Initiatives and Policies

There is a need to act regionally to align resources to grow and retain a skilled workforce. Efforts to maximize infrastructure funding should be coupled with efforts to diversify the workforce impacted by investments. This is critical for rectifying the historical exclusion of people of color and women from careers in trades, which typically serve as pathways to high-quality jobs and family-sustaining wages. By increasing efforts to diversify the construction workforce and/or occupations impacted by funding, jurisdictions can promote equitable access to quality jobs particularly for populations in most need. Workforce diversification supports the creation of a robust supply of workers to meet industry demand, and it also addresses social and economic disparities faced by communities of color.[26]

For example, Metro is currently piloting a Cultural Competency Plan requirement into three Pre-Construction Phase Request for Proposals (RFPs), representing 5% of the maximum overall points a proposal could garner according to RFP evaluation criteria. Expansive in its framing, the requirement was originally intended to ensure that major Metro construction projects meaningfully benefit residents and businesses in the communities surrounding project sites and mitigate the negative impacts that might result from construction activities.

---

[22] LACMTA, “We're launching a website to support women seeking careers in construction. Here's why,” March 2024, https://thesourcearchives.metro.net/2024/03/08/were-launching-a-website-to-support-women-seeking-careers-in-construction-heres-why/.
[23] LACMTA and LA/OC BCTC, “Women Breaking Ground,” 2024, https://womenbreakground.com/.
[24] LACMTA and LA/OC BCTC, “Women Breaking Ground: Explore careers in construction,” 2024, https://womenbreakground.com/jobs/.
[25] LACMTA Construction Committee, “Project Labor Agreement/Construction Careers Policy,” board report, September 18, 2024.
[26] The Columbia-Willamette Workforce Collaborative. *Interstate Bridge Replacement Program (IBR).* Workystems, March 2024, https://worksystems.org/wp-content/uploads/2024/04/IBR2024_Workforce_Summary-2024-03-22_CWWC.pdf.

The East San Fernando Valley Light Rail (ESFV) is the first Metro project to prepare a Cultural Competency Plan. This plan is currently under collaborative development by the contractor and Metro representatives. It includes eleven distinct sections; one of these is dedicated to workforce development commitments to the East San Fernando Valley community, such as internships, ancillary service provision, career transition support, and partnership with STEM education programs.[27] The guiding principle of cultural competency refers to long-term positive community outcomes related to major Metro projects.[28]
The following section highlights current local workforce development and infrastructure-related initiatives across public agencies in LA County.

LA County's Women and Girls Initiative (WGI)
In 2022, the County Board of Supervisors formalized the Women and Girls Initiative (WGI), which is one of the largest-scale efforts in the U.S. to adopt a gender equity lens in all facets of government administration.[29] The WGI aims to comprehensively address gender equity issues across all 38 county departments. The assessments cover internal workforce experiences, representation in leadership, and barriers to county-provided social services.

The WGI workforce assessment focuses on internal county staff, but lessons can extend to the contracted construction workforce. For example, the County Fire Department is focusing on recruiting women into a male-dominated culture through PPE purchasing, hiring of a DEI Officer, and supporting women's recruitment.[30] This approach to culture change can guide ongoing collaboration with Women in Trades Advisory Council (WITAC) at LA County Department of Public Works, which facilitates discussions to increase female recruitment, training, placement, and retention in the construction industry.[31] After the creation of the WITAC, female construction hours on LA County Public Works projects increased.[32]

LA County InfrastructureLA Collaborative
Established as part of the County's efforts for regional recovery, InfrastructureLA is a multi-disciplinary, collaborative partnership of local agencies that aim to seek funding opportunities, build support, and effectively create resilient, equitable infrastructure for LA communities across the region. LA County Public Works leads the collaborative, which also includes the following member agencies: Metro, Los Angeles World Airports (LAWA), LA County Sanitation Districts, Los Angeles Department of Water & Power (LADWP), and the City of Los Angeles.

---

[27] San Fernando Transit Constructors, Cultural Competency Plan, interview by Estolano Advisors, September 23, 2024.
[28] San Fernando Transit Constructors, interview.
[29] County of Los Angeles Women and Girls Initiative, "Gender Impact Assessment Program 2024 Progress Report," June 2024, https://ceo.lacounty.gov/wp-content/uploads/2024/09/REPORT_WGI-Gender-Impact-Assessment-Program_2024-Progress-Report.pdf.
[30] Los Angeles County Chief Executive Office, "Final Report."
[31] Los Angeles County PW, "Community Workforce Agreement."
[32] Los Angeles County Chief Executive Office, "Final Report on the Implementation of the County's Women and Girls Initiative," 2024, https://ceo.lacounty.gov/wp-content/uploads/2024/09/BM_Final-Report-on-the-Implementation-of-the-Countys-WGI-1.pdf.

InfrastructureLA currently convenes a Construction Committee to collaborate and coordinate construction activities across the region. The collaborative also established a Workforce Development subcommittee, led by the LA County Department of Economic Opportunity (DEO) to "align with both federal equity and workforce development priorities and the LA County Board of Supervisors priorities of equity, sustainability, climate resilience, workforce development, economic development, and job creation" on Bipartisan Infrastructure Law (BIL) funded project proposals.[33]

City of LA Economic and Workforce Development Department's Proposed LA Workforce Infrastructure Network (LAWIN)

The City of Los Angeles Economic and Workforce Development Department (EWDD)'s strategic plan includes a recommendation to establish the LA Workforce Infrastructure Network (LAWIN), an on-going workforce systems collaborative consisting of cross-sector industries and representatives (e.g., various public, K-12 and higher education institutions, union locals, industry employers, and community partners supporting quality careers). The goal of this collaboration is to provide a platform to discuss how the City could prepare the workforce for the federal Investment Infrastructure and Jobs Act (IIJA) and Inflation Reduction Act (IRA) capital investments. In 2024, EWDD also commissioned a concept paper for this collaborative, which included recommendations to "ensure equity and inclusion in the new opportunities of quality skilled career pathways for all LA residents."[34]

The following report is a quantitative and qualitative analysis of gender in the regional construction workforce, resulting in recommendations for Metro to increase female participation in their construction workforce. This report begins with an analysis of female construction worker availability, demand, and training, followed by an assessment of key barriers and emerging practices related to child care, workplace culture, and procurement, including but not limited to bid preference and cultural competency mechanisms. The report concludes with a set of targeted recommendations for Metro to enhance female construction worker recruitment and retention.

[33] County of Los Angeles, "Los Angeles County Selected to Advance in National Initiative to Boost High-Quality Jobs" February 2022 https://lacounty.gov/2023/02/08/los-angeles-county-selected-to-advance-in-national-initiative-to-boost-high-quality-jobs/

[34] LA City Workforce Development Board, Economic and Workforce Development Department, and Mayor's Office, "2024 Concept Paper: Los Angeles Workforce Infrastructure Network," 2024, https://ewddlacity.com/images/reports/ap25/APy25_draft2Appendix9.pdf.

2. STATE OF FEMALE WORKERS IN CONSTRUCTION

To better understand female construction workforce availability in the Greater LA Area,[35] the consultant team[36] analyzed historical trends for female construction workers in the public and private sectors. The first section provides high level information about construction workers in the public and private sector over time by age and gender. The second section provides detailed information about each trade in the public sector, broken down by gender, year, and apprentice or journey-level status.[37] As **Table 2-1** shows, the consultant team developed a "crosswalk" of trades, crafts, and occupations to ensure consistent analysis of different construction roles.

Table 2-1: Crosswalk of Construction Trade, Metro Craft, and Standard Occupation Classification

Construction Trade	Metro Craft	Standard Occupation Classification (SOC)	SOC ID Code
BRICKLAYER AND TILE SETTER	Bricklayer, Stonemason	Brickmasons and Blockmasons	47-2021
	Marble Finisher, Terrazzo Finisher, Terrazzo Worker	Terrazzo Workers and Finishers	47-2053
CARPENTER	Carpenter and Related Trades	Carpenter	47-2031
	Millwright	Millwright	49-9044
	Drywall Installer / Lather (Carpenter)	Drywall Installers, Ceiling Tile Installers, and Tapers	47-2080
	Pile Driver (Carpenter)	Pile-Driver Operators	47-2072
ELECTRICIAN	Electrician	Electricians	47-2111
	Light Fixture Maintenance*	Electricians	47-2111
	Sound/Communication	Electricians	47-2111
	Telecommunications Technician*	Electricians	47-2111
	Telephone Installation*	Electricians	47-2111
	Electrical Utility Lineman	Electrical Power-Line Installers and Repairers	49-9051
ELEVATOR CONSTRUCTOR	Elevator Constructor	Elevator Installers and Repairers	47-4021

[35] The Greater LA Area includes five Southern California counties: Los Angeles, Orange, Riverside, Ventura, and San Bernadino.
[36] The consultant team includes Estolano Advisors and ICF.
[37] For the purposes of this study, the public sector is defined as projects covered by a labor agreement such as a Project Labor Agreement or a Community Workforce Agreement.

Construction Trade	Metro Craft	Standard Occupation Classification (SOC)	SOC ID Code
INSPECTOR	Inspector/Tester	Construction and Building Inspectors	47-4011
IRON WORKER	Boilermaker-Blacksmith	Boilermakers	47-2011
	Iron Worker	Structural Iron and Steel Workers; Reinforcing Iron and Rebar Workers	47-2221; 47-2171
LABORER	Asbestos Worker, Heat and Frost Insulator	Insulation workers	47-2130
	Carpet Layer*	Carpet Installers	47-2041
	Fire Safety and Miscellaneous Sealing*	Insulation workers	47-2130
	Furniture Mover & Related Classifications*	Laborers and Freight, Stock, and Material Movers, Hand	53-7062
	Gunite Worker (Laborer)*	Mixing and Blending Machine Setters, Operators and Tenders	51-9023
	Housemover (Laborer)*	Construction Laborers	47-2061
	Laborer and Related Classifications	Construction Laborers	47-2061
	Landscape Maintenance Laborer*	Landscaping and Groundskeeping Workers	37-3011
	Apprentice Landscape Irrigation Fitter	Landscaping and Groundskeeping Workers	37-3011
	Landscape Irrigation Fitter- LA METRO USE ONLY (New Maintenance of Way/Non Revenue Vehicle Building 61 s Design/Build)	Landscaping and Groundskeeping Workers	37-3011
	Landscape/Irrigation Laborer/Tender	Landscaping and Groundskeeping Workers	37-3011
	Parking and Highway Improvement (Striper-Laborer)*	Construction Laborers	47-2061
	Asbestos and Lead Abatement (Laborer) #	Hazardous Materials Removal Workers	47-4041
	Brick Tender	Helpers- Brickmasons, Blockmasons, Stonemasons, and Tile and Marble Setters	47-3011

Construction Trade	Metro Craft	Standard Occupation Classification (SOC)	SOC ID Code
LABORER	Horizontal Directional Drilling	Drilling and Boring Machine Tool Setters, Operators, and Tenders, Metal and Plastic	51-4032
	Plaster Tender	Helpers- Painters, Paperhangers, Plasterers, and Stucco Masons	47-3014
	Tunnel Worker (Laborer)*	Construction Laborers	47-2061
OPERATING ENGINEER	Cranes, Pile Driver and Hoisting Equipment (Operating Engineer), Operating Engineer, Operating Engineer (Landscape Construction)	Operating Engineers and Other Construction Equipment Operators	47-2073
	Engineer	Operating Engineers and Other Construction Equipment Operators	47-2073
	Building / Construction Inspector and Field Soils and Material Tester	Construction and Building Inspectors	47-4011
	Field Surveyor	Surveyors	17-1022
	Tunnel (Operating Engineer)*	Operating Engineers and Other Construction Equipment Operators; Rail-Track Laying and Maintenance Equipment Operators; Paving, Surfacing, and Tamping Equipment Operators	47-2073; 47-4061; 47-2071
PAINTER	Painter, Painter – Industrial	Painters, Construction and Maintenance	47-2141
	Drywall Finisher	Tapers	47-2082
	Carpet, Linoleum, Resilient*	Floor Layers, Except Carpet, Wood, and Hard Tiles	47-2042
	Glazier	Glaziers	47-2121
PLASTERER AND CEMENT MASON	Cement Mason	Cement Masons and Concrete Finishers	47-2051
	Plasterer	Plasterers and Stucco Masons	47-2161

Construction Trade	Metro Craft	Standard Occupation Classification (SOC)	SOC ID Code
PLUMBER AND PIPEFITTER	Fire Sprinkler Fitter*	Plumbers, Pipefitters, and Steamfitters	47-2152
	Meter Technician*	Plumbers, Pipefitters, and Steamfitters	47-2152
	Plumber	Plumbers, Pipefitters, and Steamfitters	47-2152
	Plumbing HVAC	Plumbers, Pipefitters, and Steamfitters	47-2152
ROOFER	Metal Roofing Systems Installer	Roofers	47-2181
	Roofer	Roofers	47-2181
SHEET METAL	Sheet Metal Worker (HVAC)	Sheet Metal Workers	47-2211
		Sheet Metal Workers	47-2211
SURVEYOR	Surveyor	Chief of Party; Chainman/Rodman; Surveyors	17.3031.01; 17.3031.01; 17-1022
TEAMSTER/DRIVER	Driver (On/Off-Hauling To/From Construction Site)*	Heavy and Tractor-Trailer Truck Drivers	53-3032
	Teamster	Heavy and Tractor-Trailer Truck Drivers	53-3033

*Non-apprentice crafts

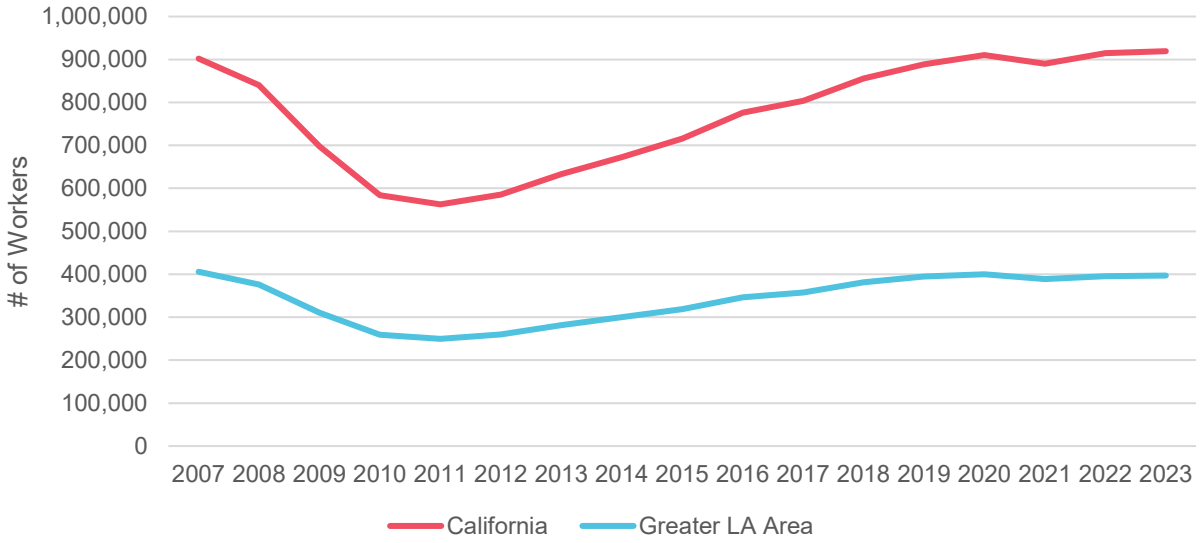
Public and Private Sector Regional Construction Workforce Availability

The U.S Census Bureau Quarterly Workforce Indicators (QWI) provides workforce data for various employment sectors in the United States, including the Construction Sector (NAICS 23), which includes the construction of residential and non-residential buildings, heavy and civil engineering construction, and other specialty trade contractors.[38] While not limited to public works construction, the QWI data provides valuable information about age and gender in the construction sector. The following section summarizes construction workforce trends in the public and private sector over the last 17 years using QWI employment data.

[38] Based on North American Industry Classification System (NAICS) Code 23: Construction Sector. The Construction Sector comprises establishments primarily engaged in the construction of buildings or engineering projects (e.g., highways and utility systems). Establishments primarily engaged in the preparation of sites for new construction and establishments primarily engaged in subdividing land for sale as building sites also are included in this sector. Construction work done may include new work, additions, alterations, or maintenance and repairs. Activities of these establishments generally are managed at a fixed place of business, but they usually perform construction activities at multiple project sites.

As shown in **Figure 2-1**, the size of the construction workforce in the Greater LA Area has followed similar patterns to the construction workforce statewide. The Greater LA Area accounts for nearly half of the statewide construction workforce. Both geographies experienced significant declines in employment due to the 2007-2009 Great Recession, but employment rates steadily increased following this period, with construction workforce growth trending slightly higher statewide compared to the Greater LA Area. Starting in 2019, growth rates in the Greater LA Area and statewide began to stagnate.

Figure 2-1: Construction Workforce in Greater LA Area and California (2007-2023)

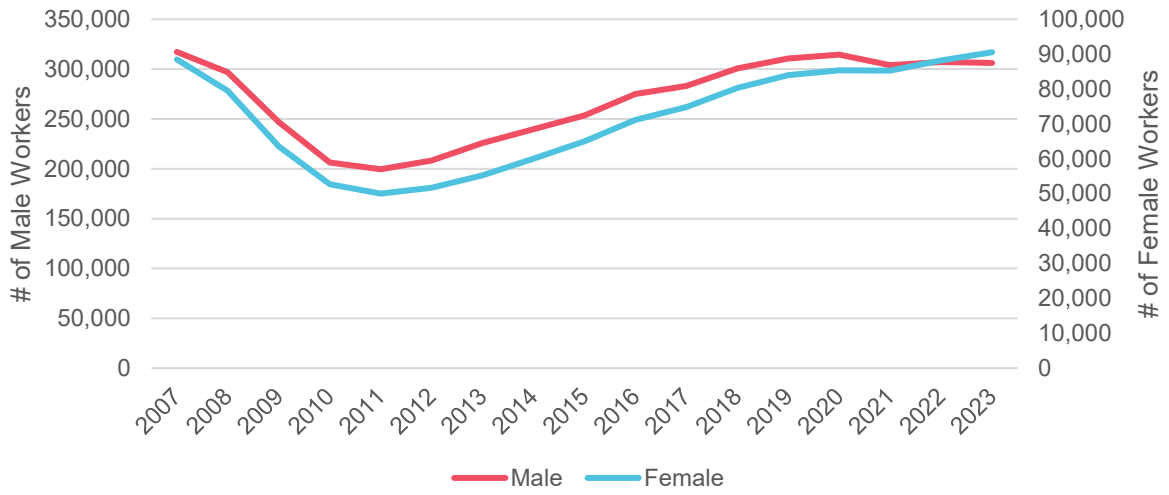


Source: U.S. Census Bureau, Quarterly Workforce Indicators

Although men make up a large majority of the construction workforce in the Greater LA Area, male and female construction workforce trends historically mirror one another. As shown in **Figure 2-2**, male and female construction workforce trends were very similar from 2007 to 2019. Between 2020 and 2023, the female construction workforce grew by a small margin while the male construction workforce declined slightly. While the difference in growth rates is only slight, these trends highlight that the female construction workforce has recently started growing at a faster rate than the male construction workforce.

In a 10-year period, between the years 2013 and 2023, the number of women in the construction sector in the Greater LA Area increased by 64%, as shown in **Table 2-2**. This is far higher than the 10-year growth average for men in the construction sector (35%). As a result, women occupied a slightly larger share of the construction workforce in 2023 compared to 2013, increasing from 20% to 23%. While this growth highlights higher female participation in the construction workforce over the last 10 years, men still account for the vast majority of the construction workforce to date.

Figure 2-2: Construction Workforce in Greater LA Area by Gender (2007-2023)



Source: U.S. Census Bureau, Quarterly Workforce Indicators

Table 2-2: Construction Workforce Trend in Greater LA by Gender (2013-2023)

Year	Total Workers	Female			Male		
		# of Workers	Annual % Growth	% of Total[39]	# of Workers	Annual % Growth	% of Total
2013	281,351	55,267	N/A	20%	226,083	N/A	80%
2014	299,766	60,107	9%	20%	239,656	6%	80%
2015	318,645	65,028	8%	20%	253,616	6%	80%
2016	346,385	71,161	9%	21%	275,227	9%	79%
2017	357,838	74,878	5%	21%	282,957	3%	79%
2018	381,038	80,306	7%	21%	300,730	6%	79%
2019	394,600	83,983	5%	21%	310,618	3%	79%
2020	399,895	85,398	2%	21%	314,499	1%	79%
2021	389,085	85,250	0%	22%	303,837	-3%	78%
2022	395,557	88,236	4%	22%	307,322	1%	78%
2023	396,892	90,556	3%	23%	306,331	0%	77%
10-Yr Growth Average	**41%**	**64%**	N/A	N/A	**35%**	N/A	N/A

Source: U.S. Census Bureau, Quarterly Workforce Indicators

[39] This dataset includes all employees of businesses in the Construction Sector as defined by North American Industry Classification Code 23. This definition includes some office workers and others who do not regularly perform construction work as described elsewhere in this study.

Construction workforce growth rates have declined significantly since Metro's last Workforce Disparity Study in 2019. In the previous iteration of this study, the male and female construction workforce grew by 26% and 35%, respectively, over a 5-year period from 2013 to 2017. As shown in **Table 2-3**, new data highlights a sharp drop in these trends. In the 5-year period (2019-2023) following the release of the previous study, the female construction workforce grew by 8%, and the male construction workforce decreased by 1%. While the female construction workforce continues to grow at a faster rate than the male construction workforce, both have experienced significantly lower growth rates in recent years.

Table 2-3: Construction Workforce Trend in Greater LA by Gender (2019-2023)

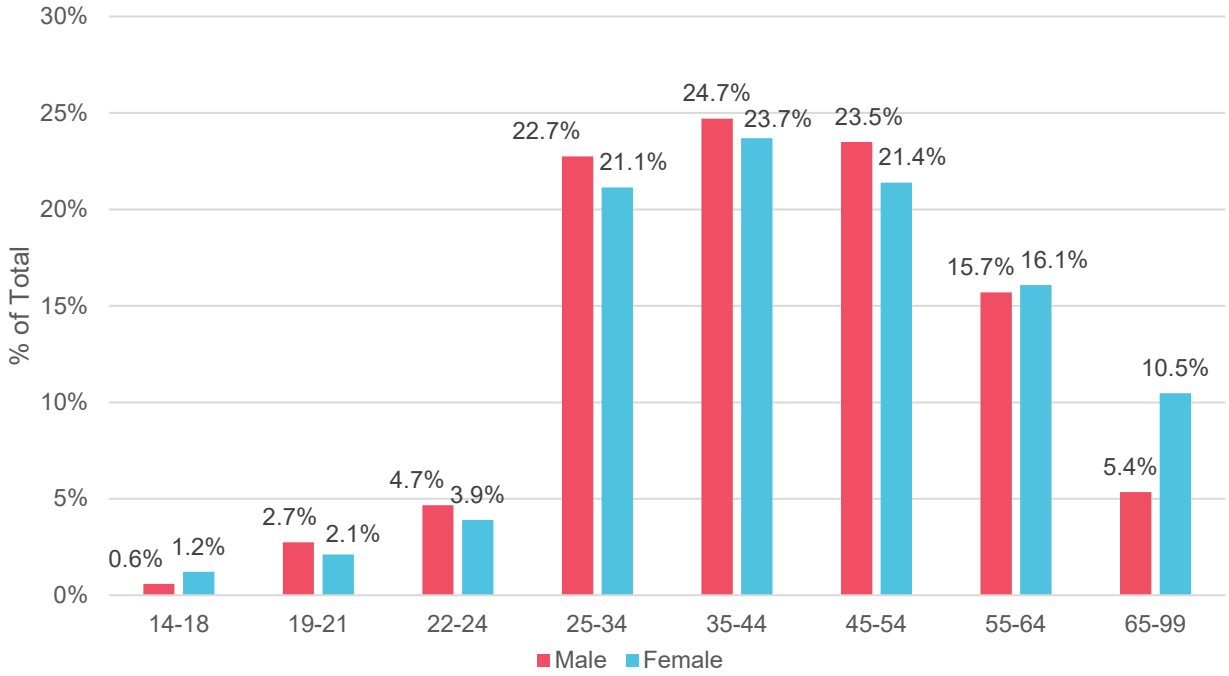
Year	Total Workers	Female			Male		
		# of Workers	Annual % Growth	% of Total [40]	# of Workers	Annual % Growth	% of Total
2019	394,600	83,983	N/A	21%	310,618	3%	79%
2020	399,895	85,398	2%	21%	314,499	1%	79%
2021	389,085	85,250	0%	22%	303,837	-3%	78%
2022	395,557	88,236	4%	22%	307,322	1%	78%
2023	396,892	90,556	3%	23%	306,331	0%	77%
5-Yr Growth Average	**1%**	**8%**	N/A	N/A	**-1%**	N/A	N/A

Source: U.S. Census Bureau, Quarterly Workforce Indicators

Figure 2-3 highlights the 10-year overall distribution of the construction workforce in the Greater LA Area by age and gender. Between 2013 and 2023, the average age distribution between men and women were roughly the same, with most of the workforce for both men and women being between the ages of 25 and 54. There is a much larger share of women near retirement age in the construction workforce than men, and there is a slightly lower share of younger women (ages 14 to 34) in the construction workforce than younger men.
The trends shown below solidify the trends seen in Metro's 2019 Workforce Disparity Study. Since 2019, the construction workforce in Greater LA has continued to grow older, highlighting the need to recruit new construction workers to replace an aging workforce.

[40] This dataset includes all employees of businesses in the Construction Sector as defined by North American Industry Classification Code 23. This definition includes some office workers and others who do not regularly perform construction work as described elsewhere in this study.

Figure 2-3: Construction Workforce in Greater LA Area by Age and Gender (2013-2023)

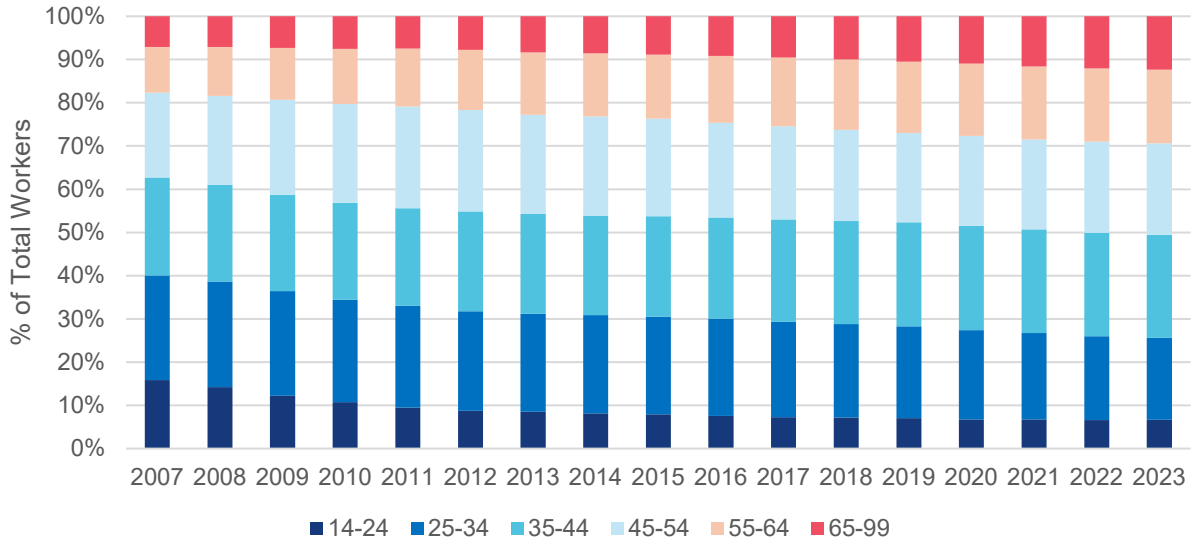


Source: U.S. Census Bureau, Quarterly Workforce Indicators

Figure 2-4 visualizes the change in age distribution for the female construction workforce in the Greater LA Area from 2007 to 2023. The share of younger female construction workers (ages 14 to 24) has shrunk by almost 10 percent while the share of older female construction workers (ages 55 and older) has increased by over 10 percent. This highlights that younger workers are not entering the construction workforce at the same rate as earlier generations, confirming trends first identified in Metro's 2019 Workforce Disparity Study.

Almost 20% of the female construction workforce is within 10 years of the average retirement age in California. Based on these trends, the region will need to significantly increase the recruitment of younger women into the construction sector to replace the large proportion of women who will likely retire from the industry soon.

Figure 2-4: Female Construction Workforce in Greater LA Area by Age (2007-2023)



Source: U.S. Census Bureau, Quarterly Workforce Indicators

Public Workforce Hiring Requirements and Goals

Public agencies in Los Angeles County have prioritized local populations and disadvantaged workers through minimum hiring requirements in public projects. Project Labor Agreement (PLA) hiring provisions have become the norm in the region, although each agency uses a different system of qualification and prioritization among its target populations.[41] **Table 2-4** shows a high-level summary overview of Metro's hiring requirements and goals. **Appendix A** shows an overview of hiring requirements and goals from nine other public agencies which, alongside Metro, comprise most of the public sector construction activity in the Los Angeles region. Most agencies have separate requirements that contractors must meet when staffing qualifying projects: one that is geographic (e.g., zip code's annual household income or relative poverty level) and another that is categorical (e.g., veteran status, former incarceration, homelessness, and former foster youth, etc.).

[41] PLA refers to a Project Labor Agreement between a public agency and the LA/OC Building and Construction Trades Council (LA/OC BCTC a/k/a Building Trades). Eight out of the ten agencies analyzed in this report utilize a PLA; LA Unified School District calls their master labor agreement a Project Stabilization Agreement (PSA) and the LA County Department of Public Works has a Countywide Community Workforce Agreement (CWA). The analysis of Metro's PLA includes the agency's Construction Careers Policy (CCP). In this report, the term "PLA" is inclusive of all these contracts and policies.

Table 2-4: Metro Hiring Requirements and Goals

Public Agency Labor Agreement Effective Dates	**Hiring Requirement***	**Definition**
LA County Metro Project Labor Agreement and Construction Careers Policy 2017 - 2027	***Metro: Non-Federally Funded (and FTA-funded, 2021-2025)***	
	40% Local Targeted	
	First Priority: Community Area Residents	Residence within an ED or EED area within a 5-mile radius of covered project.
	Second Priority: Local Residents from Extremely Economically Disadvantaged (EED) areas	Residence within an EED area in LA County. EED area is median annual household income less than $32,000 per year.
	Third Priority: Local Residents from Economically Disadvantaged (ED) areas	Residence within an ED area in LA County. ED area is median annual household income less than $40,000 per year.
	10% Disadvantaged	Residence within LA County, resides within EED or ED area, and meets at least two barriers: homeless, custodial single parent, receiving public assistance, lacking GED or high school diploma, criminal record or involvement with criminal justice system, suffering from chronic unemployment, emancipated from foster care system, veteran of Iraq/Afghanistan war, apprentice with less than 15% of required hours.
	20% Apprentices	
	50% of apprenticeship hours performed by Local Targeted Workers	Participant in California Division of Apprenticeship Standards approved program.
	6.9% Female Utilization Goal*	Exceed Federal Executive Order 11246 goal.
	Metro: Federally Funded	
	40% National Targeted	
	First Priority: National Extremely Economically Disadvantaged areas	Residence within an EED area in the US.
	Second Priority: National Targeted Worker	Residence within an EED or ED area in the US.
	10% Disadvantaged	Resides within EED or ED area, and meets at least two barriers: homeless, custodial single parent, receiving public assistance, lacking GED or high school diploma, criminal record or involvement with criminal justice system, suffering from chronic unemployment, emancipated from foster care system, veteran of Iraq/Afghanistan war, apprentice with less than 15% of required hours.
	20% Apprentices	
	50% of apprenticeship hours performed by National Targeted Workers	Participant in US Department of Labor or California Division of Apprenticeship Standards approved program.
	6.9% Female Utilization Goal*	Exceed Federal Executive Order 11246 goal.

Key:
Geographic
Categorical
Apprentice
Female Utilization

*Metro's 6.9% female utilization target is a goal, not an explicit requirement

Apprentice and Female Utilization Requirements

Five agencies have some form of apprentice utilization requirements, which ensure that new tradespeople are exposed to skill-building opportunities. Only two public owners (Metro and the Port of Los Angeles) require a minimum of 20% of work hours completed by apprentices. Other agencies that have apprentice requirements set categorical or geographic minimums for the makeup of the apprentice workforce. For example, the Port of Long Beach requires that a quarter of apprentices are first-year apprentices. The City of Los Angeles requires that half of apprenticeship hours are completed by local residents or transitional workers (based on their set of criteria).

Metro is the only agency to set an aspirational goal for female utilization. Similarly, there is a disparity across agencies in the adoption of apprentice utilization requirements, which pose no preemption conflicts with Prop 209. This is an area of opportunity to build a pipeline into the trades for women and minority workers who will seek work with a variety of agencies as they embark on their careers.

Prop 209 limits California public agencies in their ability to set gender and race-specific hiring requirements for contracts. Instead, Metro utilizes a best-effort female utilization goal to encourage contractors to increase the number of women working on Metro-funded projects. While the region has set strong goals for local and disadvantaged/transitional workers, the requirements can be strengthened through Prop 209-compliant aspirational goals.

Public Sector Regional Construction Workforce Availability

To estimate the public works construction workforce availability, the consultant team utilized payroll data from LCPtracker, a payroll system used by most public works construction projects in the Greater LA Area[42] to track hours by gender, trade, apprentice or journey-level status, and other parameters. Every worker in LCPtracker's system has worked on a project using a labor agreement such as a project labor agreement (PLA) or community workforce agreement (CWA). Many public construction projects in the Greater LA Area use PLAs, so every worker recorded in LCPtracker could hypothetically work on public construction projects, including those at Metro. As such, the consultant team analyzed this data to estimate the public works construction workforce in the Greater LA region.

Metro's 2019 Workforce Disparity Study also utilized LCPtracker to estimate the public works construction workforce in the Greater LA region; however, the previous study analyzed data from a specific set of public agencies. The consultant team expanded the dataset for this study to include all agencies and companies that use project labor agreements (PLAs). As a result, this study provides a more complete representation of the construction workforce that is eligible to work on public works construction projects.

Table 2-5 highlights the workforce utilization of men and women by trade in Greater LA and Metro projects. Metro's most utilized trades between 2019 and 2023 were 1) Laborers, 2) Electrician, and 3) Operating Engineers. The most utilized trades in Greater LA were 1) Laborers, 2) Carpenters, and 3) Electrician. Although the top trade for both Greater LA and Metro projects was Laborers, Metro utilized a much higher share (37.79%) than Greater LA (23.69%). Conversely, Metro utilized a much lower share of Carpenters (10.75%) compared to the Greater LA region (20.34%).

[42] The Greater LA Area includes five Southern California counties: Los Angeles, Orange, Riverside, Ventura, and San Bernadino.

Table 2-5: Workforce Utilization by Trade for Men and Women: Greater LA and Metro (2019-2023)

Trade	Greater LA	Metro
Bricklayer and Tile Setter	1.70%	0.24%
Carpenter	20.34%	10.75%
Electrician	14.54%	14.11%
Elevator Constructor	0.70%	2.06%
Inspector	1.38%	3.61%
Iron Worker	6.18%	5.57%
Laborer	23.69%	37.39%
Operating Engineer	9.34%	12.17%
Painter	4.42%	1.70%
Plasterer and Cement Mason	4.16%	3.00%
Plumber and Pipefitter	5.94%	1.56%
Roofer	1.13%	0.38%
Sheet Metal	3.36%	1.32%
Surveyor	0.47%	1.12%
Teamster/Driver	2.66%	5.03%
Total:	**100.0%**	**100.00%**

Source: LCPtracker

Similarly, **Table 2-6** highlights the share of construction apprentice work hours for Greater LA and Metro from 2019 to 2023. Apprentices make up a greater share of the construction work performed in Greater LA than on Metro projects across all trades. However, Metro has a much lower share of apprentice utilization in the Elevator Constructor and Painter trades.

Table 2-6: Share of Apprentice Work Hours by Trade between Greater LA and Metro (2019-2023)

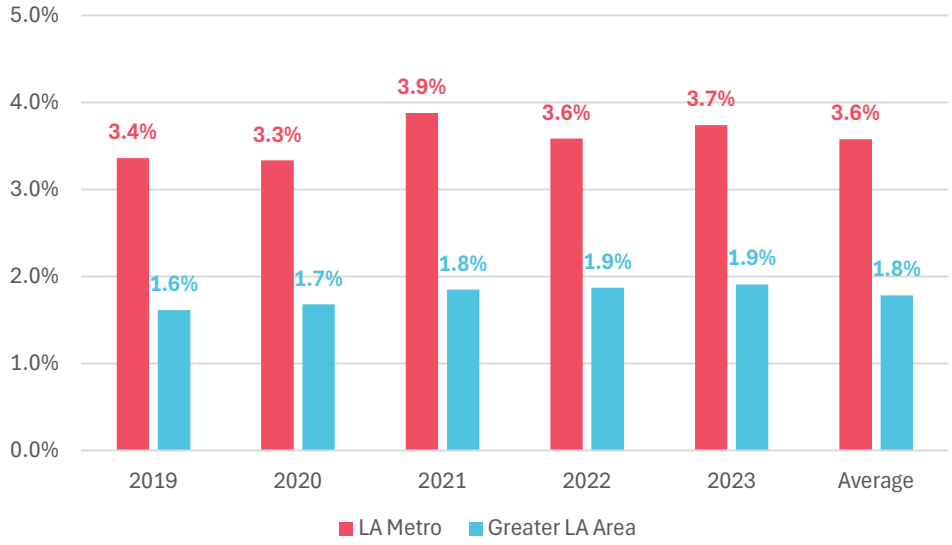
Trade	Greater LA	Metro
Bricklayer and Tile Setter	17.21%	24.08%
Carpenter	23.59%	22.56%
Electrician	28.47%	25.83%
Elevator Constructor	40.14%	25.71%
Inspector	6.23%	6.13%
Iron Worker	26.71%	22.96%
Laborer	10.19%	8.12%
Operating Engineer	7.12%	10.73%
Painter	22.49%	13.00%
Plasterer and Cement Mason	14.10%	14.19%
Plumber and Pipefitter	31.42%	32.95%
Roofer	25.65%	27.14%
Sheet Metal	26.02%	27.61%
Surveyor	24.83%	24.54%
Teamster/Driver	0.45%	1.09%
Total:	**19.1%**	**14.46%**

Source: LCPtracker

Figure 2-5 shows the female participation on both Metro construction projects and other public works projects in the Greater LA Area. The average female participation rate between 2019 and 2023 on Metro construction projects was 3.6%, a 0.1% increase from the average female participation rate from 2014-2018 (3.5%). In contrast, the 5-year average female participation rate on non-Metro public works construction projects in the Greater LA Area declined during the same period, from 1.9% (2014-2018) down to 1.8% (2019-2023).

Table 2-7 highlights participation rates on Metro construction projects from 2019 to 2023. Metro's share of construction work hours slowly declined from 2019 to 2023, with Metro accounting for 8.9% of all construction work hours in the Greater LA Area in 2023. Notably, Metro accounts for a much larger share of female construction work hours compared to all work hours in the Greater LA Area. For example, while Metro supplied 8.9% of all construction work hours in 2023, Metro supplied 17.5% of all female construction work hours the same year.

Figure 2-5: Female Participation on Metro Construction Projects (2019-2023)



Source: LCPtracker

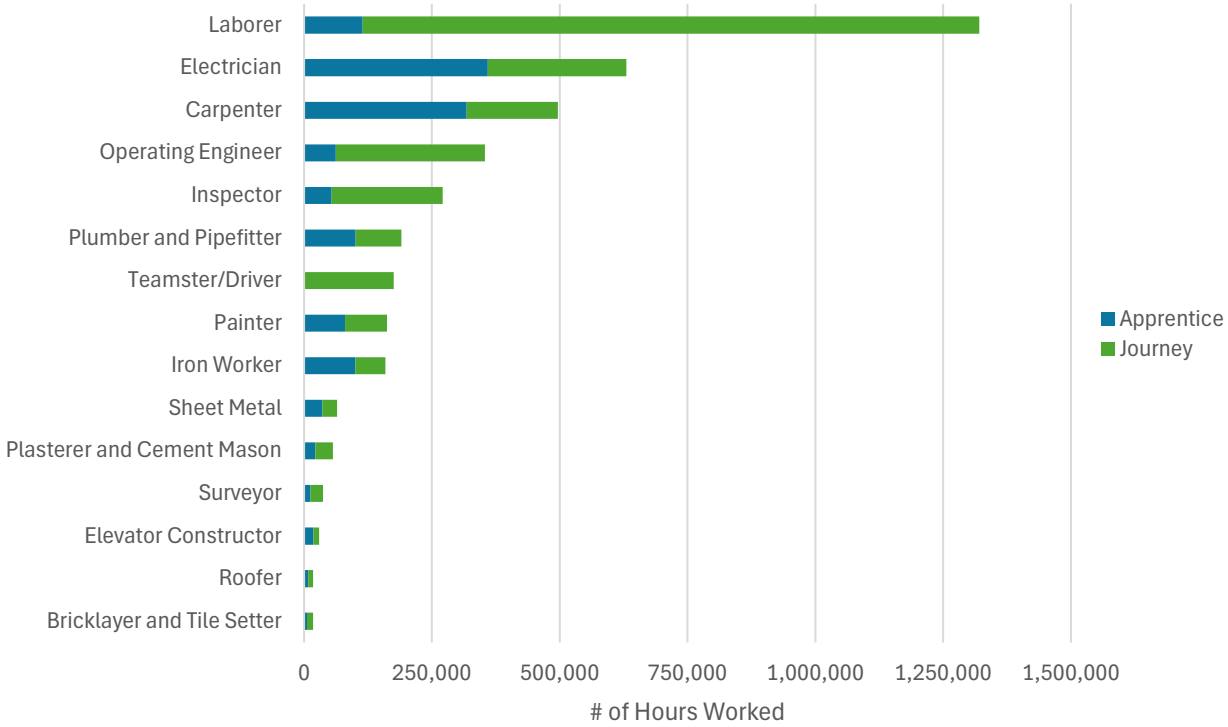
Table 2-7: Female Participation on Metro Construction Projects (2019-2023)

Year	All Work Hours			Female Work Hours		
	Greater LA Area	Metro	Metro's % Share	Greater LA Area	Metro	Metro's % Share
2019	36,751,902	4,332,876	11.8%	592,684	145,647	24.6%
2020	44,156,816	4,377,519	9.9%	740,692	145,874	19.7%
2021	46,687,291	4,422,529	9.5%	862,700	171,503	19.9%
2022	47,393,519	4,178,673	8.8%	885,554	149,688	16.9%
2023	47,149,250	4,214,979	8.9%	899,786	157,554	17.5%

Source: LCPtracker

Figure 2-6 shows the estimated number of female construction work hours by trade and by apprentice or journey-level status in the Greater LA Area. The trades with the highest number of female construction work hours were (1) Laborer; (2) Electrician; (3) Carpenter; (4) Operating Engineer and (5) Inspector. Laborers account for over one-third of female construction work hours. The trade with the lowest percentage of female apprentice hours was Teamster/Driver. Conversely, the trade with the highest percentage of female apprentice hours was Elevator Constructor, with 70% of all elevator constructor hours performed by apprentices.

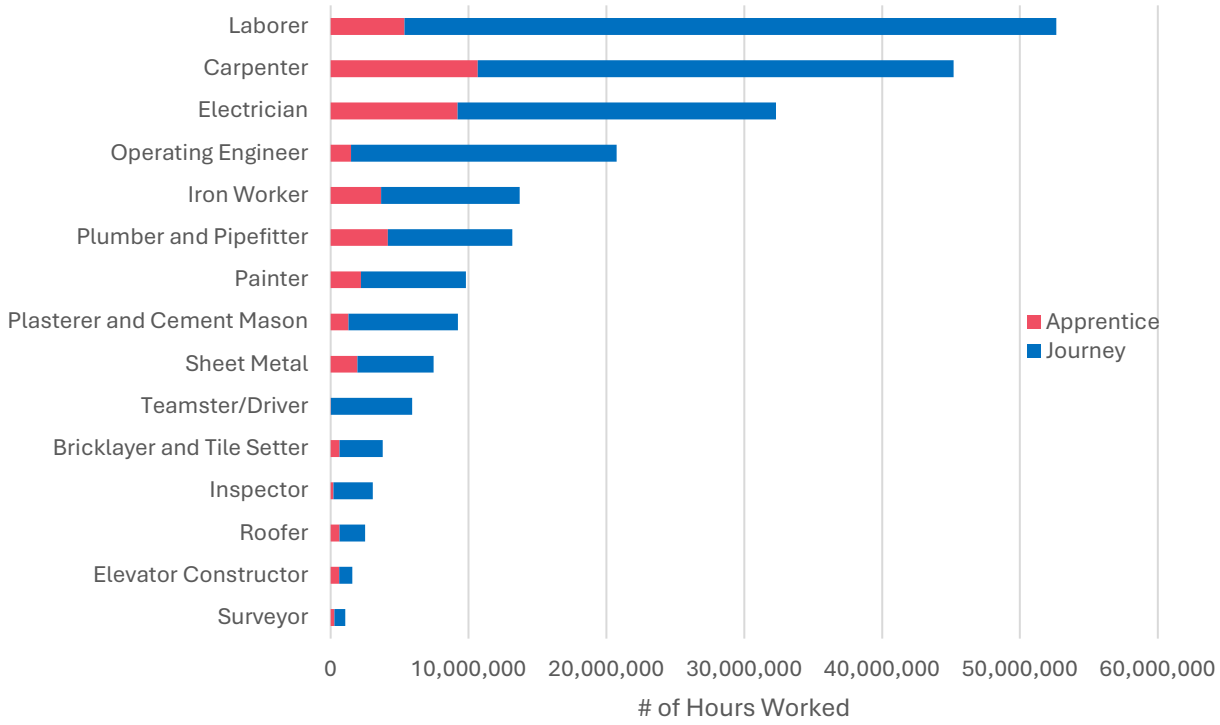
Figure 2-6: Estimated Female Hours Worked on Regional Public Works Construction Projects (2019-2023)



Source: LCPtracker

Figure 2-7 similarly shows the estimated work hours by trade and apprentice or journey-level status for male construction workers in Greater LA. The trades with the highest number of male construction work hours were 1) Laborer; 2) Carpenter; 3) Electrician; 4) Operating Engineer; 5) Iron Worker. Over half of all male construction hours were performed by the top three trades. Laborers account for the most work hours for both male and female construction workers, but the share of total construction work hours is higher for female laborers than male. The trades with the lowest apprenticeship utilization rates for male construction work hours were 1) Teamster/Driver; 2) Inspector; 3) Operating Engineer; 4) Laborer; and 5) Plasterer and Cement Mason. Elevator Constructor was the top trade for apprentice utilization for male construction hours as well.

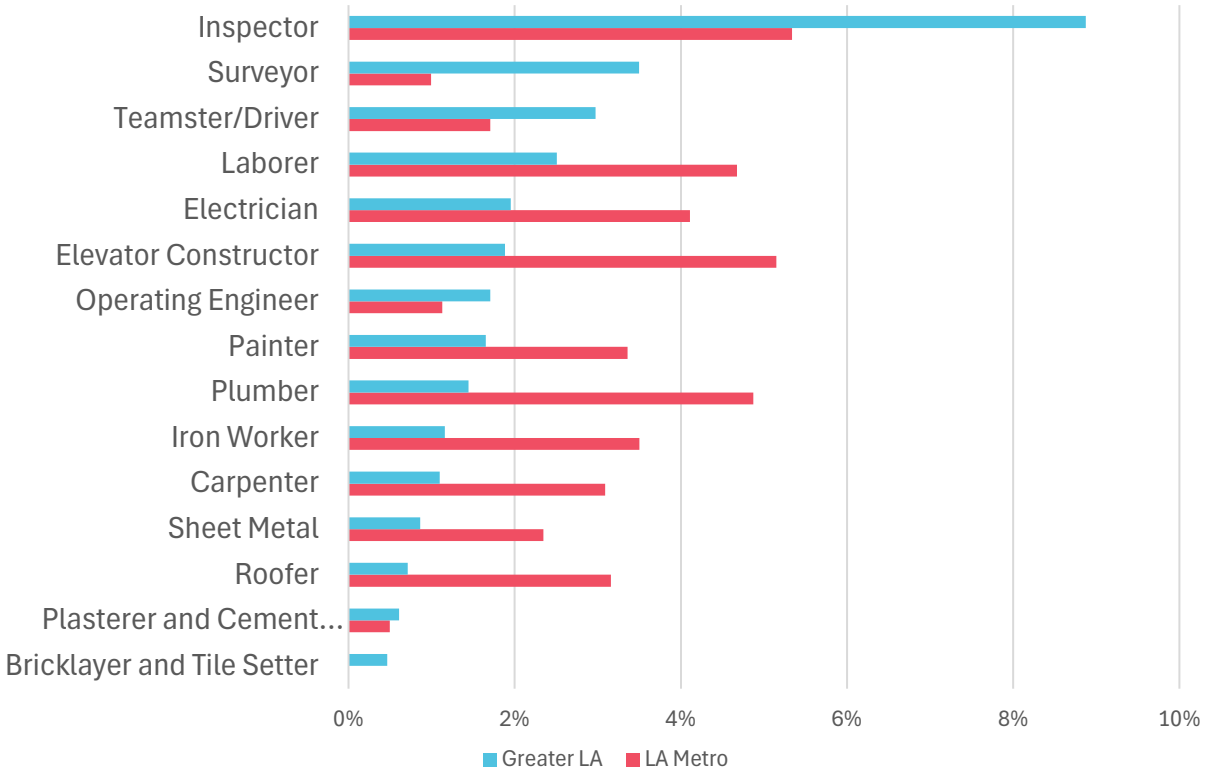
Figure 2-7: Estimated Male Hours Worked on Regional Public Works Construction Projects (2019-2023)



Source: LCPtracker

Figure 2-8 highlights female participation rates by trade on construction projects in Greater LA and at Metro from 2019 to 2023. Overall, female construction workers at Metro have a higher participation rate than Greater LA. The only trades where Metro has a lower participation rate than Greater LA are (1) Inspector; (2) Surveyor; (3) Teamster/Driver; (4) Operating Engineer and (5) Bricklayer and Tile Setter. Notably, Inspectors in Greater LA are exceeding the goal of 6.9% female participation set by the US Department of Labor's Office of Federal Contract Compliance Programs (OFCCP), but all other trades in Greater LA are not meeting the goal of 6.9% female participation.

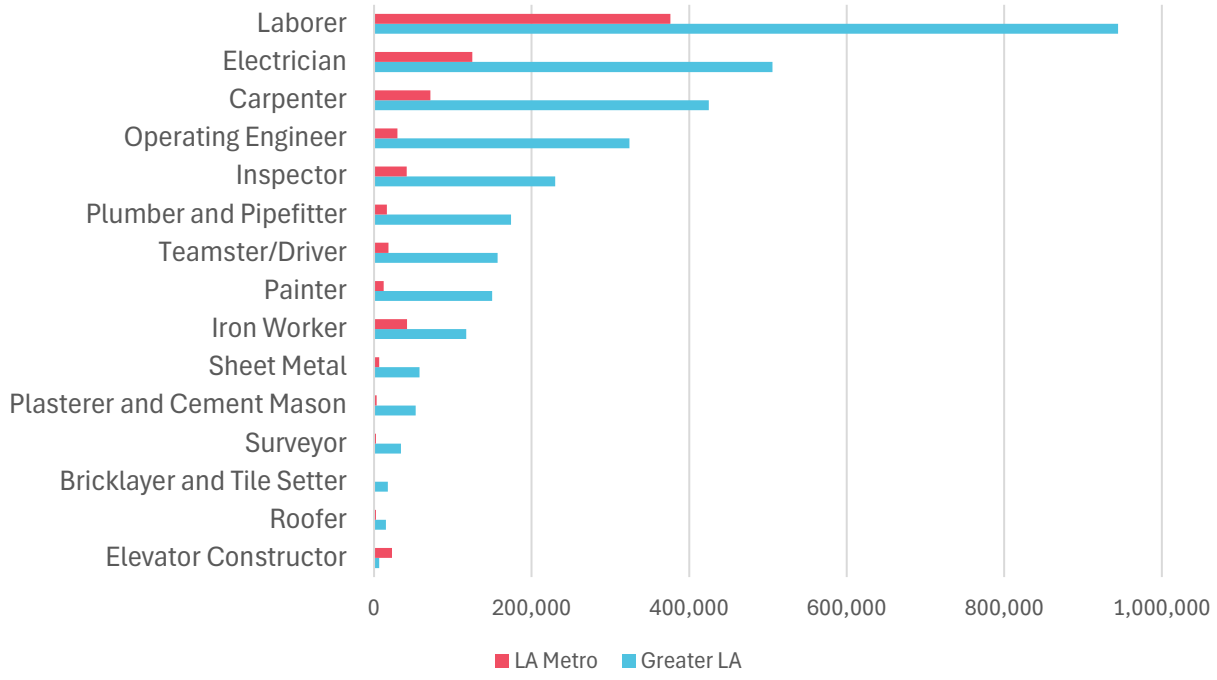
Figure 2-8: Female Work Hour Participation on Construction Projects at Metro and in Greater LA by Trade (2019-2023)



Source: LCPtracker

Figure 2-9 highlights female work hours performed by trade on construction projects in Greater LA and at Metro from 2019 to 2023. The top three trades in terms of female work hours for both were 1) Laborer; 2) Electrician; and 3) Carpenter. However, Metro's fourth ranking trade for total female work hours was Iron Worker, whereas Greater LA ranks Iron Workers ninth. Elevator Constructors were the only trade in which Metro utilized more female work hours than the region.[43]

Figure 2-9: Female Work Hours Performed on Construction Projects at Metro and in Greater LA by Trade (2019-2023)

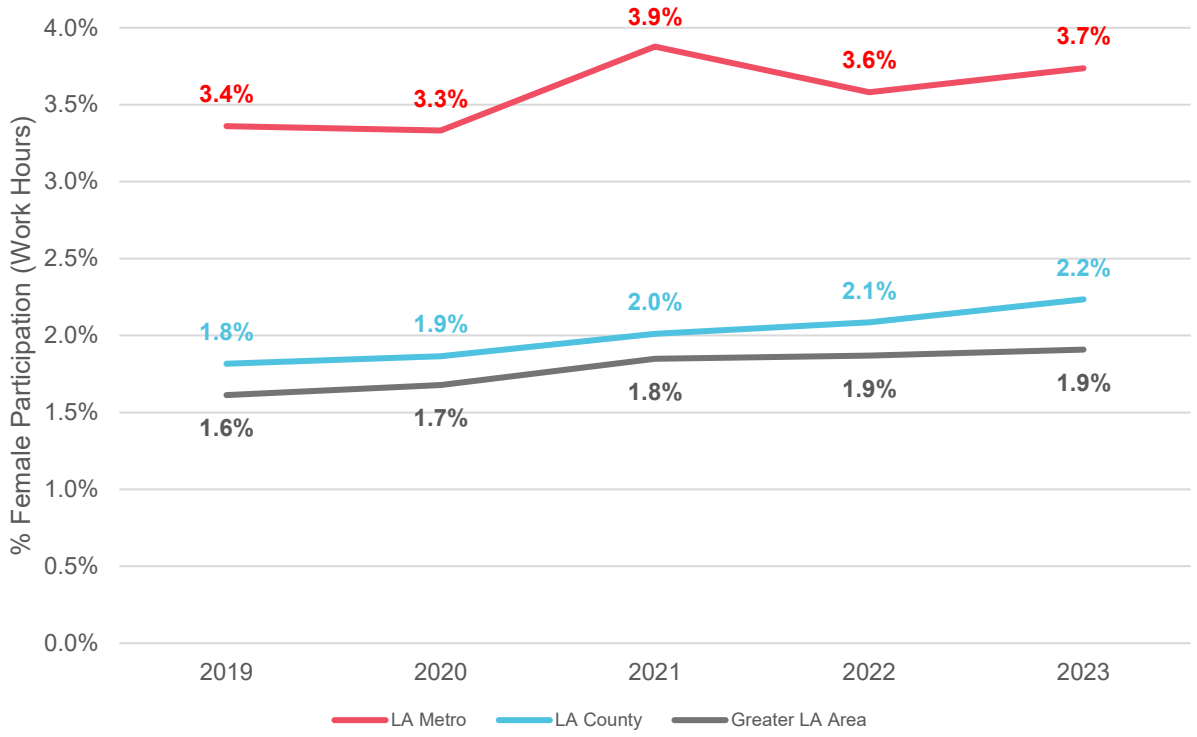


Source: LCPtracker

[43] The consultant team subtracted work hours performed for Metro from work hours performed in Greater LA.

Figure 2-10 highlights female participation rates by work hours on construction projects between Metro, LA County[44], and the Greater LA Area.[45] Female participation rates slowly rose from 2019 to 2023 for Metro, LA County, and the Greater LA Area. With a peak female participation rate of 3.9% in 2021, Metro maintained a higher female participation than the region between 2019 and 2023. While Metro outperforms the region overall, the agency is still far below the goal of 6.9% female participation set by OFCCP.

Figure 2-10: Female Participation on Construction Projects (Metro, LA County and Greater LA Area)

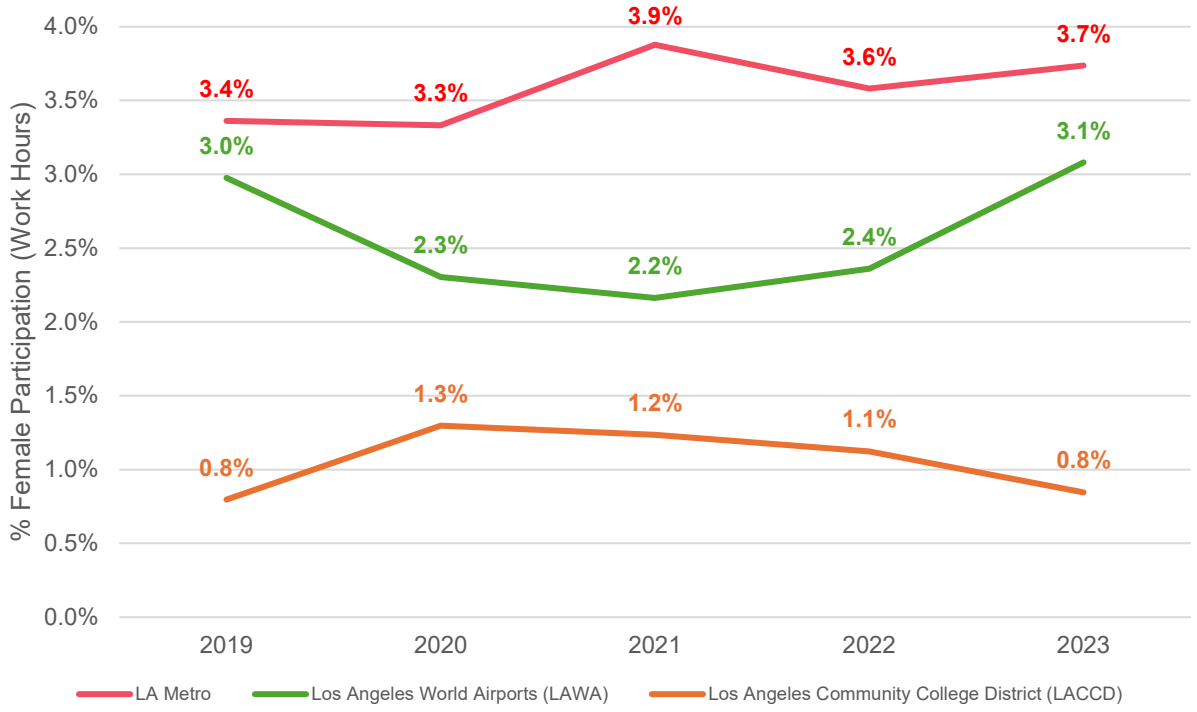


Source: LCPtracker

Figure 2-11 highlights female participation rates by work hours on construction projects between Metro and the Los Angeles Community College District (LACCD). With a peak female participation rate of 3.9% in 2021, Metro maintained a higher female participation than LA County, the Greater LA Area, and other agencies like LA County Public Works and LACCD between 2019 and 2023.[46]

[44] "LA County" includes all public works construction taking place within the county boundary, including all Metro construction and some multi-county projects that intersect LA County.
[45] The Greater LA Area includes five Southern California counties: Los Angeles, Orange, Riverside, Ventura, and San Bernadino.
[46] From January 2020 to May 2024, Los Angeles County Public Works had a female participation rate of 1.44%, spanning 804 projects.

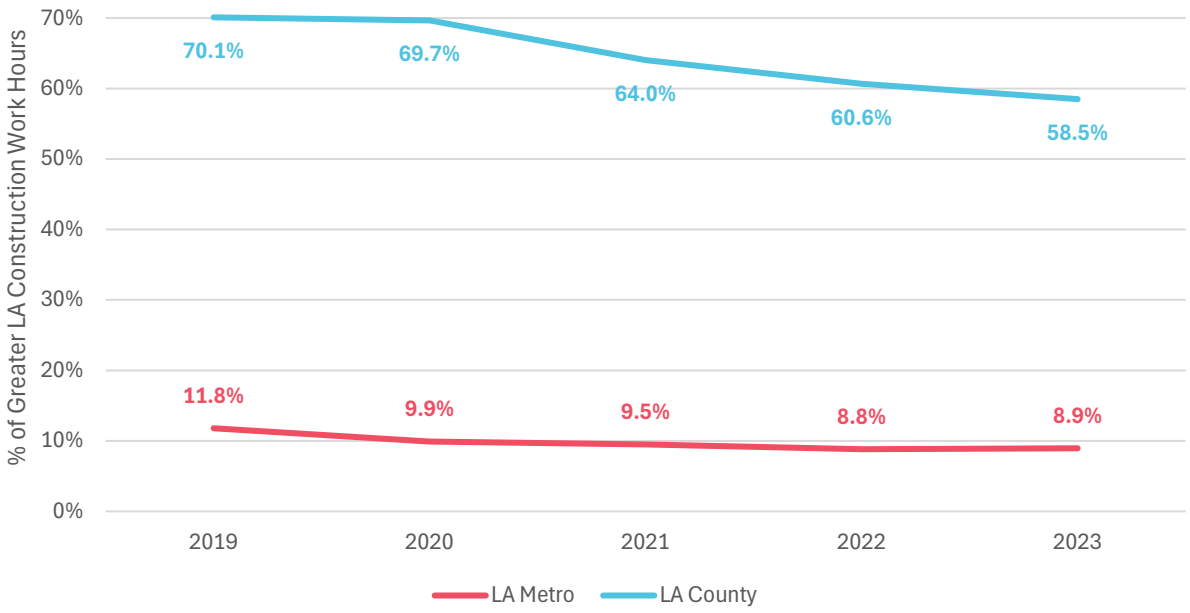
Figure 2-11: Female Participation on Construction Projects (Metro, Los Angeles World Airports, and Los Angeles Community College District)



Source: LCPtracker and Los Angeles Community College District

Figure 2-12 visualizes the share of construction work hours in the Greater LA Area that Metro and LA County capture. As of 2023, Metro accounts for approximately 8.9% of construction work hours in the Greater LA Area, a 2.9% decrease from the approximately 11.8% market share the agency had in 2019. LA County lost approximately 12% of the share of construction work hours between 2019 and 2023, but it still accounts for most of the construction work hours in the Greater LA Area. Notably, the number of construction work hours in LA County *increased* by approximately 7% during this period, suggesting that the demand for construction in Ventura, Orange, Riverside, and San Bernadino Counties is increasing at a higher rate than in LA County.

Figure 2-12: Share of Construction Work Hours by Year in Greater LA (2019-2023)



Source: LCPtracker

Projected Female Construction Workforce Availability

The consultant team used LCPtracker data to estimate projected female construction work hours through 2033, which includes both apprentices and journey workers combined. Except for Iron Workers and Bricklayers/Tile Setters, the number of female work hours in each trade generally increased from 2019 to 2023. Using LCPtracker data from 2019 to 2023, the consultant team projected future female construction workforce availability in Greater LA under three scenarios: growth, no growth, and decline. Given the unpredictability of construction demand in the region over a decade, these projections are not highly calibrated predictions. Rather, they are a rough estimation of possible of female construction work hours from 2023 to 2033. The definition for each scenario is as follows:

1. **Rapid Growth Scenario:** This scenario assumes that female work hours would see consistent and rapid growth over the next decade. To calculate this scenario, the consultant team took the difference between the highest and lowest hour totals from 2019 to 2023 and divided the difference by 5 to capture a rapid annual increase from the 2023 total.

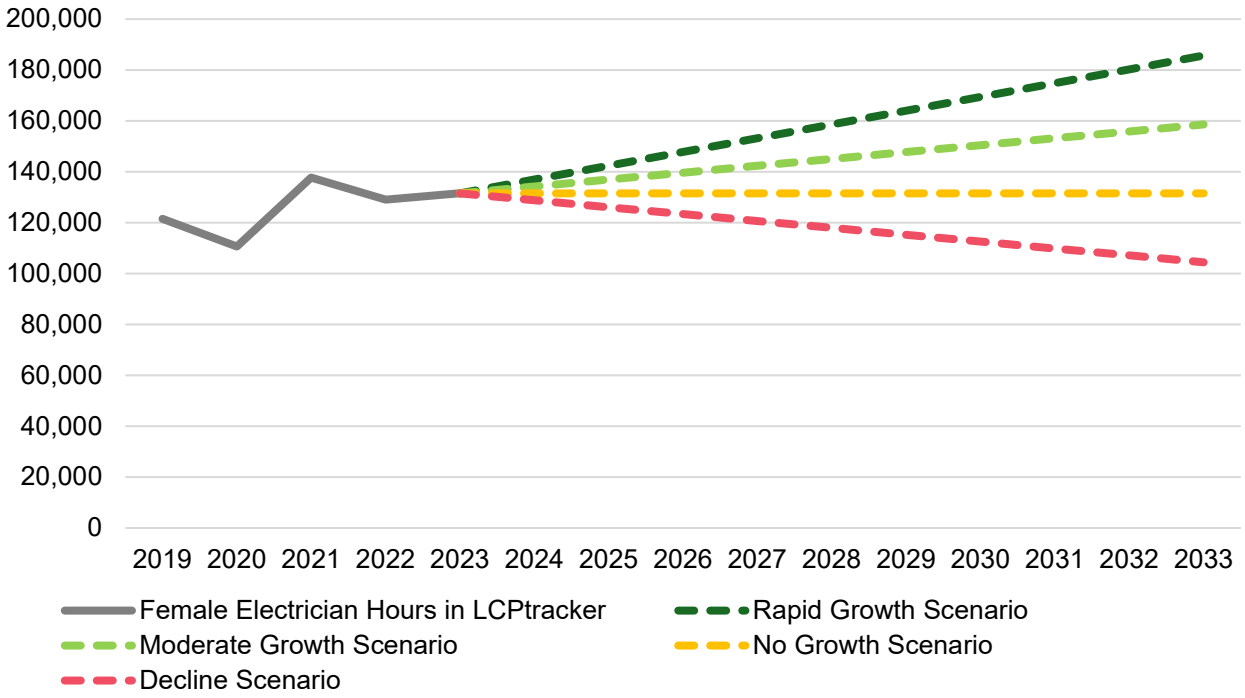
2. **Moderate Growth Scenario:** This scenario assumes that female work hours would see consistent and conservative growth over the next decade. To calculate this scenario, the consultant team took the difference between the highest and lowest hour totals from 2019 to 2023 and divided the difference by 10 to capture a gradual annual increase from the 2023 total.

3. **No Growth Scenario:** This scenario assumes that the number of female work hours would remain constant at 2023 levels through 2033.

4. **Decline Scenario:** This scenario assumes that female work hours would see consistent and conservative decline over the next decade. The consultant team calculated this scenario by taking the negative value computed in the Moderate Growth Scenario

As **Figure 2-13** shows, using the work hours of female Electricians as an example, the female work hours under "No Growth Scenario" is the midpoint between the "Decline Scenario" and "Growth Scenario" projections.

Figure 2-13: Availability of Female Electricians - Sustained Growth Scenario (2019 – 2033)



Source: LCPtracker and Estolano Advisors

Table 2-8 shows the results of these projections for each trade, while **Figure 2-14** shows these projections for all 15 trades combined. The following scenarios are intended to visualize the most reasonable range of possible work hour outcomes for each trade over a decade.[47]

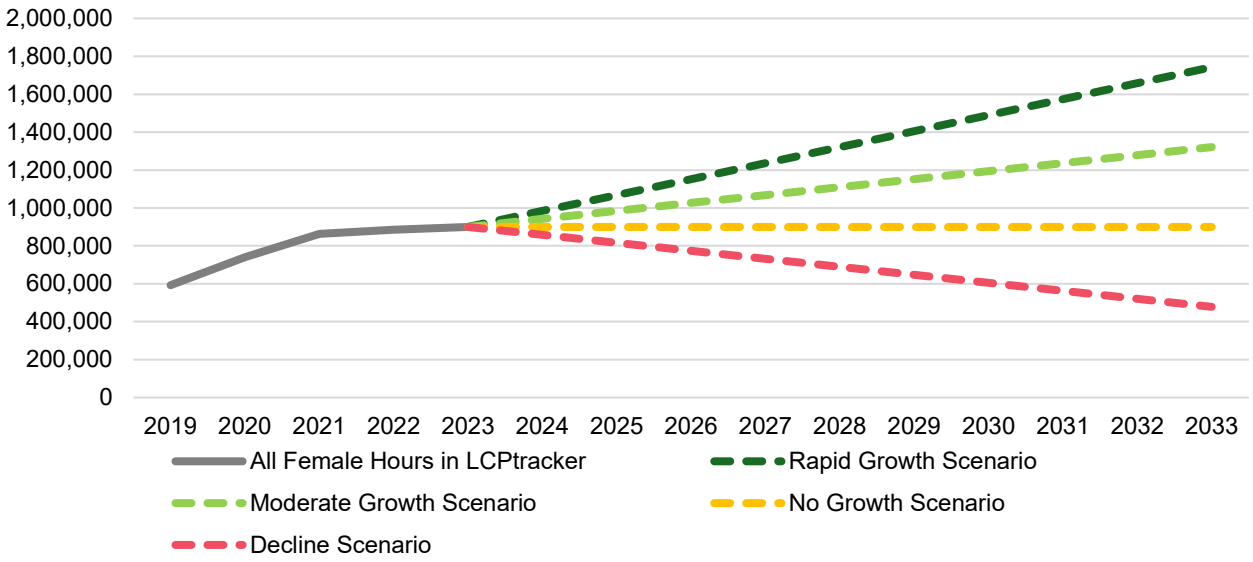
[47] These projections do not account for unemployment rates in each trade. Additionally, these projections assume that LCPtracker encompasses the entire available workforce for prevailing wage construction.

Table 2-8: Estimated Female Workforce Availability for Greater LA (2023-2033)

Construction Trade	2023	2027			2030			2033		
		Decline	Moderate	Rapid	Decline	Moderate	Rapid	Decline	Moderate	Rapid
Bricklayer and Tile Setter	3,088	2,653	3,524	3,959	2,326	3,851	4,613	1,999	4,177	5,266
Carpenter	87,911	73,057	102,765	117,619	61,916	113,906	139,901	50,775	125,047	162,182
Electrician	131,511	120,674	142,349	153,186	112,546	150,477	169,442	104,418	158,605	185,698
Elevator Constructor	9,344	6,470	12,218	15,092	4,315	14,374	19,403	2,160	16,529	23,714
Inspector	78,680	51,889	105,471	132,262	31,796	125,564	172,448	11,703	145,657	212,634
Iron Worker	31,804	23,422	40,185	48,566	17,136	46,471	61,138	10,851	52,757	73,710
Laborer	281,304	250,268	312,339	343,375	226,992	335,616	389,928	203,715	358,893	436,481
Operating Engineer	72,612	56,175	89,049	105,486	43,848	101,377	130,142	31,520	113,705	154,798
Painter	42,035	33,861	50,209	58,383	27,731	56,340	70,644	21,600	62,470	82,905
Plasterer and Cement Mason	10,369	7,321	13,418	16,466	5,034	15,704	21,039	2,748	17,991	25,612
Plumber and Pipefitter	71,682	51,582	91,782	111,882	36,507	106,857	142,031	21,432	121,932	172,181
Roofer	5,075	3,919	6,232	7,388	3,052	7,099	9,123	2,185	7,966	10,857
Sheet Metal	14,939	11,413	18,466	21,993	8,768	21,111	27,283	6,122	23,756	32,573
Surveyor	6,843	4,012	9,674	12,505	1,889	11,797	16,752	(235)	13,921	20,998
Teamster/Driver	52,587	34,512	70,662	88,737	20,956	84,219	115,850	7,400	97,775	142,962

Source: LCPtracker and Estolano Advisors

Figure 2-14: Projected Availability of All Female Work Hours (2019-2033)



Source: LCPtracker and Estolano Advisors

Projected Female Construction Workforce Demand on Metro Projects

On behalf of the consultant team, ICF estimated current and future demand for female workers on Metro projects. To project hours of employment on Metro projects per craft and trade through 2033 (**Table 2-9 and Table 2-10**), ICF estimated the current (2023 base year) Metro construction costs by applying budgeted construction costs[48] to projects identified in Metro's project schedule (as of January 2024)[49] as in an active construction phase in 2023. ICF estimated total Metro construction costs for 2023 at $2.13B. ICF also estimated the proportion of labor costs at 35%,[50] resulting in base year labor construction costs of $747,000,555. ICF applied the construction cost estimated in 2023 to the total hours worked for Metro among unionized workers in 2023 to determine the construction cost per hour at $177.23.

ICF used upper and lower bound scenarios to project future labor construction costs. In the Flat (0%) Demand Growth scenario, ICF assumed that Metro labor construction costs and demand will remain flat through 2033 with no increase in labor hours. In the second 2% Demand Growth scenario, ICF estimated Metro construction costs and demand will increase at 2% year over year, based on Metro's average growth over the last five years sourced from Metro annual budgets.[51] This methodology produced annual labor construction cost estimates for Metro.

Subsequently, the consultant team applied the percent of total labor hours for each Metro craft in 2023 to each future year to calculate the required labor hours by Metro craft for each year through 2033. For this analysis, ICF assumed that the proportion of labor hours in 2023 for each Metro craft will remain constant relative to the total in each succeeding year. In the flat demand scenario, the hours stay constant at 2023 levels. In the 2% annual growth scenario, the hours needed per craft for Metro projects escalate based on the growing labor costs translated into total annual hours and proportioned based on the 2023 craft mix. Comparing the number of labor hours in 2023 to the number of labor hours estimated for each future year represents the total demand gap in labor hours.

[48] Metro Adopted Budget FY2024, Appendix V: Transportation Infrastructure Development Project List. Retrieved August 5, 2024 from Finance and Budget - LA Metro.
[49] Metro Program Management Master Schedule, January 2024. Metro provided internal document.
[50] Labor costs in construction projects typically range from 20-40% with specialized projects and major urban markets skewing higher in the range. See for example, Labor vs material cost in construction: Overview - Bridgit.
[51] Metro Adopted Budgets FY2020-FY2025, https://budget.metro.net/budget-documents.html. Note that this outpaces EDD Construction Market growth projections in Greater LA (1.6% growth) and the annualized employment growth for the 34 SOC occupations estimated using Lightcast data (.8-1.2% growth).

For example, in the Flat Demand Growth scenario the total projected hours for Metro in 2033 are 4,214,979 (equivalent to 2023 hours) and in the 2% Demand Growth scenario (Exhibit 9), in 2033 the total projected hours for all Metro crafts are 5,138,035. As further example, for the Metro craft "Building / Construction Inspector and Field Soils and Material Tester" specifically, 2033 hours are 216,518. By comparing the number of labor hours in 2023 to the number of labor hours estimated for each future year, the number of additional hours required are calculated, which represents the total demand gap in labor hours. For example, for the Metro craft of "Building / Construction Inspector and Field Soils and Material Tester" the demand gap hours (additional hours needed for 2033) comparing 2023 and 2033 is 38,898 and the total demand gap in 2033 is 988,056 hours.

Table 2-9: Projected Metro Hours in 2026 and 2033 under 2% Demand Growth Scenario by Craft

Metro Craft	2023 Hours for Unionized Workers on Metro Projects	Projected 2026 Hours for Unionized Workers on Metro Projects	Additional Labor Hours Required for 2026	Projected 2033 Hours for Unionized Workers on Metro Projects	Additional Labor Hours Required for 2033
Apprentice Landscape Irrigation Fitter (2nd Shift)	48	51	3	59	11
Asbestos and Lead Abatement (Laborer)	2,549	2,705	156	3,107	558
Asbestos Worker, Heat and Frost Insulator	1,196	1,269	73	1,458	262
Brick Tender	11,042	11,718	676	13,460	2,418
Bricklayer	865	918	53	1,054	189
Bricklayer, Stonemason	37,838	40,154	2,316	46,124	8,286
Building / Construction Inspector and Field Soils and Material Tester	177,620	188,492	10,872	216,518	38,898
Carpenter And Related Trades	513,518	544,950	31,431	625,976	112,458
Carpet, Linoleum	272	289	17	332	60
Carpet, Linoleum, Resilient	12	13	1	15	3
Cement Mason	134,682	142,925	8,244	164,176	29,495
Cranes, Pile Driver, and Hoisting Equipment (Operating Engineer)	33,781	35,848	2,068	41,178	7,398
Driver (On/Off-Hauling To/From Construction Site)	74,351	78,902	4,551	90,634	16,282
Drywall Finisher	1,788	1,897	109	2,180	392
Drywall Installer / Lather (Carpenter)	35,125	37,275	2,150	42,817	7,692
Electrical Utility Lineman	6,177	6,555	378	7,530	1,353
Electrician	475,231	504,318	29,088	579,303	104,073
Elevator Constructor	82,236	87,269	5,033	100,245	18,009
Fence Builder (Carpenter)	2	2	0	2	0
Field Surveyor	38,458	40,812	2,354	46,880	8,422
Fire Safety and Miscellaneous Sealing	184	195	11	224	40

Metro Craft	2023 Hours for Unionized Workers on Metro Projects	Projected 2026 Hours for Unionized Workers on Metro Projects	Additional Labor Hours Required for 2026	Projected 2033 Hours for Unionized Workers on Metro Projects	Additional Labor Hours Required for 2033
Glazier	27,316	28,988	1,672	33,298	5,982
Gunite Worker (Laborer)	9,841	10,443	602	11,996	2,155
Horizontal Directional Drilling	7,135	7,572	437	8,698	1,563
Iron Worker	300,399	318,785	18,387	366,184	65,786
Laborer (Construction, Fence Erector, Gunite, Housemover, Tunnel)	235	249	14	286	51
Laborer And Related Classifications	954,083	1,012,480	58,397	1,163,021	208,939
Landscape Irrigation Fitter	203	216	12	248	44
Landscape Maintenance Laborer	58,772	62,369	3,597	71,643	12,871
Landscape Operating Engineer	175	186	11	213	38
Landscape / Irrigation Laborer / Tender	7,084	7,517	434	8,635	1,551
Marble Finisher	1,506	1,598	92	1,836	330
Modular Furniture Installer (Carpenter)	517	548	32	630	113
Operating Engineer	441,485	468,508	27,022	538,168	96,683
Operating Engineer (Landscape Construction)	134	142	8	163	29
Painter	55,080	58,452	3,371	67,143	12,062
Painter - Industrial	2,602	2,762	159	3,172	570
Parking And Highway Improvement (Striper-Laborer)	3,807	4,040	233	4,640	834
Parking And Highway Improvement (Striping, Slurry and Seal Coat Operations-Laborer)	642	681	39	782	140
Pile Driver (Carpenter)	5,237	5,558	321	6,384	1,147
Plaster Tender	9,967	10,577	610	12,149	2,183
Plasterer	13,257	14,068	811	16,160	2,903
Plumber	83,861	88,993	5,133	102,225	18,365
Residential Electrician	8	8	0	10	2
Residential Sheet Metal Worker	341	362	21	416	75
Roofer	41,736	44,291	2,555	50,876	9,140
Sheet Metal Worker	26,026	27,619	1,593	31,726	5,700
Sheet Metal Worker (HVAC)	49,184	52,194	3,010	59,955	10,771
Teamster	36,572	38,811	2,239	44,581	8,009
Telecommunications Technician	341	362	21	416	75
Terrazzo Finisher	187	198	11	228	41
Terrazzo Worker	336	356	21	409	73
Tile Finisher	3,806	4,039	233	4,639	833
Tile Layer	2,466	2,617	151	3,006	540
Tile Setter	176	187	11	215	39

Metro Craft	2023 Hours for Unionized Workers on Metro Projects	Projected 2026 Hours for Unionized Workers on Metro Projects	Additional Labor Hours Required for 2026	Projected 2033 Hours for Unionized Workers on Metro Projects	Additional Labor Hours Required for 2033
Tree Maintenance (Laborer)	4,255	4,515	260	5,187	932
Tunnel (Operating Engineer)	42,997	45,629	2,632	52,413	9,416
Tunnel Worker (Laborer)	396,239	420,492	24,253	483,013	86,774
Total Construction Labor Hours	**4,214,979**	**4,472,969**	**257,990**	**5,138,035**	**923,056**
Estimated Labor Construction Cost	**$747,000,555**	**$792,722,965**	N/A	**$910,589,508**	N/A

Source: LCPtracker and ICF.

To calculate the female labor demand gap, ICF analyzed the LCPtracker data to calculate the sum of female hours incurred per Metro craft in 2023 and the percent of total hours completed by female workers in 2023 for each craft. This craft-specific proportion was applied to each respective Metro craft for each future year being analyzed to determine the projected number of female hours per year. The number of female labor hours required to meet the utilization goal of 6.9% per year was calculated and compared to the estimated female labor hours in each year to determine the additional hours required by female labor needed to satisfy Metro's current and future demand. This metric represents the demand gap in female labor hours which is shown by craft for 2026 and 2033 in Exhibit 10 below.

For example, the Metro craft "Building / Construction Inspector and Field Soils and Material Tester" incurred 11,959 female worker hours in 2023 and is projected to use 14,578 hours in 2033 based on future demand growth projections. To reach the 6.9% utilization goal, this craft needs to incur 14,940 total female hours in conjunction with accretions in hours for other crafts listed in the Exhibit 10. Thus, the additional hours required to meet this utilization goal, or the female labor hours demand gap, for the "Building / Construction Inspector and Field Soils and Material Tester" craft in 2033 is 362 female hours.

Table 2-10: Projected Female Metro Hours in 2026 and 2033 under 2% Demand Growth Scenario by Craft

Metro Craft	2023 Hours for Female Workers on Metro Projects	Projected 2026 Hours for Female Workers on Metro Projects	Number of 2026 Female Hours Required to Meet Utilization Target	Additional 2026 Female Hours Required to Meet Utilization Target	Projected 2033 Hours for Female Workers on Metro Projects	Number of 2033 Female Hours Required to Meet Utilization Target	Additional 2033 Female Hours Required to Meet Utilization Target
Apprentice Landscape Irrigation Fitter (2nd Shift)	-	-	4	4	-	4	4
Asbestos And Lead Abatement (Laborer)	-	-	187	187	-	214	214
Asbestos Worker, Heat and Frost Insulator	40	42	88	45	49	101	52
Brick Tender	-	-	809	809	-	929	929
Bricklayer	-	-	63	63	-	73	73
Bricklayer, Stonemason	-	-	2,771	2,771	-	3,183	3,183
Building / Construction Inspector and Field Soils and Material Tester	11,959	12,691	13,006	315	14,578	14,940	362
Carpenter and Related Trades	12,370	13,127	37,602	24,475	15,079	43,192	28,114
Carpet, Linoleum	-	-	20	20	-	23	23
Carpet, Linoleum, Resilient	-	-	1	1	-	1	1
Cement Mason	298	316	9,862	9,546	363	11,328	10,965
Cranes, Pile Driver, And Hoisting Equipment (Operating Engineer)	779	826	2,474	1,647	949	2,841	1,892
Driver (On/Off-Hauling To/From Construction Site)	836	887	5,444	4,557	1,019	6,254	5,235
Drywall Finisher	-	-	131	131	-	150	150
Drywall Installer / Lather (Carpenter)	218	231	2,572	2,341	266	2,954	2,689
Electrical Utility Lineman	-	-	452	452	-	520	520
Electrician	24,984	26,513	34,798	8,285	30,455	39,972	9,517
Elevator Constructor	7,152	7,590	6,022	(1,568)	8,718	6,917	(1,801)
Fence Builder (Carpenter)	-	-	0	0	-	0	0
Field Surveyor	486	516	2,816	2,300	592	3,235	2,642
Fire Safety and Miscellaneous Sealing	-	-	13	13	-	15	15

Metro Craft	2023 Hours for Female Workers on Metro Projects	Projected 2026 Hours for Female Workers on Metro Projects	Number of 2026 Female Hours Required to Meet Utilization Target	Additional 2026 Female Hours Required to Meet Utilization Target	Projected 2033 Hours for Female Workers on Metro Projects	Number of 2033 Female Hours Required to Meet Utilization Target	Additional 2033 Female Hours Required to Meet Utilization Target
Glazier	293	311	2,000	1,689	357	2,298	1,940
Gunite Worker (Laborer)	-	-	721	721	-	828	828
Horizontal Directional Drilling	-	-	522	522	-	600	600
Iron Worker	9,341	9,913	21,996	12,083	11,387	25,267	13,880
Laborer (Construction, Fence Erector, Gunite, Housemover, Tunnel)	-	-	17	17	-	20	20
Laborer and Related Classifications	54,689	58,037	69,861	11,824	66,666	80,248	13,583
Landscape Irrigation Fitter	-	-	15	15	-	17	17
Landscape Maintenance Laborer	508	539	4,303	3,765	619	4,943	4,325
Landscape Operating Engineer	-	-	13	13	-	15	15
Landscape / Irrigation Laborer / Tender	-	-	519	519	-	596	596
Marble Finisher	-	-	110	110	-	127	127
Modular Furniture Installer (Carpenter)	-	-	38	38	-	43	43
Operating Engineer	4,204	4,461	32,327	27,866	5,124	37,134	32,009
Operating Engineer (Landscape Construction)	-	-	10	10	-	11	11
Painter	2,089	2,217	4,033	1,816	2,546	4,633	2,086
Painter - Industrial	1,216	1,291	191	(1,100)	1,483	219	(1,264)
Parking And Highway Improvement (Striper-Laborer)	47	50	279	229	57	320	263
Parking And Highway Improvement (Striping, Slurry and Seal Coat Operations-Laborer)	-	-	47	47	-	54	54
Pile Driver (Carpenter)	-	-	383	383	-	440	440
Plaster Tender	-	-	730	730	-	838	838
Plasterer	504	535	971	436	614	1,115	501
Plumber	3,088	3,276	6,141	2,864	3,764	7,054	3,290
Residential Electrician	-	-	1	1	-	1	1

Metro Craft	2023 Hours for Female Workers on Metro Projects	Projected 2026 Hours for Female Workers on Metro Projects	Number of 2026 Female Hours Required to Meet Utilization Target	Additional 2026 Female Hours Required to Meet Utilization Target	Projected 2033 Hours for Female Workers on Metro Projects	Number of 2033 Female Hours Required to Meet Utilization Target	Additional 2033 Female Hours Required to Meet Utilization Target
Residential Sheet Metal Worker	-	-	25	25	-	29	29
Roofer	2,072	2,199	3,056	857	2,526	3,510	985
Sheet Metal Worker	1,080	1,146	1,906	760	1,317	2,189	873
Sheet Metal Worker (HVAC)	-	-	3,601	3,601	-	4,137	4,137
Teamster	3,532	3,748	2,678	(1,070)	4,305	3,076	(1,229)
Telecommunications Technician	-	-	25	25	-	29	29
Terrazzo Finisher	-	-	14	14	-	16	16
Terrazzo Worker	-	-	25	25	-	28	28
Tile Finisher	-	-	279	279	-	320	320
Tile Layer	-	-	181	181	-	207	207
Tile Setter	-	-	13	13	-	15	15
Tree Maintenance (Laborer)	-	-	312	312	-	358	358
Tunnel (Operating Engineer)	-	-	3,148	3,148	-	3,617	3,617
Tunnel Worker (Laborer)	15,772	16,737	29,014	12,277	19,225	33,328	14,103
Total Female Labor Hours	**157,554**	**167,198**	**308,635**	**141,437**	**192,058**	**354,524**	**162,467**

Source: LCPtracker and ICF.

Additionally, to illustrate the female current and future demand by construction trade, ICF mapped each craft to its respective construction trade to show current **(Table 2-11)** and future **(Table 2-12)** demand gaps. For example, in Exhibit 12 the Teamster/Driver trade will need an additional 4,005 hours in 2033 to meet projected demand.

Table 2-11: Current Female Workforce Gap on Metro Projects in 2023 by Trade

Construction Trade	2023 Hours (Actual)	Female Hours Required for 6.9%	2023 Female Hours (Actual)	Current Female Workforce Gap
BRICKLAYER AND TILE SETTER	47,180	3,255	-	**3,255**
CARPENTER	554,399	38,254	12,588	**25,666**
ELECTRICIAN	481,757	33,241	24,984	**8,258**
ELEVATOR CONSTRUCTOR	82,236	5,674	7,152	***(1,478)***
INSPECTOR	177,620	12,256	11,959	**297**
IRON WORKER	300,399	20,728	9,341	**11,387**
LABORER	1,467,077	101,228	71,055	**30,173**
OPERATING ENGINEER	518,571	35,781	4,204	**31,578**
PAINTER	87,071	6,008	3,598	**2,410**
PLASTERER AND CEMENT MASON	147,939	10,208	802	**9,406**
PLUMBER AND PIPEFITTER	84,064	5,800	3,088	**2,713**
ROOFER	41,736	2,880	2,072	**808**
SHEET METAL	75,551	5,213	1,080	**4,133**
SURVEYOR	38,458	2,654	486	**2,168**
TEAMSTER/DRIVER	110,923	7,654	5,146	**2,507**
Total	**4,214,979**	**290,834**	**157,554**	**133,279**

Source: LCPtracker and ICF.

Table 2-12: Projected Female Metro Hours in 2026 and 2033 under 2% Demand Growth Scenario by Trade

Construction Trade	Actual 2023 Hours for Female Workers on Metro Projects	Projected 2026 Hours for Female Workers on Metro Projects	Number of 2026 Female Hours Required to Meet Utilization Target	Additional 2026 Female Hours Required to Meet Utilization Target	Projected 2033 Hours for Female Workers on Metro Projects	Number of 2033 Female Hours Required to Meet Utilization Target	Additional 2033 Female Hours Required to Meet Utilization Target
BRICKLAYER AND TILE SETTER	0	0	3,455	3,455	0	3,968	3,968
CARPENTER	12,588	13,358	40,595	27,237	15,344	46,631	31,286
ELECTRICIAN	24,984	26,513	35,276	8,763	30,455	40,521	10,066
ELEVATOR CONSTRUCTOR	7,152	7,590	6,022	(1,568)	8,718	6,917	(1,801)
INSPECTOR	11,959	12,691	13,006	315	14,578	14,940	362
IRON WORKER	9,341	9,913	21,996	12,083	11,387	25,267	13,880
LABORER	71,055	75,404	107,424	32,020	86,616	123,397	36,781
OPERATING ENGINEER	4,982	5,287	37,972	32,684	6,073	43,617	37,544
PAINTER	3,598	3,819	6,376	2,557	4,386	7,324	2,937
PLASTERER AND CEMENT MASON	802	851	10,833	9,981	978	12,443	11,466
PLUMBER AND PIPEFITTER	3,088	3,276	6,155	2,879	3,764	7,071	3,307
ROOFER	2,072	2,199	3,056	857	2,526	3,510	985
SHEET METAL	1,080	1,146	5,532	4,386	1,317	6,355	5,038
SURVEYOR	486	516	2,816	2,300	592	3,235	2,642
TEAMSTER/DRIVER	4,368	4,635	8,122	3,487	5,325	9,330	4,005
Total Female Labor Hours	**157,554**	**167,198**	**308,635**	**141,437**	**192,058**	**354,524**	**162,467**

Source: LCPtracker and ICF.

Projected Female Construction Workforce Gap

The consultant team compared measures of construction labor supply and demand to project the workforce gap both regionally and specifically for Metro projects. These projections consider different growth scenarios for the labor supply and demand from 2024 to 2033.

Overall Projected Metro Labor Gap

The consultant team developed supply side labor projections using historical Greater LA Area[52] data from LCPtracker as described in Pages 48 through 50. To capture the volatility in many of the trades over the past five years, the consultant team developed Rapid Growth, Moderate Growth, No Growth, and Decline scenarios for each trade. To incorporate supply-side projections into the gap analysis, ICF developed scenarios assuming moderate and rapid growth in supply. The projected supply for each scenario includes the number of projected female hours in the Greater LA Area by trade and by year from through 2033.

Because the supply scenarios represent projections for the Greater LA Area, not all of which would be available to Metro based on competition for these resources, the consultant team estimated supply side availability of female labor for Metro contractors based on the historical average of the percent of the Greater LA female supply Metro captured from 2019-2023 by trade. For example, on average over the last five years, Metro has captured 78% of the "Elevator Constructor" trade and 6.5% of the "Surveyor" trade. The consultant team multiplied female supply projections for Greater LA by the historical percent of female supply that Metro has captured to create hour supply estimates by year and trade

Using the two demand and two supply scenarios, the consultant team compared demand and supply estimates under the four resulting scenarios to project the annual gap in female labor hours and projected female utilization rate by year. **Table 2-13** shows the current or base year (2023) gap between 2023 female hours and the female hours that would be needed to meet an annual 6.9% female participation rate of 133,280 hours. That gap decreases as demand remains flat and supply moderately increases and by 2033 is 48,942 hours. By 2033, the projected annual female participation rate is 4.56% in 2026 and 5.74% by 2033. **Figure 2-15** displays this projection graphically and extrapolates through 2043.

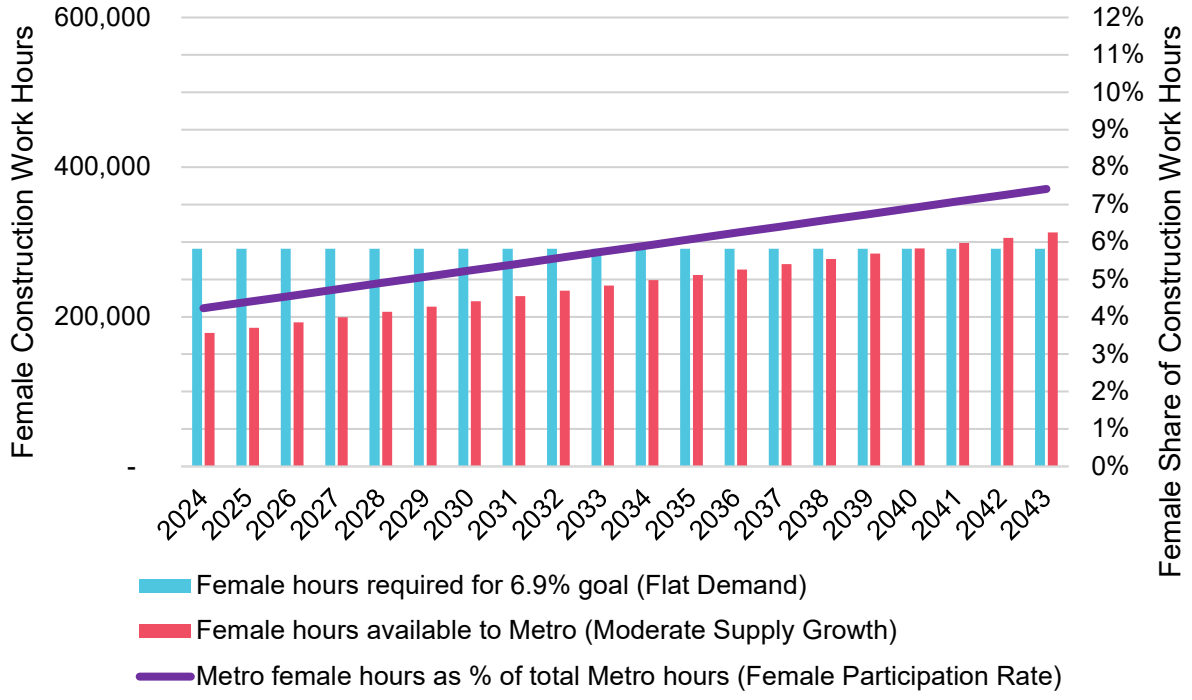
[52] The Greater LA Area includes five Southern California counties: Los Angeles, Orange, Riverside, Ventura, and San Bernadino.

Table 2-13. Metro Female Annual Gap & Utilization: Flat (0%) Demand Growth and Moderate Supply Growth, Current, 3-Year, and 10-Year Projections

Scenario: Flat (0%) Demand Growth and Moderate Supply Growth	Female Labor Hours 2023 (Current)	Female Labor Hours 2026 (Projected)	Female Labor Hours 2033 (Projected)
Projected Total Hours (all genders)	4,214,979	4,214,979	4,214,979
Projected Female Hours at 2023 Participation Rate	157,554	157,554	157,554
Female hours required to meet target utilization	290,834	290,834	290,834
Additional female hours needed to meet target utilization	133,279	133,279	133,279
Projected female hours available to Metro (supply)	157,554	192,384	241,891
Difference between available female hours and projected demand at 2023 participation rate	--	34,829	84,337
Difference between available female hours and hours needed to meet target utilization rate	**(133,280)**	**(98,450)**	**(48,942)**
Metro Percent Female Hours	3.74%	3.74%	3.74%
Percent Female Hours required to meet target utilization	6.90%	6.90%	6.90%
Metro Female Hours as % of total hours (Female Participation)	**3.74%**	**4.56%**	**5.74%**

Source: LCPtracker, ICF, and Estolano Advisors. Note: Base year female utilization is calculated from LCPtracker data and may vary slightly from other point in time estimates of Metro female utilization.

Figure 2-15: Projected Female Workforce Utilization on Metro Construction Projects, 0% Demand Growth, Moderate Supply Growth (2024-2043)



Source: LCPtracker, Metro, Estolano Advisors, and ICF

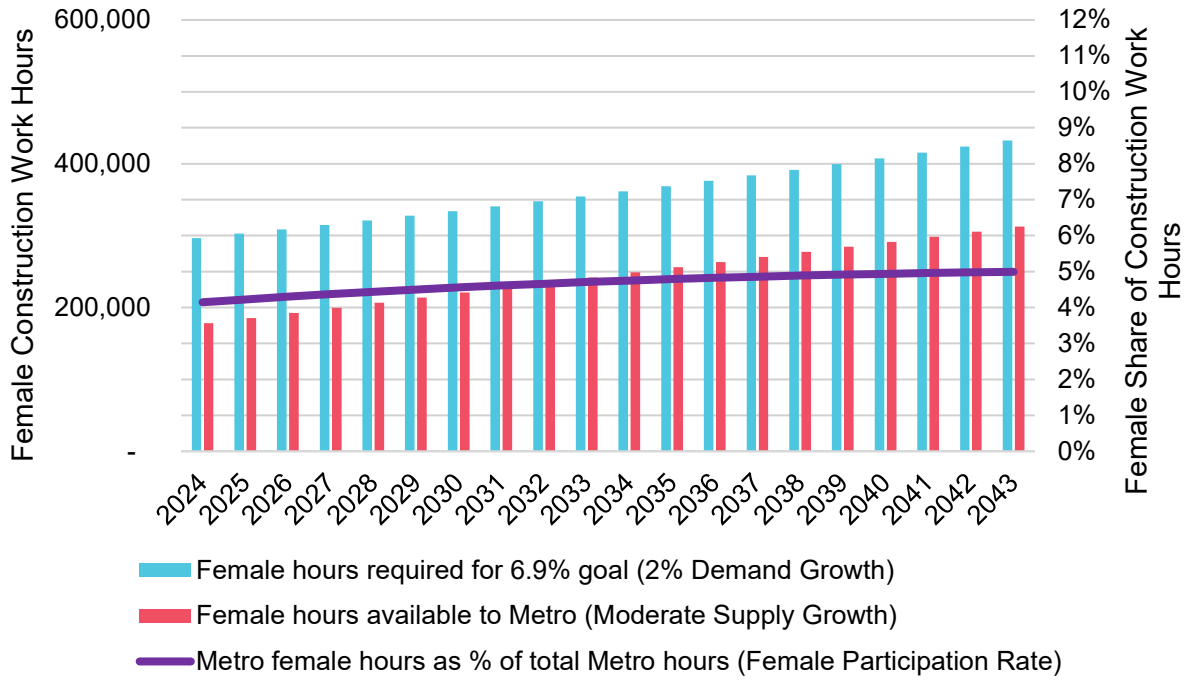
Table 2-14 shows the three- and ten-year projections assuming demand is increasing at 2% a year. As expected, the female workforce gap is larger than under the previous scenario and by 2033 the female utilization rate is at 4.71%. **Figure 2-16** displays this projection graphically and extrapolates through 2043.

Table 2-14. Metro Female Annual Gap & Utilization: 2% Annual Demand Growth and Moderate Supply Growth, Three-Year and Ten-Year Projections

Scenario: 2% Demand Growth and Moderate Supply Growth	Female Labor Hours 2026 (Projected)	Female Labor Hours 2033 (Projected)
Projected Total Hours (all genders)	4,472,969	5,138,035
Projected Female Hours at 2023 Participation Rate	167,198	192,058
Female hours required to meet target utilization	308,635	354,524
Additional female hours needed to meet target utilization	141,437	162,467
Projected female hours available to Metro (supply)	192,384	241,891
Difference between available female hours and projected demand at 2023 participation rate	25,186	49,833
Difference between available female hours and hours needed to meet target utilization rate	**(116,251)**	**(112,633)**
Metro Female Hours as % of total hours (Female Participation)	**4.30%**	**4.71%**

Source: LCPtracker, ICF, and Estolano Advisors.

Figure 2-16: Projected Female Workforce Utilization on Metro Construction Projects, 2% Demand Growth, Moderate Supply Growth (2024-2043)



Source: LCPtracker, Metro, Estolano Advisors, and ICF

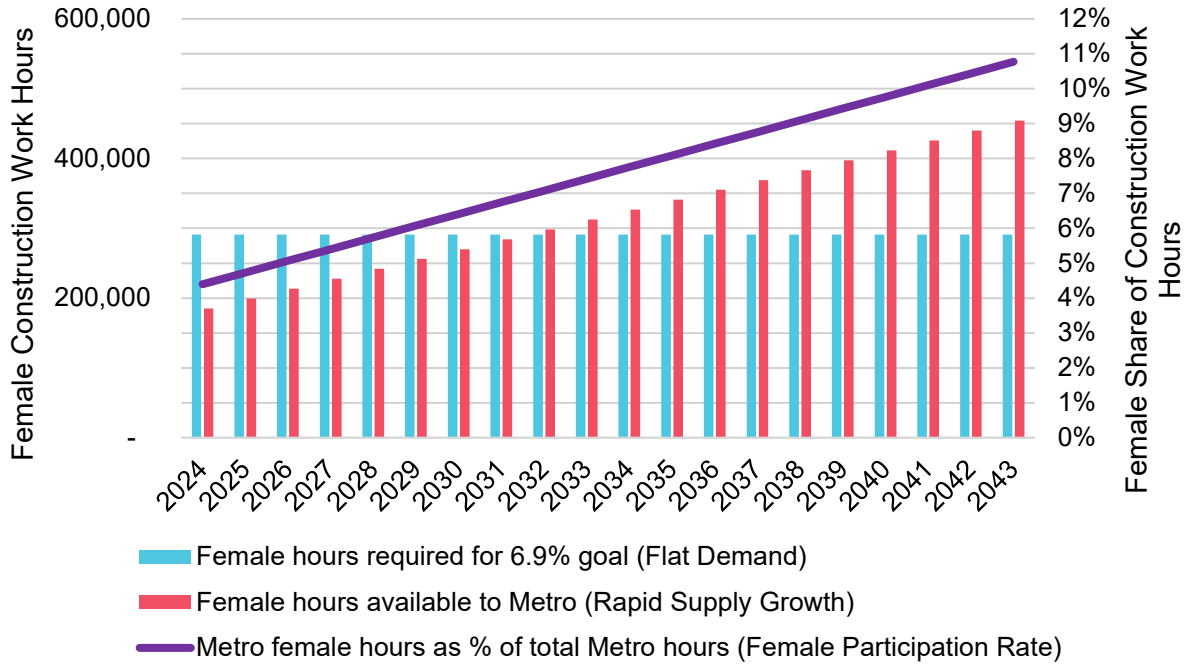
In the most optimistic scenario modeled, Flat (0%) Demand Growth and Rapid Supply Growth, Metro contractors could surpass the 6.9% goal for female utilization by 2032, on an annual basis, reaching 7.08% in 2032 and 7.42% in 2033 **(Table 2-15** and **Figure 2-17)**. In the final scenario, **Table 2-16**, 2% Demand Growth per year and Rapid Supply Growth, female participation surpasses 6% by 2033 but not does surpass 6.9% within the ten-year period. **Figure 2-18** displays this projection graphically and extrapolates through 2043.

Table 2-15. Metro Female Annual Gap & Utilization: Flat Demand Growth and Rapid Supply Growth, Three-Year and Years 8-10 Projections

Scenario: Flat (0%) Demand Growth and Rapid Supply Growth	Female Labor Hours 2026 (Projected)	Female Labor Hours 2031 (Projected)	Female Labor Hours 2032 (Projected)	Female Labor Hours 2033 (Projected)
Projected Total Hours (all genders)	4,214,979	4,214,979	4,214,979	4,214,979
Projected Female Hours at 2023 Participation Rate	157,554	157,554	157,554	157,554
Female hours required to meet target utilization	290,834	290,834	290,834	290,834
Additional female hours needed to meet target utilization	133,279	133,279	133,279	133,279
Projected female hours available to Metro (supply)	213,601	284,326	298,471	312,616
Difference between available female hours and projected demand at 2023 participation rate	56,047	126,772	140,917	155,062
Difference between available female hours and hours needed to meet target utilization rate	**(77,232)**	**(6,507)**	**7,638**	**21,783**
Metro Female Hours as % of total hours (Female Participation)	**5.07%**	**6.75%**	**7.08%**	**7.42%**

Source: LCPtracker, ICF, and Estolano Advisors.

Figure 2-17: Projected Female Workforce Utilization on Metro Construction Projects, 0% Demand Growth, Rapid Supply Growth (2024-2043)



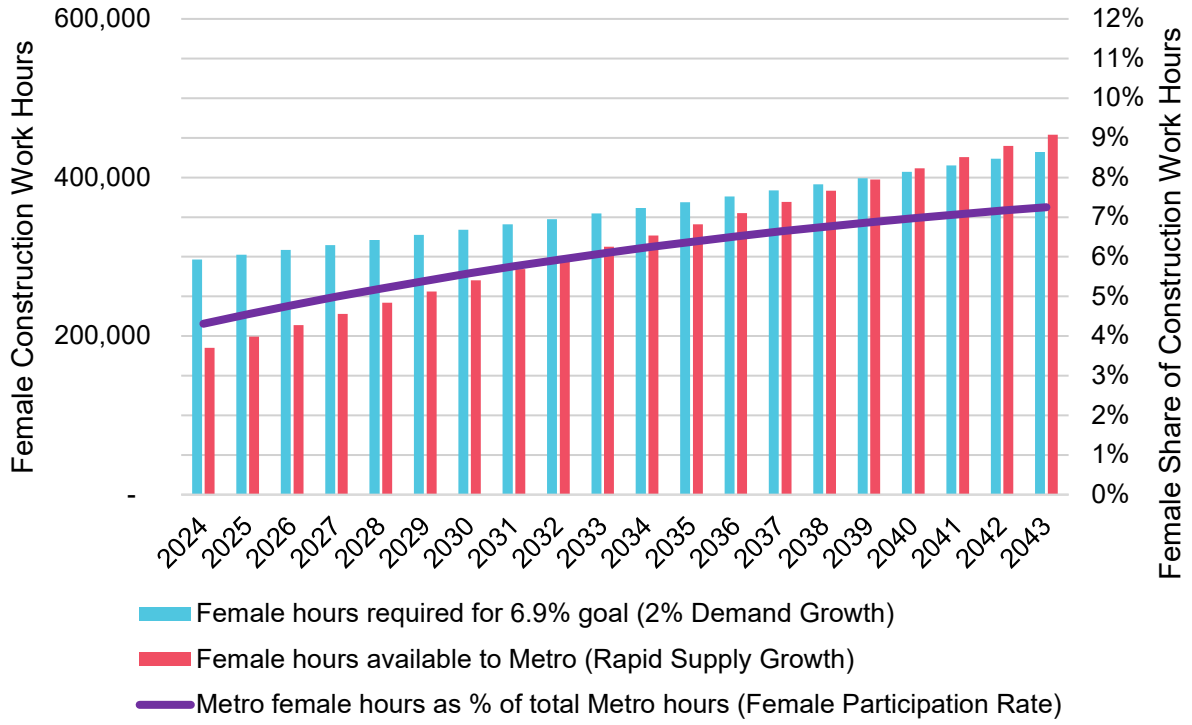
Source: LCPtracker, Metro, Estolano Advisors, and ICF

Table 2-16. Metro Female Annual Gap & Utilization: 2% Annual Demand Growth and Rapid Supply Growth, Three-Year and Ten-Year Projections

Scenario: 2% Demand Growth and Rapid Supply Growth	Female Labor Hours 2026 (Projected)	Female Labor Hours 2033 (Projected)
Projected Total Hours (all genders)	4,472,969	5,138,035
Projected Female Hours at 2023 Participation Rate	167,198	192,058
Female hours required to meet target utilization	308,635	354,524
Additional female hours needed to meet target utilization	141,437	162,467
Projected female hours available to Metro (supply)	213,601	312,616
Difference between available female hours and projected demand at 2023 participation rate	46,403	120,559
Difference between available female hours and hours needed to meet target utilization rate	**(95,034)**	**(41,908)**
Metro Female Hours as % of total hours (Female Participation)	**4.78%**	**6.08%**

Source: LCPtracker, ICF, and Estolano Advisors.

Figure 2-18: Projected Female Workforce Utilization on Metro Construction Projects, 2% Demand Growth, Rapid Supply Growth (2024-2043)



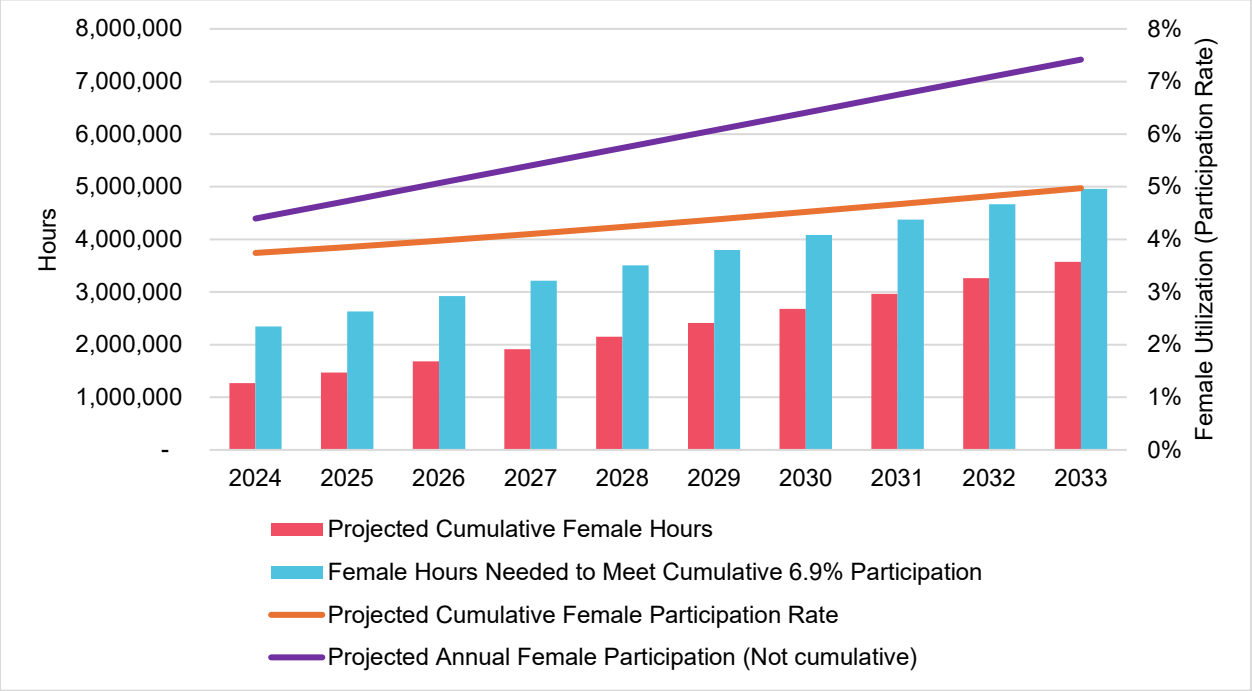
Source: LCPtracker, Metro, Estolano Advisors, and ICF

As noted above, under the most favorable scenario modeled: Flat Demand Growth and Moderate Supply Growth, Metro contractors could achieve a 7.08% female utilization in 2032 and 7.42% in 2033, on an annual basis. However, due to historical hours (29.7M as of November 2023[53]) included in the PLA utilization calculations and Metro contractors' historical female utilization rates below 2023 levels dating back to 2012, the cumulative female utilization would still be less than 5% by 2033. **Figure 2-19** shows the difference between the Female Utilization rate annually each year and the lower cumulative rate when accounting for historical hours. Cumulative female utilization increases at a lower rate than annual utilization because it is being weighted by lower historical female utilization rates.

Table 2-17 below shows, for each of the four scenarios, the projected cumulative female utilization rate for 2026 and 2033 accounting for historical hours, PLA hours, and female utilization rates. The cumulative Female Utilization rate in 2033 under the four scenarios ranges from 4.15% (with a shortfall in hours of 2.11M) under a 2% annual demand growth, moderate supply growth scenario to 4.97% (with a shortfall in hours of 1.39M) assuming flat demand growth and rapid supply growth. If demand were to increase more than the 2% annual projected growth, under both the moderate and rapid supply growth scenarios, Female Utilization rates would be lower than those shown here, all other assumptions equal.

[53] Sourced from Metro provided PLA documents.

Figure 2-19. Metro Annual and Cumulative Female Utilization: Flat Demand Growth and Rapid Supply Growth, 2024-2033



Source: LCPtracker, Metro, Estolano Advisors, and ICF

Table 2-17. Metro Cumulative Female Workforce Gap & Utilization: All Scenarios, Three-Year and 10-Year Projections

Scenario: Flat (0%) Demand Growth and Moderate Supply Growth	2026	2033
Projected Cumulative Hours	42,379,823	71,884,672
Projected Cumulative Female Hours	1,641,318	3,186,034
Projected Cumulative Female Utilization Rate	**3.87%**	**4.43%**
Cumulative Female Hours Needed to Reach 6.9% Utilization	2,924,208	4,960,042
Scenario: 2% Demand Growth and Moderate Supply Growth		
Projected Cumulative Hours	42,892,398	76,810,783
Projected Cumulative Female Hours	1,641,318	3,186,034
Projected Cumulative Female Utilization Rate	**3.83%**	**4.15%**
Cumulative Female Hours Needed to Reach 6.9% Utilization	2,959,575	5,299,944
Scenario: Flat (0%) Demand Growth and Rapid Supply Growth		
Projected Cumulative Hours	42,379,823	71,884,672
Projected Cumulative Female Hours	1,683,753	3,575,022
Projected Cumulative Female Utilization Rate	**3.97%**	**4.97%**
Cumulative Female Hours Needed to Reach 6.9% Utilization	2,924,208	4,960,042
Scenario: 2% Demand Growth and Rapid Supply Growth		
Projected Cumulative Hours	42,892,398	76,810,783
Projected Cumulative Female Hours	1,683,753	3,575,022
Projected Cumulative Female Utilization Rate	**3.93%**	**4.65%**
Cumulative Female Hours Needed to Reach 6.9% Utilization	2,959,575	5,299,944

Source: LCPtracker, Metro, Estolano Advisors, and ICF

Projected Metro Labor Gap by Trade

The consultant team also calculated the annual female utilization and gap for each trade through 2033. As shown in **Table 2-18**, historically over the last five years, the top five trades with the most hours annually on Metro projects are: Laborers, Electricians, Operating Engineers, Carpenters, and Iron Workers. Trades with the highest number of female hours over the 2019-2023 period are: Laborers, Electricians, Carpenters, Iron Workers, and Inspectors. The trades with highest average female utilization from 2019-2023 are Inspector, Elevator Constructor, Plumber and Pipefitter, Laborer, and Electrician, though none meet the target utilization goal when looking at the average over five years.

Table 2-18. Hours and Female Utilization on Metro Construction Projects, 2019-2023

Construction Trade	All Hours (2019-2023)	Female Hours (2019-2023)	Average Female Utilization
BRICKLAYER AND TILE SETTER	51,455	-	0.00%
CARPENTER	2,313,989	71,455	3.09%
ELECTRICIAN	3,036,702	124,789	4.11%
ELEVATOR CONSTRUCTOR	442,879	22,798	5.15%
INSPECTOR	776,406	41,435	5.34%
IRON WORKER	1,199,382	42,009	3.50%
LABORER	8,049,139	376,251	4.67%
OPERATING ENGINEER	2,619,518	29,522	1.13%
PAINTER	367,025	12,331	3.36%
PLASTERER AND CEMENT MASON	645,272	3,197	0.50%
PLUMBER AND PIPEFITTER	336,765	16,408	4.87%
ROOFER	81,677	2,579	3.16%
SHEET METAL	283,736	6,651	2.34%
SURVEYOR	240,671	2,388	0.99%
TEAMSTER/DRIVER	1,081,961	18,456	1.71%
Total	**21,526,576**	**770,268**	**3.58%**

Source: LCPtracker and ICF.

To project the female workforce gap and the projected female utilization for each trade, the consultant team used the Moderate and Rapid Supply Growth scenarios and scaled the projected Greater LA supply estimates to account for competition for the regional labor supply. Supply estimates for each trade were scaled based on the average percent of the female labor supply that Metro has captured out of the Greater LA female labor supply over the last five years.

Under the four scenarios (**Table 2-19 and 2-20**), annual projections for 2033 female utilization by trade for the top five Metro trades range from: Laborer: (5.72%-8.48%); Electrician: (5.35%-7.63%); Iron Workers: (3.8%-6.48%); Carpenters: (2.66%-4.21%) and Operating Engineer: (1.5%-2.49%).

Table 2-19. Projected Female Workforce Gap and Utilization by Trade: Flat (0%) Demand Growth; Rapid Supply Growth, 2033 (Most Optimistic Scenario for achieving 6.9% female utilization)

Trade	Projected Hours 2033	Female Hours Required to Meet 6.9% 2033	Projected Female Hours (Supply) Available to Metro 2033	Female Workforce Gap - Hours 2033	Projected Female Utilization 2033
BRICKLAYER AND TILE SETTER	47,180	3,255	0	(3,255)	0.00%
CARPENTER	554,398.90	38,253.52	23,351	(14,902.28)	4.21%
ELECTRICIAN	481,756.50	33,241.20	36,762	3,521.04	7.63%
ELEVATOR CONSTRUCTOR	82,235.64	5,674.26	18,371	12,697.15	22.34%
INSPECTOR	177,620.27	12,255.80	32,472	20,216.24	18.28%
IRON WORKER	300,398.59	20,727.50	19,463	(1,264.69)	6.48%
LABORER	1,467,076.69	101,228.29	124,357	23,128.34	8.48%
OPERATING ENGINEER	518,571.36	35,781.42	12,923	(22,858.37)	2.49%
PAINTER	87,070.58	6,007.87	6,304	296.07	7.24%
PLASTERER AND CEMENT MASON	147,938.75	10,207.77	2,430	(7,777.60)	1.64%
PLUMBER AND PIPEFITTER	84,063.60	5,800.39	14,845	9,044.15	17.66%
ROOFER	41,736.00	2,879.78	1,575	(1,305.03)	3.77%
SHEET METAL	75,551.00	5,213.02	3,359	(1,854.18)	4.45%
SURVEYOR	38,457.75	2,653.58	1,366	(1,287.11)	3.55%
TEAMSTER/DRIVER	110,923.39	7,653.71	15,038	7,384.58	13.56%
Total	**4,214,979**	**290,834**	**312,616**	**21,783**	**7.42%**

Source: LCPtracker and ICF.

Table 2-20. Projected Female Workforce Gap and Utilization by Trade: 2% Demand Growth; Moderate Supply Growth, 2033 (Least Optimistic Scenario for achieving 6.9% female utilization)

Trade	Projected Hours 2033	Female Hours Required to Meet 6.9% 2033	Projected Female Hours (Supply) Available to Metro 2033	Female Workforce Gap - Hours 2033	Projected Female Utilization 2033
BRICKLAYER AND TILE SETTER	57,512	3,968	0	(3,968)	0.00%
CARPENTER	675,809.17	46,630.83	18,004.39	(28,626.44)	2.66%
ELECTRICIAN	587,258.49	40,520.84	31,398.64	(9,122.20)	5.35%
ELEVATOR CONSTRUCTOR	100,244.79	6,916.89	12,805.27	5,888.38	12.77%
INSPECTOR	216,518.12	14,939.75	22,243.73	7,303.98	10.27%
IRON WORKER	366,184.20	25,266.71	13,930.22	(11,336.49)	3.80%
LABORER	1,788,358.30	123,396.72	102,251.05	(21,145.67)	5.72%
OPERATING ENGINEER	632,135.59	43,617.36	9,492.50	(34,124.86)	1.50%
PAINTER	106,138.55	7,323.56	4,750.11	(2,573.45)	4.48%
PLASTERER AND CEMENT MASON	180,336.51	12,443.22	1,707.02	(10,736.20)	0.95%
PLUMBER AND PIPEFITTER	102,473.06	7,070.64	10,512.28	3,441.64	10.26%
ROOFER	50,875.95	3,510.44	1,155.45	(2,354.99)	2.27%
SHEET METAL	92,096.25	6,354.64	2,449.67	(3,904.97)	2.66%
SURVEYOR	46,879.78	3,234.71	905.89	(2,328.81)	1.93%
TEAMSTER/DRIVER	135,214.99	9,329.83	10,284.99	955.16	7.61%
Total	**5,138,035**	**354,524**	**241,891**	**(112,633)**	**4.71%**

Source: LCPtracker and ICF.

Table 2-21 and Table 2-22 show the projected progression of female utilization rates for each Trade under the most optimistic and least optimistic scenarios. Under the most optimistic scenario, 7 of the 15 trades would exceed 6.9% female utilization by 2033, some by significant margins. Under the least optimistic scenario, four trades are projected to be able exceed 6.9%.

Table 2-21. Projected Annual Female Utilization by Trade, 3-, 5-, and 10- year projections: Flat (0%) Demand Growth; Rapid Supply Growth (Most Optimistic Scenario for achieving 6.9% female utilization)

Trade	Current Female Utilization (2023)	Projected Female Utilization (2026)	Projected Female Utilization (2029)	Projected Female Utilization (2033)
BRICKLAYER AND TILE SETTER	0.00%	0.00%	0.00%	0.00%
CARPENTER	2.27%	2.86%	3.44%	4.21%
ELECTRICIAN	5.19%	6.07%	6.74%	7.63%
ELEVATOR CONSTRUCTOR	8.70%	12.86%	16.93%	22.34%
INSPECTOR	6.73%	10.22%	13.67%	18.28%
IRON WORKER	3.11%	3.90%	5.01%	6.48%
LABORER	4.84%	6.37%	7.27%	8.48%
OPERATING ENGINEER	0.96%	1.57%	1.96%	2.49%
PAINTER	4.13%	4.74%	5.81%	7.24%
PLASTERER AND CEMENT MASON	0.54%	0.96%	1.25%	1.64%
PLUMBER AND PIPEFITTER	3.67%	10.44%	13.54%	17.66%
ROOFER	4.96%	2.37%	2.97%	3.77%
SHEET METAL	1.43%	2.76%	3.48%	4.45%
SURVEYOR	1.26%	1.88%	2.60%	3.55%
TEAMSTER/DRIVER	3.94%	7.56%	10.13%	13.56%
Total	**3.74%**	**5.07%**	**6.07%**	**7.42%**

Source: LCPtracker and ICF.

Table 2-22. Projected Annual Utilization by Trade, 3-, 5- and 10-year projections: 2% Demand Growth; Moderate Supply Growth, 2033 (Least Optimistic Scenario for achieving 6.9% female utilization)

Trade	Current Female Utilization (2023)	Projected Female Utilization (2026)	Projected Female Utilization (2029)	Projected Female Utilization (2033)
BRICKLAYER AND TILE SETTER	0.00%	0.00%	0.00%	0.00%
CARPENTER	2.27%	2.42%	2.54%	2.66%
ELECTRICIAN	5.19%	5.41%	5.39%	5.35%
ELEVATOR CONSTRUCTOR	8.70%	10.21%	11.42%	12.77%
INSPECTOR	6.73%	8.00%	9.07%	10.27%
IRON WORKER	3.11%	3.15%	3.46%	3.80%
LABORER	4.84%	5.57%	5.65%	5.72%
OPERATING ENGINEER	0.96%	1.29%	1.39%	1.50%
PAINTER	4.13%	3.96%	4.21%	4.48%
PLASTERER AND CEMENT MASON	0.54%	0.76%	0.85%	0.95%
PLUMBER AND PIPEFITTER	3.67%	8.38%	9.27%	10.26%
ROOFER	4.96%	1.95%	2.10%	2.27%
SHEET METAL	1.43%	2.26%	2.45%	2.66%
SURVEYOR	1.26%	1.43%	1.67%	1.93%
TEAMSTER/DRIVER	3.94%	5.91%	6.71%	7.61%
Total	**3.74%**	**4.30%**	**4.50%**	**4.71%**

Source: LCPtracker and ICF.

Female Workforce Training Pipeline Assessment

California's robust apprenticeship system represents the recruitment and training pipeline for workers on public construction projects statewide. The California Department of Industrial Relations Division of Apprenticeship Standards (DAS) regulates the state-certified apprenticeship programs that provide apprentices to public works projects in California. DAS collects and manages the data for all registered apprentices in the state. This data includes gender, age, race, program, year enrolled, enrollment status, address, and other information on each apprentice, but it does not include names or other personally identifiable information.[54] This section analyzes 15 years of statewide apprenticeship data to discern trends in female participation in construction work in the Greater LA Area[55] in terms of recruitment and retention.

Table 2-23 shows statewide DAS data[56] by the following status levels within the apprenticeship program:

- **Active-** Individuals who are actively enrolled in a program through an apprenticeship contract agreement
- **Canceled-** Individuals who canceled their apprenticeship contract agreement before reaching journey-level status
- **Graduated-** Individuals who have completed the apprenticeship program and became journey workers

The Greater LA Area represents 42% of the total active apprentices in California, and 38% of the total female graduates in the state. Although the Bay Area includes fewer female active and graduated apprentices in total, they outperform the Greater LA Area in the share of females. Despite falling behind the Bay Area, the Greater LA Area outperforms San Diego County in share of active and graduated female apprentices. The higher share of active female apprentices in the Greater LA area (2.73%) versus the share of graduated female apprentices (1.8%) reflects the increased efforts to recruit female apprentices. However, both rates fall short of Metro's goal of 6.9% female workforce participation.

[54] Due to the very small number of workers that selected "Other" or did not respond to the gender identification question (less than 0.1% of all apprentices), the consultant team only analyzed data for "Male" and "Female" in this study.

[55] The Greater LA Area includes Los Angeles, Orange, Riverside, San Bernardino, and Ventura counties.

[56] Table 2-23 includes all registered apprenticeship programs in California, including union and non-union programs. The remainder of the report focuses on union-only programs in the Greater LA Area.

Table 2-23: Apprenticeship Status by Region and Gender (Start Year 2008-2023)

Status[57]	California	Greater LA Area	Bay Area[58]	San Diego County
Active	**52,267**	**21,755**	**9,309**	**4,849**
# Female	2,344	594	461	120
% Female	4.5%	2.7%	5.0%	2.5%
% of State	100%	41.6%	17.8%	9.3%
Graduated	**98,728**	**37,825**	**22,137**	**7,666**
# Female	4,093	680	666	107
% Female	4.2%	1.8%	3.0%	1.4%
% of State	100%	38.3%	22.4%	7.8%

Source: California Department of Industrial Relations Division of Apprenticeship Standards (June 2024)

Female Apprentice Recruitment in the Greater LA Area

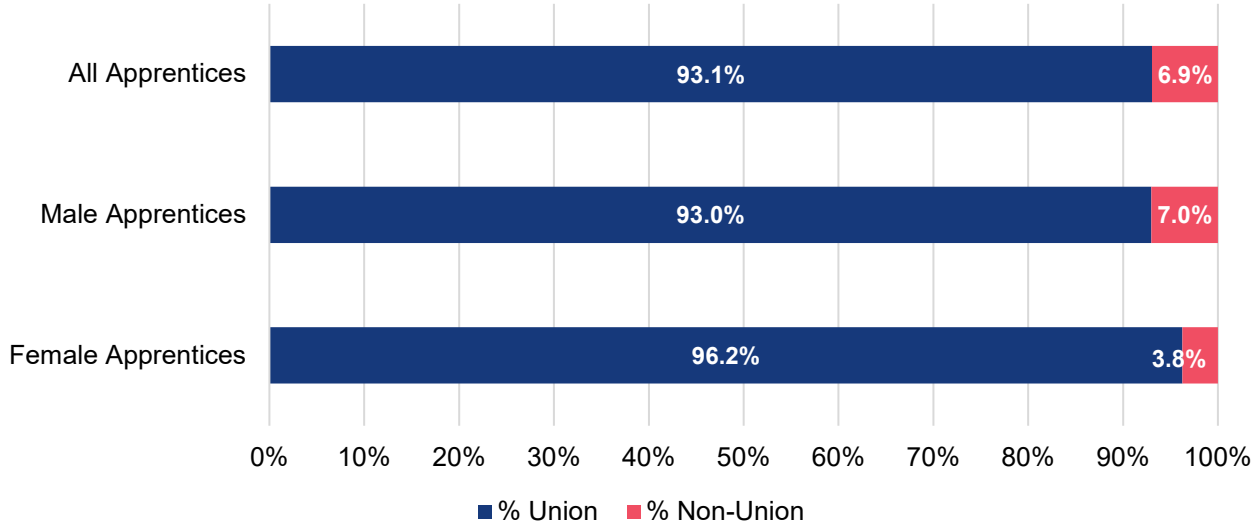
Union vs. Non-Union Apprenticeships

The apprenticeship data in the following subsections reflect only those apprentices enrolled in joint-labor management apprenticeship programs in the Greater LA Area. Public agencies such as Metro use union workers in accordance with their Project Labor Agreements (PLAs), so these union-led programs provide more relevant data on the construction training pipeline.

Although some construction apprentices are enrolled in state-registered non-union programs led by contractors' associations, they account for a small share of the apprenticeship dataset. As shown in **Figure 2-20**, non-union apprentices represent 6.9% of all construction apprentices in the Greater LA Area. Male apprentices (7.0%) are nearly twice as likely to be in non-union programs than female apprentices (3.8%). The higher rate of female participation in union programs may result from the female utilization goals included in some PLAs. In addition, stronger job security and worker protections may encourage female workers to join unionized apprenticeship programs at a higher rate.

[57] Data highlights the 15 construction trades identified in **Table 2-1**
[58] Bay Area includes Alameda. Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma counties.

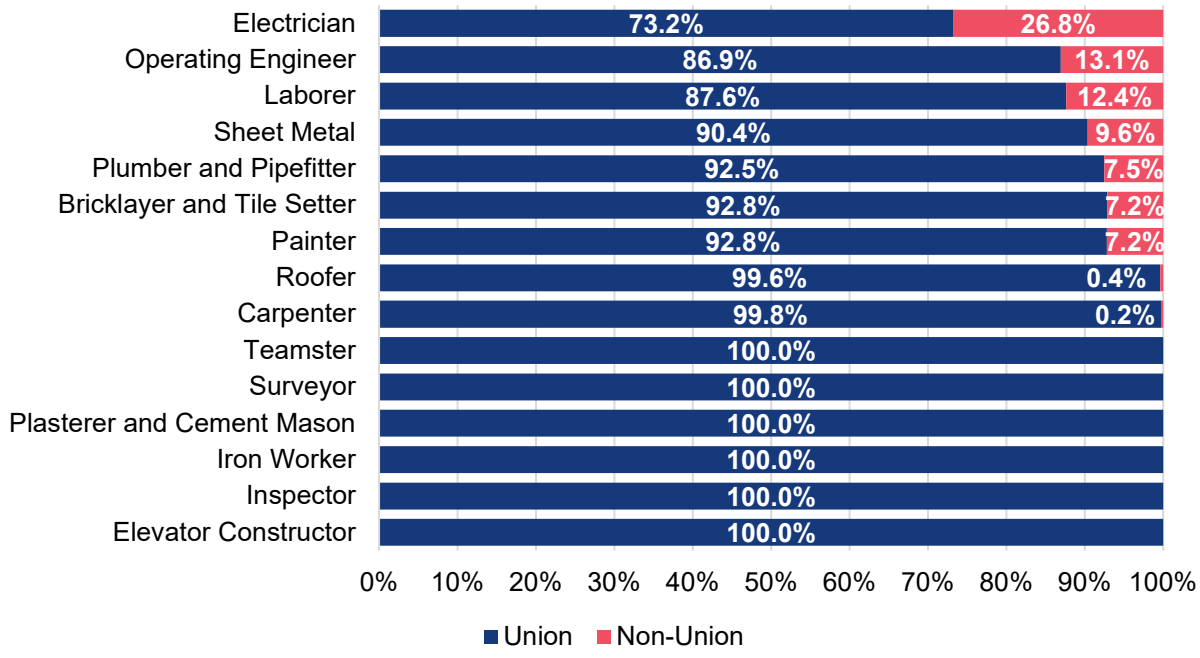
Figure 2-20: Apprenticeships by Union Status and Gender (Start Year 2008-2024)



Source: California Department of Industrial Relations Division of Apprenticeship Standards (June 2024)

Figure 2-21 shows the union status of apprentices by trade among the 15 trade categories used elsewhere in this report. Trades such as Electrician (26.8%), Operating Engineer (13.1%), and Laborer (12.4%) have relatively high shares of non-union apprentices. Conversely, the Teamster, Surveyor, Plasterer and Cement Mason, Iron Worker, Inspector, and Elevator Construction trades are 100% union apprenticeship programs.

Figure 2-21: Union Status by Trade (Start Year 2008-2024)

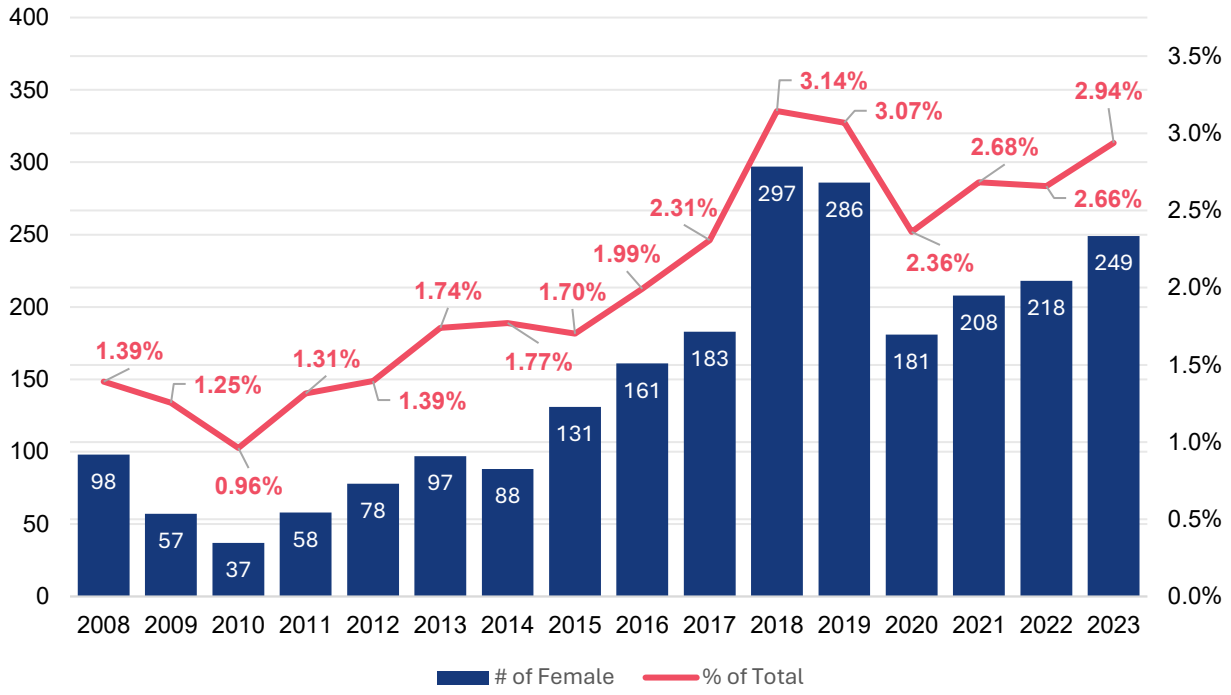


Source: California Department of Industrial Relations Division of Apprenticeship Standards (June 2024)

Male and Female Apprenticeship Participation by Year

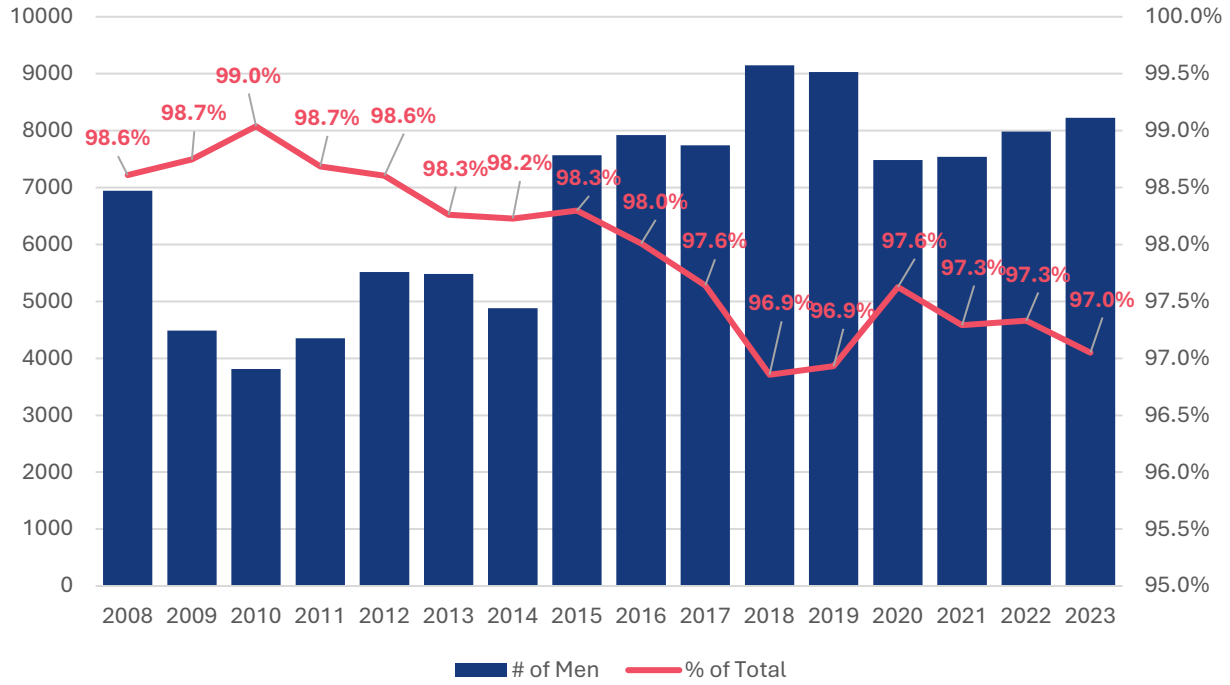
The annual female enrollment in union apprenticeship programs has more than doubled since 2008 in the Greater LA Area. Between 2008 and 2024, registered building trades apprenticeship programs in the Greater LA Area recruited over 2,500 female apprentices, over half of whom registered after 2018. As **Figure 2-22** shows, female participation peaked in 2018 at just over 3% of apprentices. While female participation in apprenticeship programs decreased at the start of the COVID-19 pandemic in 2020, rates of female participation have steadily risen every year since. Conversely, **Figure 2-23** shows that male participation rates in union apprenticeship programs have decreased during the same period. That said, men still account for the vast majority of apprenticeship participation.

Figure 2-22: Female Apprenticeship Participation by Year (Start Year 2008-2024)



Source: California Department of Industrial Relations Division of Apprenticeship Standards (June 2024)

Figure 2-23: Male Apprenticeship Participation by Year (Start Year 2008-2024)

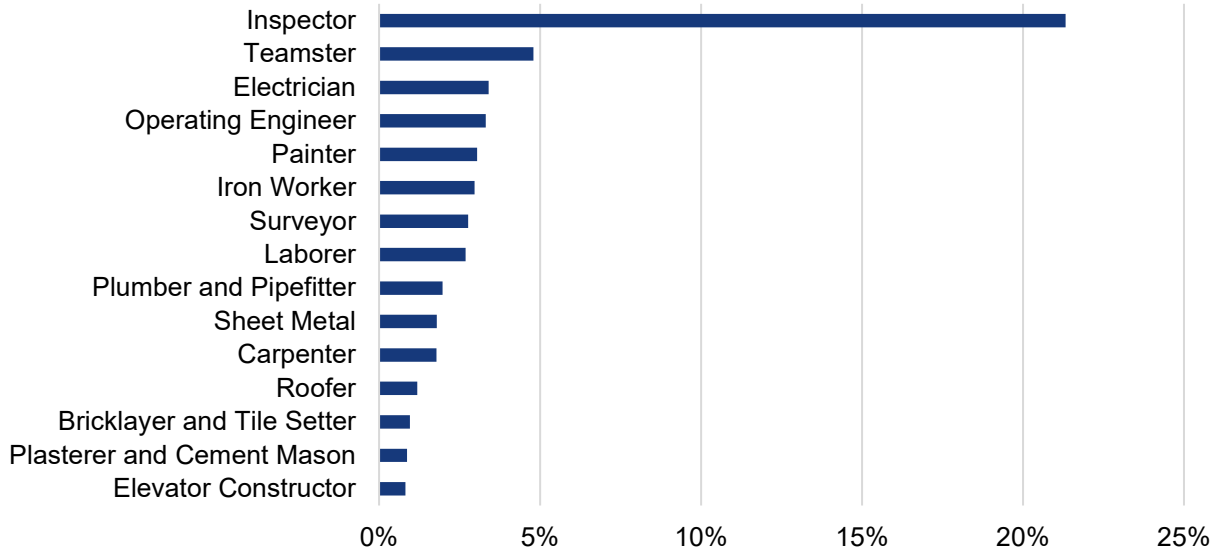


Source: California Department of Industrial Relations Division of Apprenticeship Standards (June 2024)

Female Apprenticeship Participation by Trade

Although the overall share of women in union apprenticeship programs in the Greater LA Area has remained between 1% and 4% since 2008, female participation varies widely across trades as shown in **Figure 2-24**. Since 2008, over 20% of Inspector apprentices have identified as female, whereas no other trade has reached 5% female apprenticeship participation. Union apprenticeship programs with the next highest female participation rates are Teamsters (4.8%), Electricians (3.4%), Operating Engineers (3.3%), Painters (3.0%), and Iron Workers (3.0%).

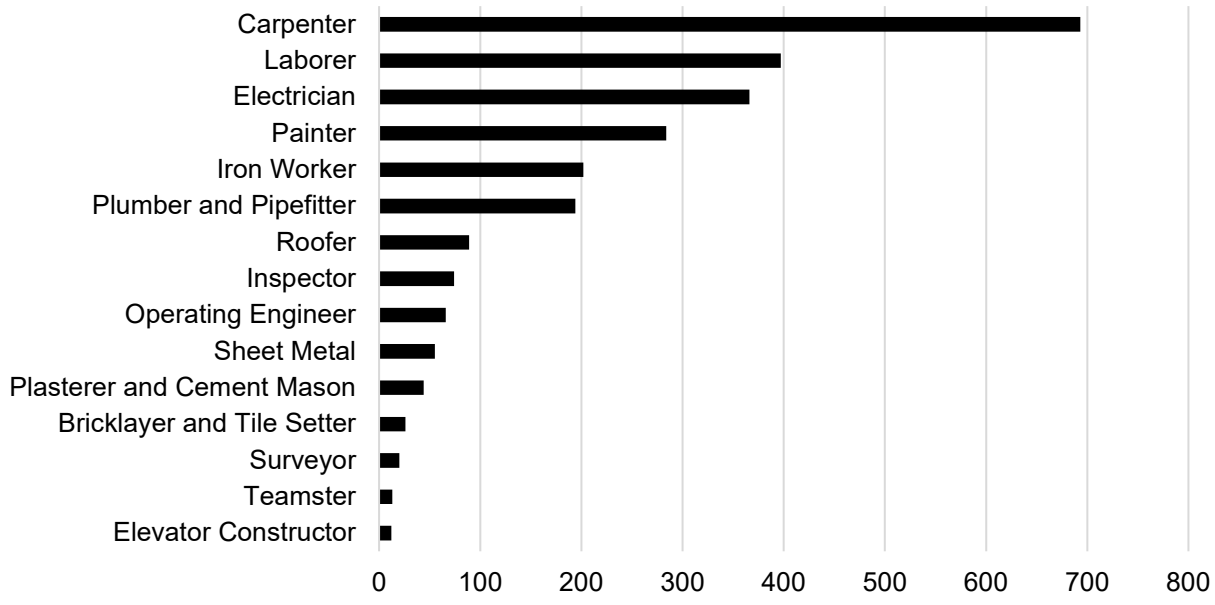
Figure 2-24: Share of Female Apprentices by Trade (Start Year 2008-2024)



Source: California Department of Industrial Relations Division of Apprenticeship Standards (June 2024)

Figure 2-25 categorizes the 2,535 union female apprenticeships started since 2008 by trade. Despite relatively low female participation rates, the overall number of female apprentices has been highest among Carpenters, which have enrolled nearly 700 women in union apprenticeship programs in the Greater LA Area since 2008. Laborers, Electricians, Painters, and Iron Workers have also enrolled over 200 female apprentices each since 2008.

Figure 2-25: Total Female Apprentices by Trade (Start Year 2008-2024)



Source: California Department of Industrial Relations Division of Apprenticeship Standards (June 2024)

Apprenticeship durations vary substantially depending on trade and individual programs. **Table 2-24** shows the range of program durations for each trade. Inspector and Sheet Metal programs are longest on average, with all programs lasting 60 months in total. Laborer programs vary the most, with some programs as short as 18 months and others as lengthy as 60 months. Teamster/Driver and Surveyor programs have the shortest maximum durations at 36 months.

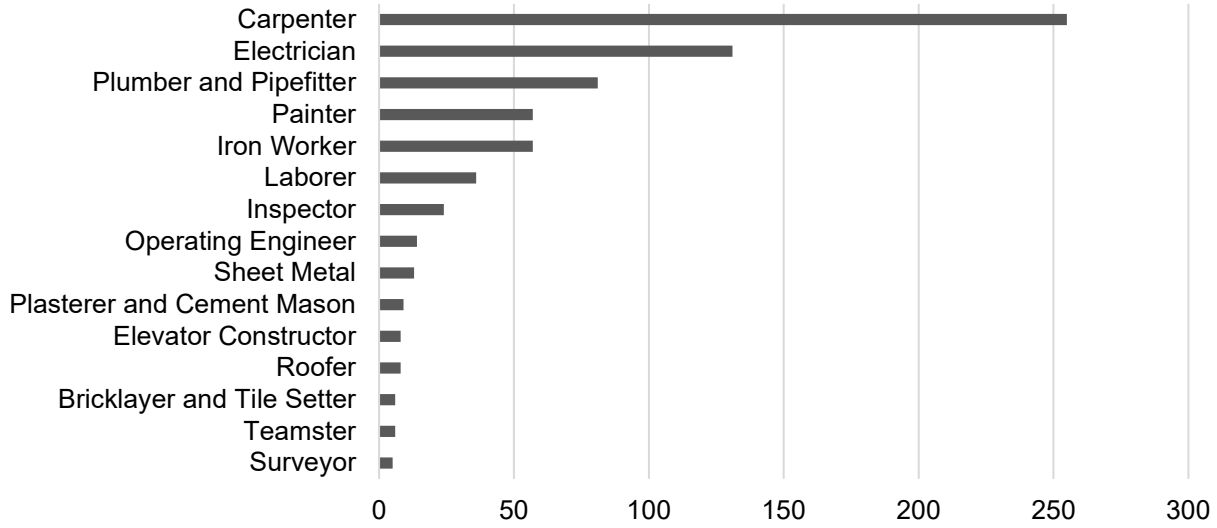
Table 2-24: Range of Apprenticeship Program Durations by Trade

Trade	Training Duration (Months)
Inspector	60
Sheet Metal	60
Plumber and Pipefitter	48 - 60
Electrician	36 - 60
Carpenter	36 - 60
Painter	36 - 60
Laborer	18 - 60
Elevator Constructor	48
Iron Worker	48
Plasterer and Cement Mason	36 - 48
Operating Engineer	24 - 48
Bricklayer and Tile Setter	24 - 48
Roofer	42
Teamster/Driver	36
Surveyor	24 - 36

Source: California Department of Industrial Relations Division of Apprenticeship Standards (June 2024)

As of June 2024, there were 710 women actively enrolled in union apprenticeship programs in the Greater Los Angeles Area. The Carpenter trade has the most females active in apprenticeships with 255 females (or 36% of total active female apprentices). Electricians are next with 19% of the total active female apprentices, followed by Plumbers and Pipefitters with 11%. **Figure 2-26** shows that the trades with the highest number of active female apprentices are (1) Carpenter, (2) Electrician, (3) Plumber and Pipefitter, (4) Painter, and (5) Iron Worker. These top five trades represent 82% of the active female apprentices in the Greater LA Area. More than half of the female apprentices in the Greater LA Area are in the top two trades (Carpenter and Electrician). Although Laborers had the second-most female apprentices recruited from 2008 to 2023, they have the sixth-most active female apprentices as of June 2024.

Figure 2-26: Active Female Apprentices by Trade (Start Year 2008-2024)



Source: California Department of Industrial Relations Division of Apprenticeship Standards (June 2024)

Female Apprenticeship Participation by Program

Table 2-25 below lists the five largest union apprenticeship programs in the Greater LA Area. Although the Plumber/Pipefitter and Painter trades are in the top five of active female apprentices, their largest state-registered union apprenticeship programs are outside the top five, suggesting those trades have relatively decentralized apprenticeship systems.

Table 2-25: Active Female Apprentices by Program (Start Year 2008-2024)

State- Registered Apprenticeship Program	Trade	# of Female Apprentices
Southwest Carpenter and Affiliated Trades J.A.T.C. (Carpenters)	Carpenter	182
Los Angeles Electrical JATC	Electrician	59
Southern California Operating Engineers J.A.C.	Operating Engineer/ Inspector[59]	38
International Association of Bridge, Structural. Ornamental & Reinforcing Ironworkers L433 J.A & T.C.	Iron Worker	35
Southwest Carpenter and Affiliated Trades J.A.T.C	Laborer	30

Source: California Department of Industrial Relations Division of Apprenticeship Standards (June 2024)

[59] Southern California Operating Engineers J.A.C. trains apprentices in both the Operating Engineer and Inspector trades which is why this program ranks in the top five programs for active females, but the individual trades are not in the top five trades for active female apprentices.

There are over 145 state-registered apprenticeship programs in the Greater LA Area in the 15 trades identified elsewhere in this report. **Table 2-26** below shows each trade's largest union apprenticeship program in the Greater LA Area in terms of female recruitment between 2008 and June 2024. Over 100 female apprentices have enrolled in each of the largest Carpenter, Laborer, Electrician, Painter, and Iron Worker programs since 2008.

Table 2-26: Total Female Apprentices Enrolled by Largest Trade Program (Start Year 2008-2024)

Trade	State- Registered Apprenticeship Program	# of Female Apprentices Enrolled
Carpenter	Southwest Carpenter and Affiliated Trades J.A.T.C. (Carpenter)	422
Laborer	Laborers Southern California Joint Apprenticeship Committee	366
Electrician	Los Angeles Electrical JATC	147
Painter	District Council #36 Painter, Paperhanger, and Decorator JATC	147
Iron Worker	International Association of Bridge, Structural, Ornamental & Reinforcing Ironworker L433 J.A.&T.C.	123
Roofer	Southern California Roofers Waterproofers J.A.T.C.	78
Inspector	Southern California Operating Engineers J. A. C.	70
Operating Engineer	Southern California Operating Engineers J. A. C.	66
Plumber and Pipefitter	Los Angeles & Vicinity Steamfitters and Industrial Pipefitters Joint Apprenticeship Training Committee	60
Sheet Metal	Southern California Sheet Metal J.A.&T.C.	51
Plasterer and Cement Mason	Southern California Cement Masons J.A.C.	32
Surveyor	Southern California Surveyors J.A.C.	20
Bricklayer and Tile Setter	Joint Apprenticeship Committee Tile & Terrazzo Industry	19
Elevator Constructor	Southern California Elevator Constructor Joint Apprenticeship and Training Committee	11
Teamster	Construction Teamsters Apprenticeship Fund of So California J A C	11

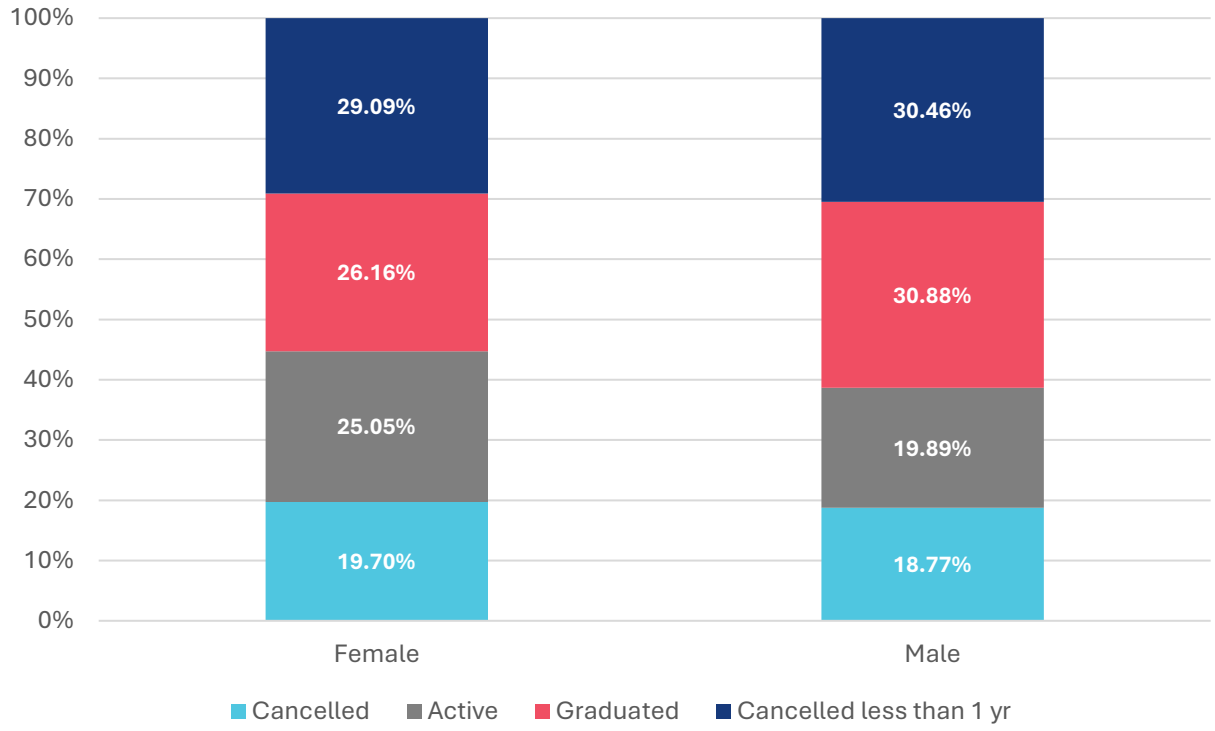
Source: California Department of Industrial Relations Division of Apprenticeship Standards (June 2024)

Female Apprentice Retention and Graduation in the Greater LA Area

Apprenticeship Status by Gender

Overall cancellation rates in the Greater LA Area union apprenticeship programs is similar across genders, but graduation rates have been lower among women compared to men. As **Figure 2-27** shows, approximately 49% of men and 49% of women who started apprenticeships since 2008 have cancelled, whereas 31% of men and 26% of women have graduated.

Figure 2-27: Apprentice Status by Gender (Start Year 2008-2023)

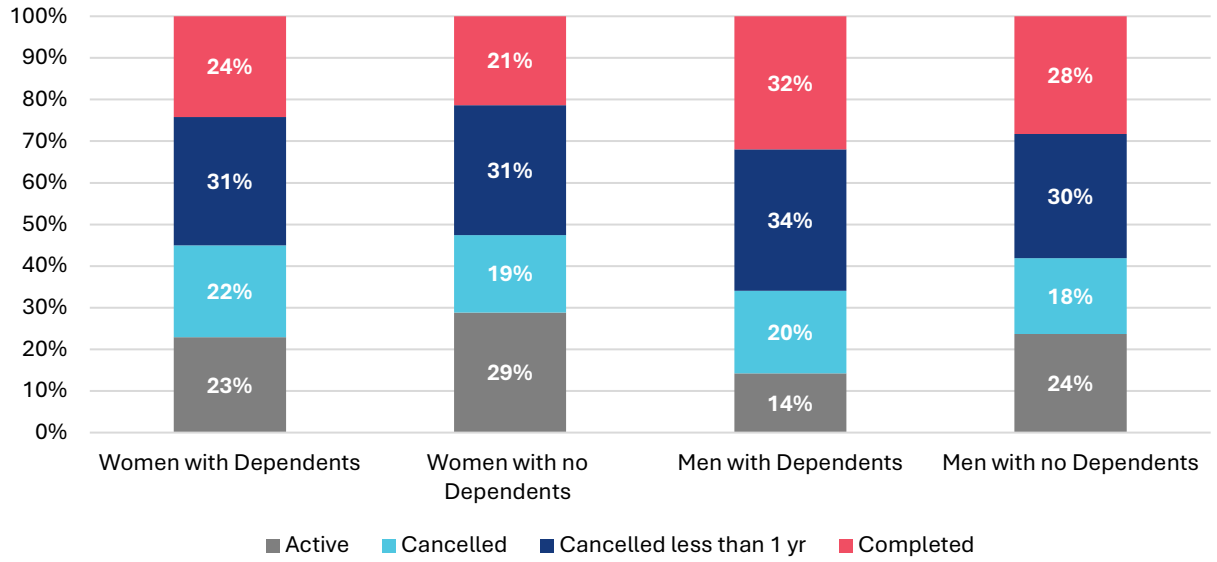


Source: California Department of Industrial Relations Division of Apprenticeship Standards (June 2024)

Apprenticeship Status by Gender and Dependent Status

Unionized construction careers have historically provided family-sustaining wages to working class families. However, the early morning schedules and relatively low wages of apprentices create barriers for parents, especially single parents, to find appropriate child care during their training. **Figure 2-28** supports this notion, showing how both men and women with dependents are more likely to cancel their apprenticeship than those without dependents. Men and women with dependents have similar cancellation rates. Male apprentices are 6% more likely to cancel their apprenticeship contracts if they have dependents, and females are 3% more likely to cancel if they have dependents.

Figure 2-28: Apprentice Status by Gender and Dependent Status (Start Year 2008-2023)

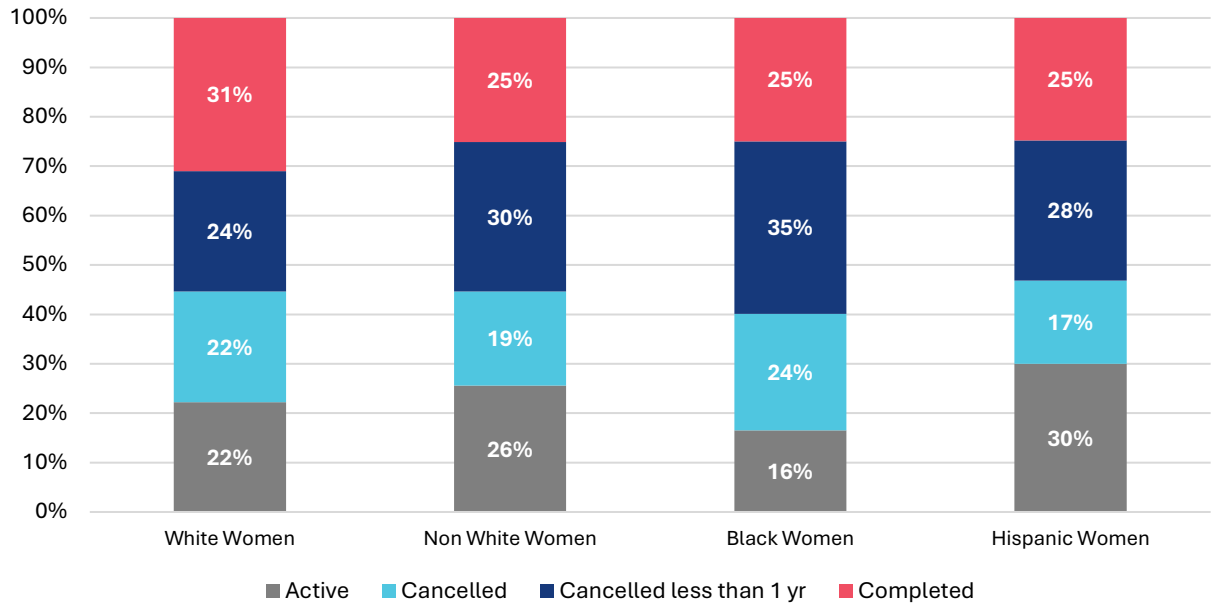


Source: California Department of Industrial Relations Division of Apprenticeship Standards (June 2024)

Apprenticeship Status by Race and Ethnicity

Figure 2-29 shows the status for female apprentices who enrolled from 2008 to 2023 by race. White women graduated at a higher rate than Hispanic, Black, and nonwhite women. Black women are much more likely to cancel within one year compared to Hispanic and white women.

Figure 2-29: Female Apprentice Status by Race/Ethnicity (Start Year 2008-2023)

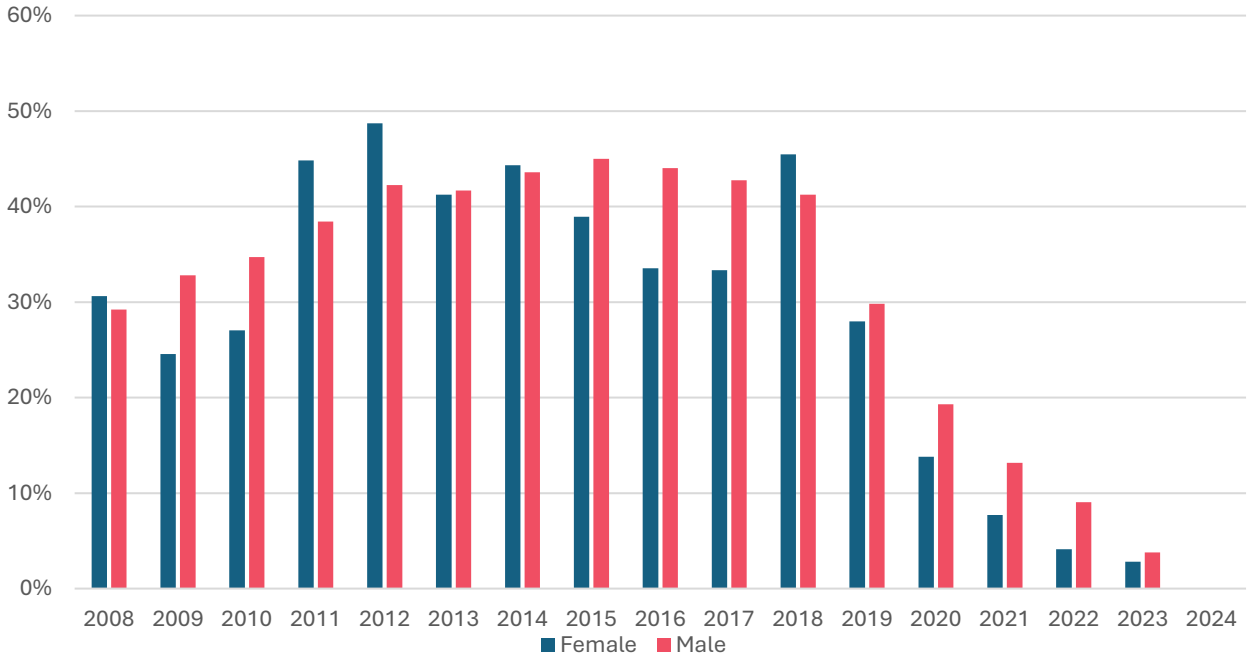


Source: California Department of Industrial Relations Division of Apprenticeship Standards (June 2024)

Apprenticeship Graduations by Gender and Year

Female apprenticeship graduation rates have been lower and less consistent than male graduation rates since 2008. **Figure 2-30** shows that male apprenticeship graduation rates increased somewhat steadily from 29% among 2008 entrants to 45% among 2015 entrants. Conversely, female apprenticeship graduation rate peaked at 49% among 2012 entrants, declined to 33% among 2017 entrants, and increased again to 45% among 2018 entrants. Female apprenticeship graduation rates were also lower than male graduation rates among those starting programs from 2019 through 2023, which may reflect COVID-19 impacts or trade-specific dynamics, as the trade with the highest female apprentice participation rate (Inspector) requires the longest completion time of five years.

Figure 2-30: Male and Female Apprenticeship Graduations by Year (Start Year 2008-2024)

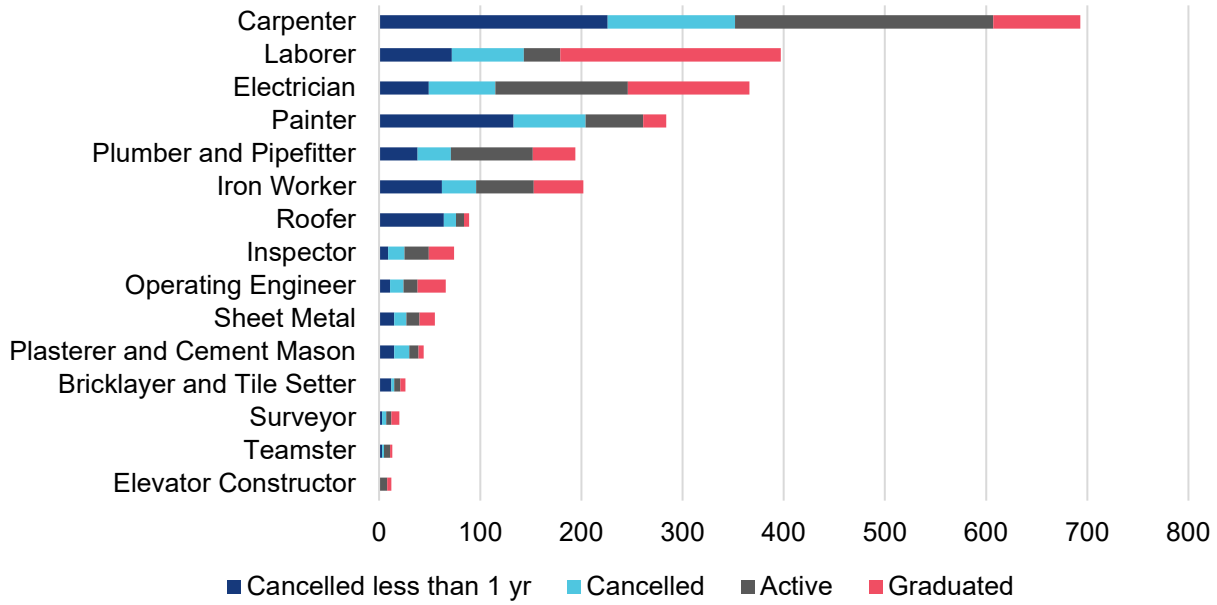


Source: California Department of Industrial Relations Division of Apprenticeship Standards (June 2024)

Female Apprentice Cancellations by Trade

Among the 2,535 female apprenticeship participants since 2008, over 700 have cancelled within one year of starting their program. **Figure 2-31** shows how many apprentices per trade have cancelled in less than one year, cancelled in more than one year, graduated from, or remain enrolled in apprenticeship programs. Over 200 female Carpenter apprentices have cancelled within one year, while over 100 female Painter apprentices have cancelled within one year.

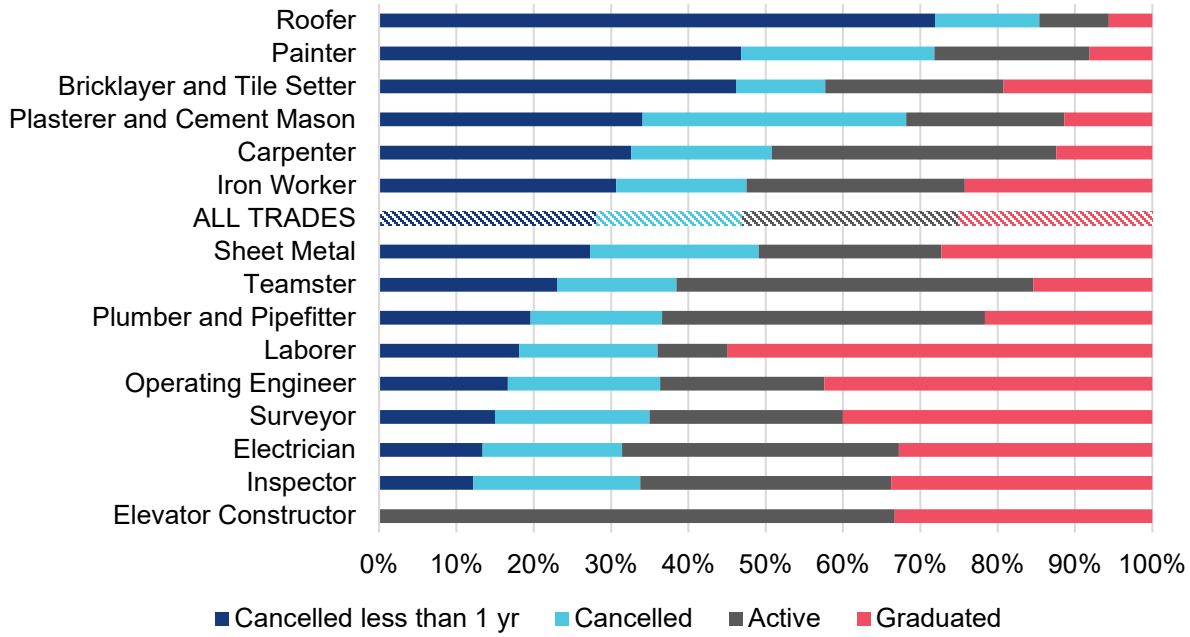
Figure 2-31: Female Apprentices by Trade and Status (Start Year 2008-2024)



Source: California Department of Industrial Relations Division of Apprenticeship Standards (June 2024)

In addition to Carpenters and Painters, female apprentices in Roofer, Bricklayer and Tile Setter, and Plasterer and Cement Mason programs face relatively high cancellation rates exceeding 50%. **Figure 2-32** shows each trade's share of apprenticeship cancellations, active enrollments, and graduations. Over 80% of females enrolled in Roofer apprenticeships since 2008 have cancelled, with over 70% cancelling within one year. Over 40% of female apprentices in Painter and Bricklayer and Tile Setter programs have also cancelled within one year of enrollment. Female apprenticeship cancellation rates are lowest in the Elevator Constructor, Electrician, Inspector, and Surveyor trades.

Figure 2-32: Female Apprenticeship Status by Trade (Start Year 2008-2024)

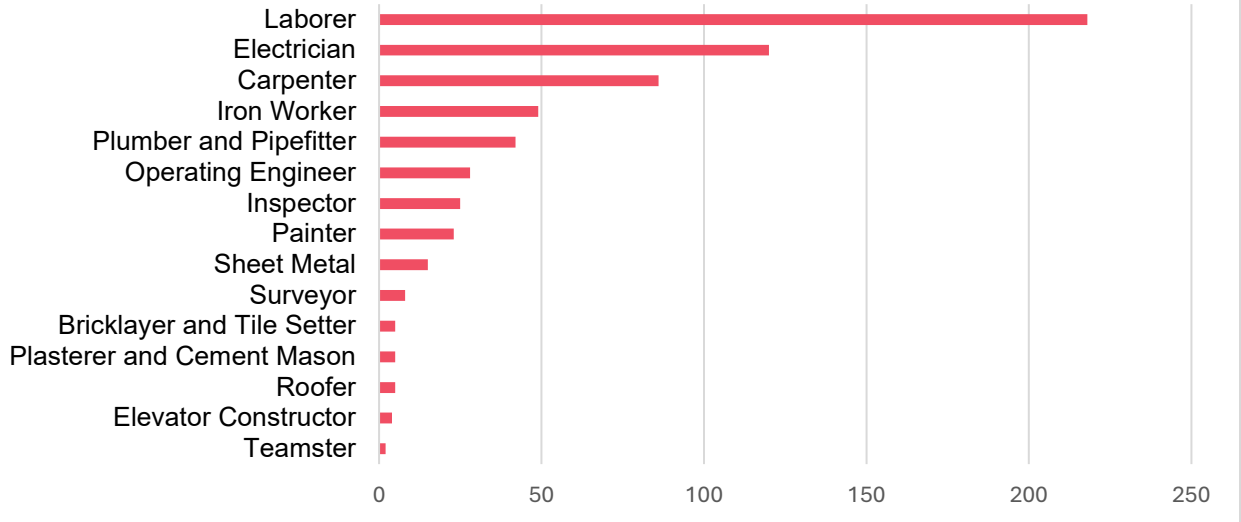


Source: California Department of Industrial Relations Division of Apprenticeship Standards (June 2024)

Female Apprenticeship Graduations by Trade

Between 2008 and 2023, 635 female apprentices graduated from a union apprenticeship program and became journey workers, 272 of which enrolled after 2018. As shown in **Figure 2-33**, the trades with the highest number of female apprentice graduates were (1) Laborer, (2) Electrician, (3) Carpenter, (4) Iron Worker, and (5) Plumber and Pipefitter.

Figure 2-33: Female Apprenticeship Graduates by Trade (Start Year 2008-2023)



Source: California Department of Industrial Relations Division of Apprenticeship Standards (June 2024)

Female Apprenticeship Graduates by Program

The three largest apprenticeship programs in terms of female graduations serve the three largest trades of Laborers, Carpenters, and Electricians. **Table 2-27** shows the five largest programs, which also includes an Iron Worker program and a program serving Operating Engineers and Inspectors.

Table 2-27: Female Apprenticeship Graduates by Program (Start Year 2008-2023)

State-Registered Apprenticeship Program	Trade	# of Female Graduates
Laborers Southern California Joint Apprenticeship Committee	Laborer	210
Southwest Carpenter and Affiliated Trades J.A.T.C. (Carpenters)	Carpenter	60
Los Angeles Electrical JATC	Electrician	54
Southern California Operating Engineers J.A.C.	Operating Engineer/Inspector[60]	53
International Association of Bridge, Structural. Ornamental & Reinforcing Ironworkers L433 J.A & T.C.	Iron Worker	43

Source: California Department of Industrial Relations Division of Apprenticeship Standards (June 2024)

Construction Workforce Training Ecosystem

The education and service-providing organizations are fundamental to the success of today's Los Angeles-area tradeswomen and will be central to future efforts to advance women in construction. Pre-Apprenticeship, or Apprenticeship Readiness Programs are more general vocational training programs that introduce participants to a range of construction trades. Apprenticeship Readiness Programs develop vocational skills to succeed in apprenticeships, and they also expose participants to various trades so participants can make informed decisions when choosing apprenticeships. These programs are often run by community-based organizations or schools as pre-apprenticeships specialize in targeting specific populations. For example, the Anti-Recidivism Coalition and WINTER (Women in Non-Traditional Employment Roles) operate pre-apprenticeship programs to educate formerly incarcerated individuals and women about the career opportunities in construction.

[60] Southern California Operating Engineers J.A.C. trains apprentices in both the Operating Engineer and Inspector trades which is why this program ranks in the top five programs for graduated females, but the individual trades are not in the top five trades for graduated female apprentices.

LA/OCBCTC Apprentice Readiness Fund

The Los Angeles/Orange Counties Building and Construction Trades Council (LA/OCBCTC) administers the Apprenticeship Readiness Fund (ARF), which funds dozens of Multi-Craft Core Curriculum pre-apprenticeship training programs across Los Angeles and Orange Counties. The Fund is a connective tissue between the unions, supportive service providers, and employer-based jobs coordinators. Many workers embarking on construction careers struggle with transportation, child care, unemployment, and other ancillary needs that directly impact their ability to enter and complete apprenticeships. ARF provides case management for participants to address these needs and helps place program graduates into affiliate unions.[61]

Through the ARF, the Building Trades have developed initiatives to address the low numbers of women in the industry. Most recently, the Fund ran a social media recruitment campaign that featured women in a variety of construction professions. They also hosted a focus group on tradeswomen's issues that recommended the development of child care services and women's mentoring groups among affiliate unions.[62]

One key feature of all of these apprenticeship readiness programs is the use of the Multi-Craft Core Curriculum (MC3). MC3 was developed by the national building trades based on their assessment of the most important skills for workers to be accepted into and succeed in apprenticeship programs. The MC3 does not tailor its training to a particular trade but exposes participants to a range of trades. The LA/OCBCTC approves programs to use the MC3 and aims to coordinate with these programs to create and enhance the links between these entry-level training programs and apprenticeship programs.

[61] LA City Workforce Development Board et al, "2024 Concept Paper: Los Angeles Workforce Infrastructure Network."
[62] Apprenticeship Readiness Fund interview.

Table 2-28 shows data collected by the LA/OCBCTC Apprenticeship Readiness Fund for MC3 programs in the LA region. Data shows that women account for 19% of total enrolled pre-apprentices and graduates, indicating that completion rates are the same across men and women. Annual enrollment has decreased by half since 2018, but female participation has remained consistent.

Table 2-28: LA/OCBCTC Apprenticeship Readiness Fund Program Participants

	Female		Male		Total	
Year	Enrolled	Passed	Enrolled	Passed	Enrolled	Passed
2016	100	58	252	224	352	282
2017	79	72	300	281	379	353
2018	214	199	856	796	1,070	995
2019	180	159	836	688	1,016	847
2020	97	84	405	302	502	386
2021	87	66	431	321	518	387
2022	103	83	459	405	562	488
2023	110	87	482	382	592	469
Total	**970**	**808**	**4,021**	**3,399**	**4,991**	**4,207**
% of total	**19%**	**19%**	**81%**	**81%**	**100%**	**100%**

Source: LA/OCBTC Apprenticeship Readiness Fund

Apprenticeship Readiness Programs

Los Angeles has a dense network of skill-based training programs that prepare participants for construction apprenticeships. Among the most prominent organizations that offer a mix of training programs and supportive services for participants are the Flintridge Center, Second Chance, WINTER, Playa Vista Job Opportunities and Business Services, and various YouthBuild programs.

Several Los Angeles apprenticeship readiness programs implement the MC3, a comprehensive curriculum developed by North America's Building Trades Unions (NABTU).[63] MC3 programs train students on the industry, tools and materials, and blueprint reading to ensure that participants get insight on a career in a variety of construction trades.[64] Los Angeles Unified School District (LAUSD) offers many MC3-affiliated programs that connect students to careers in the trades.

[63] LA/OC BCTC, "Apprentice Readiness Fund," https://laocmc3.org/.
[64] North America's Building Trades Unions, "The Building Trades' Multi-Craft Core Curriculum: A Guide for Students and Parents," https://nabtu.org/wp-content/uploads/2017/08/MC3-in-Our-Schools-A-Guide-for-Students-and-Parents.pdf.

HireLAX Apprenticeship Readiness Program

Los Angeles World Airports (LAWA) offers a unique pre-apprenticeship program in collaboration with various other public and nonprofit entities that encourages female participation. The HireLAX Apprenticeship Readiness Program enrolls airport-area residents in an 8-week pre-apprenticeship program that follows the Multi Craft Core Curriculum (MC3). MC3 is a comprehensive trade-developed curriculum that trains the prospective construction workforce. LAWA developed HireLAX to integrate with several community and public agency partners to assist with recruitment and support of its participants. Partners include the City of Los Angeles, Los Angeles Southwest College, Los Angeles County, the Flintridge Center, the AFL-CIO, Second Call, Work Source, and America's Job Center of California (AJCC). Upon completion of the program, HireLAX places graduates on LAWA projects through its contractors and local craft unions.

HireLAX strongly and actively supports women to participate in the program. 20% of program graduates are women, and recruitment of women and girls into HireLAX is individualized across LAWA's workforce programs.[65] These include internships and STEM programs where LAWA administrators expose potential program participants to construction careers. The Community Relations office ensures that aviation career pathways go beyond pilots and airplane mechanics to incorporate construction careers. LAWA's annual Aviation Career Day has taught more than 1,000 students about aviation-related careers and includes recruitment for HireLAX.[66] While many programs focus career outreach on high school students, HireLAX intentionally targets girls through early exposure during any elementary-school community programming.[67]

Like the approach of LA County Public Works staff, LAWA's contracting personnel verbally and informally establish the agency's desire for contractors to make best efforts in the recruitment of women into project jobs.[68]

Women in Non-Traditional Employment Roles (WINTER)

Women in Non-Traditional Employment Roles (WINTER) offers the only gender-specific pre-apprenticeship program in the state, providing women with 10 weeks of vocational training and exposure to construction trades through the LA/OC Building Construction Trade Council's MC3 curriculum. The organization has been in operation for 37 years and provides a free ten-week MC3 apprenticeship readiness program to women interested in the building trades. WINTER also provides resource navigation, transitional services, job placement, and retention services to its participants.[69] The organization partners with individual trades, the Apprentice Readiness Fund, and the county's network of supportive service providers to maximize success among program participants.

[65] Los Angeles World Airports (LAWA), interview by Estolano Advisors, September 10, 2024.
[66] Los Angeles World Airports, "Aviation Career Day," https://www.lawa.org/groups-and-divisions/community-relations/lax/programs/aviation-career-day.
[67] LAWA interview.
[68] LAWA interview.
[69] WINTER, interviews with Estolano Advisors, July 25 and August 15, 2024.

Table 2-29 shows WINTER's annual program metrics from FY 2017-2018 until FY 2023-2024. WINTER's outreach has increased, but enrollments have decreased since FY 2017-2018. Of the 1,415 women who attended a WINTER orientation since 2017, 160 or 11% have successfully completed pre-apprenticeship and entered apprenticeship.

Table 2-29: WINTER Program Participation (FY 2017/18 – FY 2023/24)

	FY 2017-2018	FY 2018-2019	FY 2019-2020	FY 2020-2021	FY2021-2022	FY 2022-2023	FY 2023-2024	Total
# Attended Orientation	130	150	149	270	186	207	323	**1,415**
Enrolled	70	74	26	30	22	39	55	**316**
Graduated	65	56	20	26	16	25	43	**251**
Union Placements	50	25	11	15	9	20	30	**160**

Source: WINTER

Other Tradeswomen Organizations and Programs

Tradeswomen Ran Association for Diversity and Equity (T.R.A.D.E.) is a new organization focused on building solidarity, community, and mentorship among women in the trades. T.R.A.D.E. hosts periodic happy hours and recruitment career fairs. They also fund delegations of Los Angeles tradeswomen to attend national conferences.[70]

Several building trades offer women's mentorship programs where apprentices can connect with journeypersons with industry experience.[71] The International Brotherhood of Electrical Workers (IBEW) Local 11 hosts monthly meetings for tradeswomen to meet and build comradery.[72] The meetings are open to women in all trades as well as WINTER pre-apprenticeship participants.

[70] T.R.A.D.E., email correspondence with Estolano Advisors, October 23, 2024.
[71] Apprenticeship Readiness Fund, interview by Estolano Advisors, September 10, 2024.
[72] IBEW Local 11, interview by Estolano Advisors, September 23, 2024.

3. KEY BARRIERS FACING WOMEN IN CONSTRUCTION

To gain insight into the challenges women face in entering and staying in the construction workforce in the Los Angeles region, the consultant team conducted interviews with union representatives, apprenticeship coordinators, public agencies, project owners, and aspiring tradeswomen. The key takeaways on barriers to recruiting and retaining women include:

Barriers to Recruitment

1. Not Enough Demand for Women Workers
2. Awareness of Construction Careers is Limited by Who You Know
3. Lack of Stipends During Pre-Apprenticeship Training and Benefits Cliff

Barriers to Retention

1. Need for Comprehensive Supportive Services
    a. Child Care
    b. Transportation
    c. Mental Health Services
2. Need for Culture Change
    a. On-site Harassment and Job Site Culture
    b. Isolation of Women Workers

While construction jobs have low barriers to entry for those with high school diplomas or GEDs, becoming a skilled tradesperson requires years of classroom and on-the-job training, mentorship by journey-level workers and awareness of job opportunities through word-of-mouth and relationships. Women encounter additional challenges, including toxic job site cultures, discrimination, harassment, and limited access to supportive services such as child care.

Understanding these barriers and addressing them through effective policies and workplace practices will help women achieve journey-level status and obtain the necessary certifications to succeed in their construction careers. Reaching this milestone enables women to earn family-sustaining wages and opens doors to further career opportunities, such as roles as foreperson, superintendents, or even starting their own construction businesses. By tackling these barriers today, Metro and its partners can build a more diverse workforce for the future.

Barriers to Recruitment

Not Enough Demand for Women Workers

> *"With PLAs, contractors will call in and ask for women to meet quotas, so they don't have to wait as long to find work." – Recent WINTER graduate*[73]

The construction industry continues to face gender discrimination in hiring and bias. Establishing clear goals and demands from public owners on projects is essential for removing this bias at the outset. In the Los Angeles region, only Metro has established female participation goals on their construction projects.

Without clear demand for women workers from public owners of projects, contractors will often fall back on traditional practices for deploying workers on a project that are steeped in bias.[74] Contractors often rely on recommendations when hiring and requesting workers from union halls. Therefore, Project Labor Agreements (PLA) and Community Workforce Agreements (CWAs) that include specific targets for female participation help ensure that both unions and contractors recognize the importance of training and placing women on projects. Examples of "subjective hiring tests" include recruitment practices, such as (1) word-of-mouth referrals where workforce is not diverse, (2) reliance on subjective evaluations, such as the "eye ball" test, from predominantly white supervisors, (3) neglecting to post job opportunities, and (4) an overemphasis on promoting from within can perpetuate racial and gender bias in hiring and promotions.[75]

Creating a public owner direct hiring policy to ensure that the female workforce get access to work on projects is crucial for increasing equity. Project owners use PLAs and CWAs to include successful initiatives, such as setting firm apprenticeship diversity requirements in partnership with Joint Apprenticeship Training Committees (JATCs), specifying goals for hours worked on projects by women (including journey-level workers), and establishing these goals for women across multiple projects and jurisdictions to create sustained demand for women workers. Federal partners are also potential key allies in this effort. For example, the Office of Federal Contract Compliance Programs (OFCCP) Megaproject Program promotes equal opportunity in the construction trades workforce of federal contractors and subcontractors on large federal projects by engaging stakeholders early to remove hiring barriers and encourage consideration of a diverse pool of qualified workers.[76]

---

[73] Anonymous. Zoom Interview with Estolano Advisors. 2024. *WINTER Lived Experience: Estolano Advisors (EA) Construction Workforce Disparity Study Interview.* Zoom Interview, October 15, 2024.
[74] https://www.dol.gov/sites/dolgov/files/WB/media/508_WB_Issuebrief-Equity-Module_10022023.pdf , page 4
[75] https://www.dol.gov/agencies/ofccp/compliance-assistance/outreach/resources/construction-best-practices
[76] https://www.dol.gov/sites/dolgov/files/OFCCP/Construction/MegaProgram/Files/OFCCP-Sixteen-Affirmative-Action-Steps.pdf

Awareness of Construction Careers is Limited by Who You Know

> *"If more women knew about the support and resources available [in the trades], it would be easier to recruit." – Recent WINTER graduate*[1]

As noted in Section 2, **Figure 2-22** shows that female recruitment into the building trades apprenticeship programs has increased since 2008. However, women still represent less than 3 percent of the construction apprentices in the region. Efforts to diversify the construction workforce has resulted in various policies and programs to increase the recruitment of women and people of color into registered construction apprenticeship programs. However, informal networks and word of mouth continue to drive the exposure and recruitment of people into careers in the trades.[77]

Women in Non-Traditional Employment Roles (WINTER) is the state's only gender-specific pre-apprenticeship program and has graduated 251 women into apprenticeship since 2008. WINTER's resource navigators can take up to a year of providing resources and support to prepare women to be able to join the program and quit their jobs.[78] Gender-specific training and targeted recruitment programs expose women to the trades and create institutionalized communities of women in construction.

> *"By the time you have gotten to high school, you already have an idea of what you can do. Normalize [construction] as an option. The opportunities for growth would be a game changer" – Recent WINTER Graduate*[79]

A major obstacle to recruiting women into the construction industry is the negative association many have with the field. Women are less likely to be introduced to or encouraged to explore construction careers. Additionally, those who do show interest often need more support and motivation to enroll in training programs compared to men,[80] as many women have been socialized to not work with tools and lack the confidence to enter careers in the trades.[81] A 2021 national survey of tradeswomen found that the most effective mechanisms to recruit female construction workers is through word-of-mouth recommendations and training programs that can provide the personalized support and encouragement for women interested in the trades.[82]

---

[77] Hegewisch, Ariane, and Eve Mefferd. n.d. "A FUTURE WORTH BUILDING." https://iwpr.org/wp-content/uploads/2022/02/A-Future-Worth-Building_What-Tradeswomen-Say_FINAL.pdf. (Page 9)
[78] Flores, Luz. Zoom Interview with Estolano Advisors. *WINTER: Estolano Advisors (EA) Supportive Services Interview.* Zoom Interview, September 11, 2024.
[79] Anonymous. Zoom Interview with Estolano Advisors. 2024. *WINTER Lived Experience: Estolano Advisors (EA) Construction Workforce Disparity Study Interview.* Zoom Interview, October 15, 2024.
[80] Garcia, Ben. Zoom Interview with Estolano Advisors. 2024. *Apprenticeship Readiness Fund (ARF): Estolano Advisors (EA) Construction Workforce Disparity Study Interview.* Zoom Interview, September 10, 2024.
[81] Anthy Hadijimarkos, email message to author, October 24, 2024.
[82] Hegewisch and Mefferd. "A FUTURE WORTH BUILDING." (Page 9)

Some recent promising practices in targeted recruitment include:

- **Women in Nontraditional Employment Roles (WINTER): Outreach Strategy –** In 2022, WINTER created two full-time positions for outreach coordinators. Outreach coordinators target non-profits and social service industries that serve women and create partnerships to increase female exposure to the trades. Word of mouth has been a strong outreach tool; more recently there has been a wave of second-generation WINTER participants enrolling.[83]

- **Apprenticeship Readiness Fund (ARF): Digital Campaign Strategy:** ARF has utilized inclusive images and language in their public-facing materials. They launched a social media campaign to advertise the Multi-Craft Core (MC3) pre-apprenticeship curriculum. The advertising campaign led to outreach to 10,000 women and resulted in approximately 30 female enrollments to pre-apprenticeship.[84]

- **Construction Careers as an Opportunity for Reentry:** A 2021 study found that one third of people released from prison in 2010 did not find reemployment by 2014.[85] In this study, construction was in the top five sectors to employ formerly incarcerated people, employing 12.2% of people who found employment within 4 years of being released.[86] Education programs were found to increase post-release employment, especially for individuals who have experienced undereducation.[87] Employment after release is a significant factor to reduce the chances of recidivism and supports reentry.[88]

- **SB 828: Prison Apprenticeship Pilot Program:** In early 2024, Senator Smallwood-Cuevas introduced a bill that would create an apprenticeship training program in a state women's prison to create direct pathways for employment to reduce recidivism.[89] The proposed program would bring similar efforts of the California Department of Corrections and Rehabilitation (CDCR) that connect prison-trained apprentices to local ironworker's union, to incarcerated women.[90] However, the bill did not advance in the 2023-24 legislative session and it is unclear whether the bill will be reintroduced or revised in future sessions.

---

[83] Flores, Luz. Zoom Interview with Estolano Advisors. *WINTER: Estolano Advisors (EA) Construction Workforce Disparity Study Interview #1.* Zoom Interview, July 25, 2024.
[84] Garcia. "Apprenticeship Readiness Fund Interview." September 10, 2024.
[85] Carson, E, Danielle Sandler, Renuka Bhaskar, and Leticia Fernandez. 2021. "Special Report Employment of Persons Released from Federal Prison in 2010." https://bjs.ojp.gov/content/pub/pdf/eprfp10.pdf. (Page 14)
[86] Carson, Renuka and Fernandez. "Special Report Employment." (Page 21)
[87] Duwe, Grant, and Makada Henry-Nickie. 2021. "A Better Path Forward for Criminal Justice: Training and Employment for Correctional Populations." Brookings. April 30, 2021. https://www.brookings.edu/articles/a-better-path-forward-for-criminal-justice-training-and-employment-for-correctional-populations/.
[88] Duwe and Makada. "Better Path Forward." April 30, 2021.
[89] "2024 Legislation." 2024. California Senate District 28. 2024. https://sd28.senate.ca.gov/2024-legislation.
[90] Folsom. 2024. "Folsom Prison Inmates Graduate from Trade Schools." Goldcountrymedia.com. 2024. https://goldcountrymedia.com/news/126972/folsom-prison-inmates-graduate-from-trade-schools/.

- **Destination Crenshaw Partnership with Second Call:** Destination Crenshaw (DC) is a privately owned public benefits project in Leimert Park, LA. There are no direct public funding sources for pre-apprenticeship wages, so Destination Crenshaw connected with private funders to pay wages for its own pre-apprenticeship program. DC recruited and offered supportive services directly through outreach with Second Call, a local organization that focuses on high-risk and formerly incarcerated community members. The hourly wages and supportive services of Destination Crenshaw's pre-apprenticeship program ensure the targeted populations can succeed in training.[91]

- **IBEW Local 11 ETI Mentorship Program Offering Women Extra Resources (EMPOWER):** IBEW 11 partners with local organizations, MC3 pre-apprenticeship programs, schools, and community groups to recruit women. They attend job fairs, career days, and community events and specifically advertise the EMPOWER program to show women the opportunity for careers in the electrical industry. EMPOWER meetings are held monthly and provide food and activities for children to address the obstacles for women to attend. Meeting programs offer a range of hands-on workshops from origami, writing, and power tool safety to develop skills. IBEW 11 also uses the EMPOWER meeting space to create trainings on labor history and political activism and support prospective and existing female electricians. IBEW 11's targeted recruitment and retention efforts for women has increased female participation in apprenticeship to 5.6% across crafts, with a notable participation rate of 10.17% in Sound and Communication apprenticeship.[92]

[91] Foster, Jason. Zoom Interview with Estolano Advisors. *Destination Crenshaw: Estolano Advisors Construction Workforce Disparity Study Interview.* Zoom Interview, September 26, 2024.
[92] Anthy Hadijimarkos, email message to author, October 24, 2024.

Lack of Stipends During Pre-Apprenticeship Training and Benefits Cliff

> *"I had to quit my last job to start [pre-apprenticeship training] and chose to get a side job at McDonalds to pay my bills. My schedule was to wake up at 4am, get to the program at 5am, get off at 2pm and go work until midnight." – Lived Experience*[93]

While pre-apprenticeship and apprenticeship programs offer tuition-free training, the loss of wages during participation acts as a barrier to female involvement. Many pre-apprenticeship programs do not provide stipends for the duration of their 40-hour-per-week, 10-week programs, even though participants may be eligible for various public subsidies. Additionally, apprentices in early years of their training typically earn only 60% of a journey-worker's wage (many earning just above $20/hr.[94]) while no longer qualifying for supportive services from workforce programs (also known as "benefits cliff").[95] This situation creates additional challenges for apprentices from vulnerable populations as they attempt to complete their training.[96] The hardships caused by lack of adequate compensation during training can discourage women and lead many to drop out of the program.

> *"The cost of housing in Los Angeles County is sky-high and keeps rising… some of our apprentices are working full-time and going to school, but are still experiencing homelessness… Offering some form of food assistance could help keep apprentices focused on their training and success, rather than worrying about how to put food on the table." – EMPOWER*[97]

Pre-apprenticeship programs often require participants to attend the program for up to 40 hours per week, up to 10 weeks. Participants often must give up their current jobs and forfeit their wages during training or work additional hours to manage their financial needs. The Apprenticeship Readiness Fund of the LA/OC Building Trades Council provides stipends to WINTER participants, some up to $1,000 very two weeks[98] for the duration of the training period, but these amounts vary based on available funding and do not fully compensate for the lost hourly wages.[99] In contrast, Destination Crenshaw's pre-apprenticeship model utilized private funds to pay participants hourly wages, but there have been no direct public funds available to support pre-apprenticeship wages.[100]

---

[93] Anonymous. *WINTER Lived Experience Interview.* October 1, 2024.
[94] Anonymous. *WINTER Lived Experience Interview.* October 1, 2024.
[95] Office of the Secretary of Transportation. *Investing in America: Best Practices to Expand Access to Jobs and Economic Opportunity through Transportation Infrastructure Investments.* US Department of Transportation. (Page 25)
[96] Office of the Secretary of Transportation. *Investing in America: Best Practices to Expand Access to Jobs and Economic Opportunity through Transportation Infrastructure Investments.* US Department of Transportation. (Page 25)
[97] Anthy Hadijimarkos, email message to author, October 24, 2024.
[98] Flores. *WINTER Supportive Services Interview.* September 11, 2024.
[99] Flores. *WINTER Supportive Services Interview.* September 11, 2024.
[100] Foster. *Destination Crenshaw Interview.* September 26, 2024.

Barriers to Retention

The Need for Comprehensive Supportive Services

A. Access to Affordable and Inclusive Child Care

Child care is widely recognized as the greatest obstacle for female construction workers, though data indicates that having dependents impacts the completion rates of both male and female apprentices similarly. Nearly 54% of male and female apprentices with dependents drop out before reaching journey-level status. Women, however, continue to have the lowest completion rates for apprenticeships, less than a quarter have completed the full training.[101] Key challenges for parents in the trades include affordability, hours of operation, and location of child care services. Refer to **Section 4: Child Care** in this report for a detailed assessment and emerging practices to address child care needs in the construction workforce.

Affordability

Public subsidies and support programs, such as the Equal Representation in Construction Apprenticeship (ERiCA) and Greater Avenues for Independence (GAIN) grants, offer child care funding for female apprentices and pre-apprentices. However, these programs often have long waitlists and insufficient funding to meet the high costs of care. As apprentices' incomes increase during their first and second years, many no longer qualify for several state and county assistance programs, creating a "benefits cliff." Eligibility for state child care subsidies disappears at 85% of the State Median Income (SMI) level, which is greater than $73,536 for a family size of 1-2 for fiscal year 2023-2024.[102] Although the ERiCA grant aims to mitigate this issue, complex documentation requirements and rigid funding allocations have made it difficult to implement effectively.

A further challenge is the limited availability of child care providers that align with construction schedules. Most providers do not open early enough to accommodate parents who need to be on-site by 5 a.m. As a result, many women in construction depend on friends or family for child care. However, not all have access to such support systems, leaving them to rely on 24-hour or extended-care centers that can offer coverage for long workdays.[103] The GAIN grant pays for child care facilities and compensates family members who provide child care, but the funds can only be received if the provider is willing and able to receive taxable income from the state.[104]

---

[101] See Figure 2-28 in Section 2. Data sourced from California Department of Industrial Relations Division of Apprenticeship Standards (June 2024)
[102] "State Fiscal Year 2023-24 Schedule of Income Ceilings (85 Percent of SMI)." Child Care Resource Center (CCRC), accessed October 9, 2024, https://ccrcca.org/publications/ap/SMI-Chart_%2023-24_Eng.pdf
[103] Garcia. "Apprenticeship Readiness Fund Interview." September 10, 2024.
[104] Flores. *WINTER Supportive Services Interview.* September 11, 2024.

Limited Non-Traditional Hours Care and Location

There is limited availability of child care providers that operate within the hours to accommodate the work hours of construction. The early schedules of construction jobs have created additional barriers for parents in construction as most providers do not open early enough for a parent to be on-site by 5 a.m. Even the school district's early morning program does not open early enough for construction workers. This is why the most successful women in construction rely on friends or family for their child care needs. However, not all women in construction have a support system to rely on, so they must find 24/hour or extended care centers that are open early enough and can take the children for a long enough time for the parent to complete a workday.

Construction workers change worksites often, so most parents prefer child care to be close to home.[105] Parents of school-aged children face an additional barrier to find a child care provider that is licensed to provide transportation to and from school.[106] The costs of child care, barriers with scheduling, and the availability of local child care contribute to the lower retention rates of construction workers with children, and can deter women from joining or staying the trades.

B. Transportation

Transportation barriers and commuting times are additional challenges for construction workers in the Greater LA Area due to the region's geography. Construction workers shift to new worksites often as phases of construction are completed. The location of the new job site is unpredictable as is the length of the commutes.[107] WINTER provides gas cards for participants to support the costs of daily travel to training and site visits.[108] Interviewed workers appreciated the gas cards provided by WINTER during pre-apprenticeship training but noted the lack of Metro tap cards for those without cars. Many emphasized that using public transportation to and from work locations is impossible due to early work hours and child care responsibilities.[109]

For trades workers with children, the "care triangle" of traveling between home, daycare, and the worksite creates a significant burden. Many seek trusted child care near home to reduce travel time, but the scarcity of providers, especially those with hours that align with construction shifts, makes this difficult, if not impossible, for many parents.[110]

[105] Limon and Sanchez. *IBEW 11 Disparity Study Interview.* September 23, 2024.
[106] Flores. *WINTER Supportive Services Interview.* September 11, 2024.
[107] Anonymous. *WINTER Lived Experience Interview.* October 1, 2024.
[108] Anonymous. *WINTER Lived Experience Interview.* October 1, 2024.
[109] Flores. *WINTER Disparity Study Interview #1.* July 25, 2024.
[110] Flores. *WINTER Supportive Services Interview.* September 11, 2024.

C. Mental Health Services

> *"The environment can be difficult to navigate without addressing underlying issues" – recent graduate of WINTER's pre-apprenticeship program*[111]

The need for supportive services for women entering the trades is significant. Culturally responsive programs that address their experiences with trauma, incarceration, and poverty are vital for promoting retention in the demanding construction industry. Although access to mental health care is a broader public health issue, it is often critical for women in the trades to succeed. For women who are often in the minority on a job site, lack of mental health support can lead to absenteeism, accidents, and other workplace issues and conflict.[112] Mental health support has been the most requested service from WINTER's resource navigators.[113] This often includes connections to navigate health care resources to find medical coverage and an accessible therapist.

Construction jobs do provide opportunities for family sustaining careers and livable wages for people with backgrounds of incarceration and poverty. However, the jobs can be physically and mentally demanding. The strict schedules and time pressures that come with the skilled trades professions requires many workers to manage underlying traumas to navigate the working environment.[114] WINTER's bootcamp and apprenticeship readiness program trains women to be physically capable to enter the trades, but the mental health resources they provide have been noted as providing the mental and emotional skills for their female participants. Access to mental health support has traditionally been limited in many apprenticeship programs. However, more women and workers from diverse backgrounds are identifying it as a crucial factor in stabilizing their construction careers. Providing mental health resources not only supports the retention of female workers but also represents an acknowledgement of the very real pressures and intensive worksite culture all workers face on construction projects.

Addressing Culture Change on Jobsites

A. Harassment, Bullying and Discrimination

> *"In recent months there were at least two instances of WINTER graduates experiencing harassment; one spoke up and was retaliated against, the other did not out of fear." – Luz Flores*[115]

[111] Anonymous. *WINTER Lived Experience Interview.* October 1, 2024.
[112] Shockney, Heather. 2023. "The Importance of Mental Health in the Skilled Trades - West Virginia Women Work." West Virginia Women Work. May 2023. https://westvirginiawomenwork.org/the-importance-of-mental-health-in-the-skilled-trades.
[113] Flores, Luz and Torres, Carlos. Zoom Interview with Estolano Advisors. *WINTER: Estolano Advisors (EA) Construction Workforce Disparity Study Interview #2.* Zoom Interview, August 15, 2024.
[114] Flores. *WINTER Supportive Services Interview.* September 11, 2024.
[115] Flores and Torres. *WINTER Disparity Study Interview #2.* August 15, 2024.

Harassment and retaliation remain major obstacles to retaining female construction workers on job sites. The construction industry continues to accept both gender-based and race-based harassment, creating challenges for building inclusive and supportive work environment for women workers.[116]

A 2021 nationwide survey of tradeswomen found that 47% of former tradeswomen left the construction industry due to harassment and lack of respect. Furthermore, 39% left due to the lack of accountability in addressing their concerns.[117] Harassment on worksites creates toxic environments for tradeswomen, while the absence of accountability and respect perpetuates a culture that enables such behavior. Many incidents go unreported because workers are either unaware of the reporting procedures or fear retaliation due to the lack of anonymous reporting options.[118]

The reporting process is not anonymous, and as staff from IBEW Local 11 noted, they have heard multiple incidents on Metro projects where contractors were not held accountable including when using retaliatory layoffs.[119] Some interviewees noted they felt that there was a pervasive lack of accountability for contractors on public projects and where some contractors and subcontractors do not necessarily share the same goals to diversify the workforce.[120] And when done inadequately without oversight, contractor efforts to provide on-site anti-harassment trainings end up backfiring and creating more distrust and further targeting of women workers.[121]

One union reported that women continue to be targeted for harassment and retaliatory layoffs, especially when reporting health and safety violations on the worksite.

> *"There was an instance in a tunnel work project where a woman complained there was no restroom for women. That should have been an easy fix. A week later, they got a restroom but the next week [the same woman] was laid off… Employers don't have to give a reason, but this fear spreads. If you speak up, you'll lose your job." – IBEW*[122]

Tradeswomen often work and earn less over time than their male counterparts due to retaliatory layoffs and bias in promotions.[123] Female construction workers also cite a lack of opportunity for advancement and promotion as well as the bias and discrimination that influence promotions.[124]

[116] "Building for the Future: Advancing Equal Employment Opportunity in the Construction Industry." 2023. US EEOC. 2023. https://www.eeoc.gov/building-future-advancing-equal-employment-opportunity-construction-industry.
[117] Hegewisch and Mefferd. "A FUTURE WORTH BUILDING." (Page 18)
[118] "Building for the Future." 2023.
[119] Limon and Sanchez. *IBEW 11 Disparity Study Interview.* September 23, 2024.
[120] Foster. *Destination Crenshaw Interview.* September 26, 2024.
[121] Limon and Sanchez. *IBEW 11 Disparity Study Interview.* September 23, 2024.
[122] Limon and Sanchez. *IBEW 11 Disparity Study Interview.* September 23, 2024.
[123] Hegewisch and Mefferd. "A FUTURE WORTH BUILDING." (Page 18)
[124] Ibid.

The national survey of former tradeswomen found that 40% left the trades due to a lack of prospects for advancement.[125]

> *"There is no gender pay gap for women in construction, but women are first to get laid off and more likely to be unemployed, so annual wages are lower… so [they] don't really make the same money." -IBEW*[126]

Harassment, retaliation, and favoritism cultivate unsafe environments with less opportunity for women. Various tools and policies can be implemented by project owners, the trades, and contractors to change the culture of the industry. Refer to **Section 3C – Culture Change** in this report for emerging practices in respectful workplace training and policies used in the construction industry.

B. Isolation of Female Workers

> *"The most difficult element is the isolation of women in a male-dominated industry." -IBEW*[127]

The cycle of harassment and retaliation is intensified by the isolation women experience in construction. This isolation, driven by low number of women workers on a particular jobs site, also hinders recruitment and retention efforts.

Isolation is a prevalent issue for women in a male-dominated industry like construction. In the 2021 national tradeswomen survey, 20% of women reported never or rarely seeing other women on the job site. Women of color experience higher rates of isolation - 30% of women of color report never or rarely seeing other women of color on the job.[128] Isolation on the job increases the chances of harassment and assault for women in construction, which then pushes the few women at a jobsite out furthering the isolation and underrepresentation of women in the trades. Isolation was cited by 27% of former tradeswomen as a reason for leaving the trades.[129]

> *"Events like Tradeswomen Build Nations are powerful for helping women feel seen and heard. We need to support women attending these larger events and also create smaller, more local gatherings." -EMPOWER*[130]

[125] Ibid.
[126] Limon and Sanchez. *IBEW 11 Disparity Study Interview.* September 23, 2024.
[127] Limon and Sanchez. *IBEW 11 Disparity Study Interview.* September 23, 2024.
[128] Hegewisch and Mefferd. "A FUTURE WORTH BUILDING." (Page 10)
[129] Hegewisch and Mefferd. "A FUTURE WORTH BUILDING." (Page 18)
[130] Anthy Hadijimarkos, email message to author, October 24, 2024.

Female mentorship programs in the trades help combat isolation and build supportive communities for tradeswomen. A survey of tradeswomen identified women's committees and tradeswomen's groups as two of the most essential programs for fostering success and growth.[131] In the Greater Los Angeles region, half of the registered trades use state funding to offer female mentorship groups, which remain a critical need for women in the region.[132]

Programs like IBEW Local 11's EMPOWER group have proven highly effective in retaining female construction workers.[133] In 2006, IBEW Local 11 launched the ETI Mentorship Program Offering Women Extra Resources (EMPOWER) to support female apprentices by pairing them with journeyperson mentors. The group, which meets monthly, has since expanded to include apprenticeship applicants, helping to promote both recruitment and retention of women in the trades. EMPOWER collaborates closely with WINTER and JobCorps to build a strong tradeswomen community and provide personalized support for participants' growth throughout the program.[134]A USDOT study on women in construction found that the only areas showing progress in female participation—Oregon, the City of Seattle, and Vermont—share a common factor: strong tradeswomen organizations.[135]

Over half of the tradeswomen surveyed in 2021 reported rarely or never working under a female supervisor or foreperson.[136] Increasing female representation in supervisory roles is another strategy contractors have used to reduce isolation and create a more inclusive work environment on job sites. Contractors and project owners can create representative and diverse leadership teams on jobsites to combat female isolation. Female leadership encourages and motivates less experienced tradeswomen to grow in their careers and can prevent a culture that tolerates harassment and retaliation on the job.[137] Destination Crenshaw, for example, proactively asked their contractor to create a team of female staff in administration, engineering, and monitoring positions to develop a jobsite culture where people do not feel isolated.[138]

[131] Hegewisch and Mefferd. "A FUTURE WORTH BUILDING." (Page 33)
[132] Garcia. "Apprenticeship Readiness Fund Interview." September 10, 2024.
[133] Limon and Sanchez. *IBEW 11 Disparity Study Interview.* September 23, 2024.
[134] Limon and Sanchez. *IBEW 11 Disparity Study Interview.* September 23, 2024.
[135] Office of the Secretary of Transportation. *Best Practices to Expand Job Access.* (Page 32)
[136] Hegewisch and Mefferd. "A FUTURE WORTH BUILDING." (Page 19)
[137] Hegewisch and Mefferd. "A FUTURE WORTH BUILDING." (Page 20)
[138] Foster. *Destination Crenshaw Interview.* September 26, 2024.

4. EMERGING PRACTICES

Child Care

Affordable and reliable child care is essential to building a sustainable workforce for the construction industry. *(See side bar at end of this section for a summary of common types of child care arrangements.)* Child care is the work that makes all other work possible and is an important—albeit usually invisible—part of the nation's essential infrastructure. In support of Metro's larger efforts to support gender equity in the workforce, this chapter aims to provide a comprehensive understanding of how child care affects women workers, particularly in the construction sector. This chapter includes:

- An assessment of the gaps in child care provision for construction workers in Los Angeles County.
- Consideration of levers of influence available to Metro to prioritize and address this gap.
- Recommendations for short- and long-term actions Metro can take to tackle regional child care challenges effectively.

Key findings from this analysis include:

- Most families with children live in child care deserts, with inadequate access to child care.
- In discussions with workers, resources navigators at women in trades organizations, unions, apprenticeship providers, and training partners, the absence of affordable, high-quality, and flexible child care emerged as a key factor influencing retention rates, workforce participation, and absenteeism.
- Many workers often join waitlists for child care subsidies during transition into pre-apprenticeship programs. And joining a waitlist doesn't necessarily mean they will ultimately gain the subsidy.
- Most state reimbursement rates do not incentivize providers to offer additional early care, effectively preventing access to the early-hours care often needed to serve construction workers.
- The care transportation triangle—or long commutes from home to child are and work—limits the child care choices available, and often calls for options provided near where women live.
- Workers transitioning from pre-apprenticeship programs to apprenticeships and corresponding increased incomes often mean workers lose their child care subsidies, though they do not earn enough income to afford the child care they need.

Understanding the Child Care Needs of a Diverse Construction Workforce

The construction workforce requires a variety of high-quality, flexible child care options that can accommodate its diverse and changing needs. To assess potential gaps in child care for the regional labor market, this section defines equitable and effective child care, summarizes the region's existing child care needs, and identifies child care specific to the construction industry.

Defining Equitable and Effective Child Care

Families often choose child care based on factors such as the age and developmental needs of their children, work schedules, budgets, and personal preferences.

Equitable and effective child care options must deliver:

- ✓ **Affordability**: costs are within reach for low- and medium-income workers, such as construction apprentices
- ✓ **Accessibility**: at a convenient location with hours that meet workers' needs
- ✓ **Reliability**: granting workers confidence that they will not need to miss work for unexpected child care issues
- ✓ **Quality**: providing a safe and healthy environment that families can trust and that nurtures the healthy growth and development of children
- ✓ **Responsive**: ensuring child care options that fit the unique needs of the workforce including culturally specific options, allowance for friend and family providers, and proximity to home and school

A comprehensive plan for reliable, accessible, and affordable child care must offer a range of options, or "models," that cater to these varied needs. This includes providing multiple care solutions for a single family to support different needs, such as non-traditional hour care needed to align with the demands of construction work.

Construction workers need mixed delivery models to provide benefits that are tailored to their diverse needs." The four most likely models named are: (1) on-site care, operated by the employer; (2) on-site care, contractor-operated; (3) off-site care, cash assistance; and (4) off-site care, provider sponsorship. A multi-pronged approach that combines these and other strategies is ideal for ensuring families can match with the child care arrangements that work best for them. Employers can invest in child care provisions that offer a variety of choices to workers. As discussed further in the sections below, home-based child care providers are often the best option for parents needing care outside of traditional hours due to the home-based nature of care and smaller number of children cared for by the provider. However, there is a significant shortage of available providers in this group.

Women in Construction Face a Dire Child Care Picture in Los Angeles County

Los Angeles County is experiencing a substantial child care shortage that affects all working parents. Overall, licensed child care spaces do not have seats for 75% of children in the County.[139] The need is particularly acute for infant and toddler care, with slots available for only 4% of all children aged up to 36 months in Los Angeles, the urban center of the county.[140]

For child care to be deemed affordable, it should take up no more than 7% of a household's income, though in 2023, the median yearly infant-based center care cost of $20,455 represented 24% of the county's median income of $98,200.[141, 142, 143] The burden of child care costs is much higher for minimum-wage workers, which spend upwards of 62% of their income on infant care alone.[144] Households under the poverty level are disproportionately burdened as well: about 20% of women-headed households earn below the poverty level in Los Angeles County, with the percentage jumping up to 45% for households caring for children under five years old.[145] At this cost, subsidized care is the only pathway to afford care for most families.

[139] "Availability of Childcare for Working Families." Kids Data, Accessed September 3, 2024, https://www.kidsdata.org/topic/99/child-careavailability/table#fmt=262&loc=2,127,1657,331,1761,171,364,356,217,354,1663,339,2169,365,343,367,344,366,368,265,349,361,4,273,59,370,326,341,338,350,2145,359,363,340&tf=141&ch=1247,1248&sortColumnId=0&sortType=asc

[140] "Caring Cities: Los Angeles." City Hub and Network for Gender Equity (CHANGE), December 6, 2023, https://www.citieschange.org/resources/caring-cities-los-angeles/

[141] "Working Families are Spending Big Money on Child Care." Center for American Progress, June 20, 2019, https://www.americanprogress.org/article/working-families-spending-big-money-child-care/#:~:text=According%20to%20the%20U.S.%20Department,the%20HHS%20benchmark%20of%20affordability

[142] "Childcare Price by Age of Children and Care Setting." U.S. Department of Labor, Accessed September 6, 2024. https://www.dol.gov/agencies/wb/topics/childcare/price-by-age-care-setting

[143] "Los Angeles County Affordable Housing Program Income Limits." Los Angeles County Department of Regional Planning, May 09, 2024, https://planning.lacounty.gov/wp content/uploads/2024/05/housing_2024-income-limits-costs.pdf

[144] "Childcare Costs in the United States." Economic Policy Institute, October 1, 2020, https://www.epi.org/child-care-costs-in-the-united-states/#/CA

[145] "American Community Survey Table S1702." U.S. Census Bureau, 2023 1-Year Estimates, https://data.census.gov/table/ACSST1Y2023.S1702?q=los%20anegles%20county%20median%20family%20inocme%20single%20head%20of%20household

Child Care Deserts

61% of all Los Angeles children live in child care deserts, or areas with insufficient child care supply (defined as three children for every child care slot available).[146, 147] Low-income families, families living in rural areas, those receiving subsidies, and single parents are more likely to live in child care deserts.[148] Families needing subsidized care are more likely to be placed on waitlists than find access to affordable child care. In Los Angeles County, the need is particularly acute for infants and toddlers (age 0-3), with a waitlist of over 14,000 for this age group as of 2021, and access to licensed care for infants and toddlers under 23 months for only 7% of working parents. [149]

Census tracts with the largest concentration of families with an infant or toddler qualifying for child care subsidies are in South Los Angeles, Southeast Los Angeles, Eastside, San Fernando Valley, Long Beach, Antelope Valley and Los Angeles Crest regions.[150]

Inability to find necessary child care limits workforce participation. This is particularly true for mothers living in child care deserts as it has been found that they are less likely to participate in the workforce.[151] While there is little information on the percentage of single mothers in child care deserts, the association between single parents and child care deserts—along with a higher percentage of single mothers in the county—indicates that single mothers are more likely to reside in areas with scarce child care.[152] It is important to note that 1 in 3 single women headed households with children live in poverty.

[146] Verano, Brenda Fernanda. "Los Angeles Is One of the Many Childcare Deserts throughout the Country, Advocates Say." CaloNews, May 16, 2024, https://www.calonews.com/communities/los-angeles/losangeles-is-one-of-the-many-childcare-deserts throughout-the-country-advocates-say/article_813645d0-1356-11ef-b6a8-f7c4bfd65e63.html#:~:text=In%20L.A.%2C%20childcare%20scarcity%20is,in%20certain%20regions%20of%20L.A

[147] "Do You Live in a Childcare Desert?" Center for American Progress, accessed September 6, 2024. https://childcaredeserts.org/2018/?state=CA

[148] "81% of People in CCRC's Service Area Live in a Childcare Desert." Childcare Resource Center (CCRC), December 1, 2021. https://www.ccrcca.org/about/noteworthy-news/item/81-of-people-in-ccrcs-service-area-live-in-a-child-care-desert/

[149] County of Los Angeles Department of Public Health, Office for the Advancement of Early Care and Education. Blueprint for Identifying Immediate and Long-Term Effects to Fortify the Infant and Toddler Care System (Item 36, Board Agenda of September 12, 2023). https://childcare.lacounty.gov/wp-content/uploads/2024/03/Blueprint-Identifying-Immediate-and-Long-Term-Efforts-to-Fortify-the-Infant-and-Toddler-Care-System-Item-36-Board-Agenda-of-September-12-2023.pdf

[150] "Improving the Infant and Toddler System of Care in Los Angeles Landscape Review." Conrad N. Hilton Foundation, January 2023, https://acrobat.adobe.com/id/urn:aaid:sc:VA6C2:7a749c97-4143-440a-93c5-71a88bc132e9

[151] Center for American Progress, "Do You Live in a Child Care Desert?"

[152] "Household Types in Los Angeles, California (City)." The Demographic Statistical Atlas of the United States - Statistical Atlas, accessed October 9, 2024, https://statisticalatlas.com/place/California/Los-Angeles/Household-Types

Child Care Providers Struggle to Meet the Need

Early childhood education (ECE) programs throughout California, including Los Angeles County, operate in both centers and homes: [153]

- Child Development Centers are typically located on school campuses or in the community and serve around 100 children. In Los Angeles County, child development centers are multi-room buildings licensed by the state that can be either private businesses, nonprofit organizations or part of public districts.
- Home-based Care is provided by Family Childcare Homes or license-exempt Family, Friend, and Neighbor providers. Family Childcare Homes are licensed by the state and operate in a family home setting, typically serving eight to 14 children.

Without higher reimbursement rates, providers cannot grow their capacity, further exacerbating the child care shortage. The gaps in care resulting from low resources and high needs are most evident among the infant and toddler age group, which require the highest staffing ratios.

The financial model for providing infant and toddler care is unsustainable, as operational costs often exceed what low- to moderate-income families can afford. Additionally, government subsidy reimbursement rates for ECE providers are significantly lower than the actual cost of care,[154] and is not keeping up with cost of living and need for increasing wages.[155] As of 2022, monthly reimbursement rates for child development centers ($1,000 - $1,600[156]) and family child care home providers ($700 - $1,100[157]) did not cover the full cost of care, estimated at $1,678 per child. Low reimbursement rates further disincentivize providers from receiving children with subsidies[158] and require parents to pay more out of pocket to meet the cost of providers. From all angles, the current subsidized care system in Los Angeles County is failing to produce affordable care.

Low Wages and High Turnover of Child Care Workers Affect Costs and Supply

At the height of the pandemic, the child care industry lost 35% of its total workforce, and it has been one of the slowest sectors to recover, further increasing the fragility of a system already in crisis.[159] American Rescue Plan child care stabilization funds have been propping up the sector—allowing providers to pay more than the poverty-level wages that are preventing talented workers from joining or staying in the child care workforce. But those funds were temporary and expired in September 2023, leaving the sector with a tremendous loss.

---

[153] CHANGE, “Caring Cities: Los Angeles.”
[154] Ibid
[155] DiMatteo, Gemma. “Nontraditional Hours and Child Care: An Exploratory Study on the Needs of Families and Child Care Providers in California.” California Child Care Resource & Referral Network, October 2019, https://rrnetwork.org/assets/general-files/FINAL-NTH-Report-10.25-V2.1.pdf
[156] State of California Health and Human Services Agency, California Department of Social Services, California County Local Child Care Planning Council Needs Assessment - Los Angeles, November 2022, https://childcare.lacounty.gov/wp-content/uploads/2023/09/Child-Care-Needs-Assessment-Los-Angeles-County-FINAL-11.3.22.pdf
[157] Ibid
[158] County of Los Angeles Department of Public Health, Blueprint for Identifying Immediate and Long-Term Effects to Fortify the Infant and Toddler Care System
[159] “How is California’s Child Care Sector Faring?” Public Policy Institute of California, July 7, 2022, https://www.ppic.org/blog/how-is-californias-child-care-sector-faring/

Women, who predominantly make up the ECE workforce in Los Angeles County (95%), are significantly impacted any changes in the child care system. Over half of the women in the ECE workforce (58%) identify as Latinx and many are Spanish-speaking immigrants.[160] The ECE workforce in both the county and California is aging, with 33% of center-based teachers and 53% of center-based directors aged 50 or older.[161]

Low wages are the driving force behind child care shortages in Los Angeles County. ECE educators in Los Angeles County face significant financial challenges, with an average hourly wage of $14.62, driving nearly half (49%) into poverty.[162] Child care workers typically make $4-$5 less than fast food workers. Family child care workers earn even less money, averaging $11.73 per hour. Nearly half of the child care workforce in Los Angeles County qualifies for public assistance programs. Center-based directors earn a median annual salary of less than $60,000, while teachers earn under $40,000. Small family child care (FCC) providers earn even less, with a median salary around $20,000, and large FCC providers slightly over $40,000. Many educators lack employer-paid health insurance and retirement benefits, leading to rent burden (57%) and limited wealth-building opportunities.[163]

ECE workers are disincentivized from joining and staying in this sector because of the mismatch between wages, qualifications, and cost of living. In 2021, Los Angeles County needed an additional 33,600 workers to meet the needs of 440,000 children ages zero to five. The increase of unmet need is also an effect of the closure of 20% of licensed child care facilities due to COVID-19.[164] Additional ECE workers are especially needed for infants and toddlers, which are experiencing the highest shortages.

The insufficient supply of subsidies means that not all eligible families will receive support. Even when families are eligible for subsidized care, access and availability remain key challenges in finding a provider. About 57% of low-income families did not receive subsidized care in the same year.[165] Subsidies rates that exist now are not enough to cover the cost of providing care.

ECE wages are too low to cover workers' living and operational costs, leading to high turnover and supply shortages. County reimbursement rates have kept wages below market levels, [166] For working families, this means more difficulty to find care due to low reimbursements rates.

---

[160] Hilton, "Improving the Infant and Toddler System of Care in Los Angeles Landscape Review."
[161] Ibid
[162]County of Los Angeles Department of Public Health, Blueprint for Identifying Immediate and Long-Term Effects to Fortify the Infant and Toddler Care System
[163] Ibid
[164] City of Los Angles Child Care Equity Initiative Department, Child Care Equity Initiative, Los Angeles City Clerk, March 1, 2024, https://clkrep.lacity.org/onlinedocs/2023/23-1013_misc_3-1-24.pdf
[165] Bhusal, Samikchhyal, Evelyn Blumenberg, and Madeline Brozen. "Access to Child Care in Los Angeles County: Recent Trends and Covid-19 Implications." UCLA Lewis Center for Regional Policy Studies, June 8, 2021, https://www.lewis.ucla.edu/research/child-care-access-los-angeles-county-trends/ (p. 12)
[166] County of Los Angeles Child Care Planning Committee*, The State of Early Care and Education in Los Angeles County - Los Angeles County 2017 Needs Assessment Technical Report*, March 2017, https://childcare.lacounty.gov/wp-content/uploads/2020/07/TechRptState201711July18.pdf (p.13)

Family, Friend, and Neighbor (FFN) care plays a vital role in the ECE system, especially for infants and toddlers and for those needing flexible child care hours. In California, about 80% of children under two are cared for by FFN providers, often chosen by families working non-standard hours or those with children who have special needs. Despite their vital role, FFN providers in California receiving government subsidies earn just $8 per hour, which further discourages participation in this essential sector.[167]

Child Care Challenges for Women in Construction

A review of labor market data shows that construction workers with young dependents have higher dropout rates compared to those without dependents.[168] In the development of this report, interviews conducted with stakeholders in the construction industry (including pre-apprentices and other workers, training partners, unions, and apprenticeship coordinators) revealed that child care access is a barrier for women in construction. This challenge impacts workers at every level—hindering women's transition into apprenticeship programs, their ability to complete multi-year apprenticeships, and their continued participation in the sector after having children. Both women's trade groups and workers themselves cited the difficulty of finding affordable, high-quality child care aligned with construction job needs, such as care during non-traditional hours.

For one young single-mother, joining an intensive ten-week pre-apprenticeship program was "the best decision I made." In an interview, this recently graduated young mother, expressed that her decision to join the pre-apprenticeship program of Women in Non-Traditional Employment Roles' (WINTER) was based on the opportunity to tap into high earning careers that offered benefits. She admitted that before joining the pre-apprenticeship program, no one in her cohort, including herself, knew what it was like to be a worker in the trades. At WINTER, she learned not only about the process of becoming a worker in the trades, but also about tools and how to navigate the work environment. Most importantly, she gained experience juggling parenthood and a career with nontraditional hours.

[167] County of Los Angeles Department of Public Health, Blueprint for Identifying Immediate and Long-Term Effects to Fortify the Infant and Toddler Care System
[168] See Figure 2-28 in Section 2. Data sourced from California Department of Industrial Relations Division of Apprenticeship Standards (June 2024)

When asked about her challenges, she stated, “child care is the biggest problem we women have.” Finding early care hours and care for more than eight hours was a challenge as a pre-apprentice, and this is a challenge she anticipates facing as she enters an apprenticeship. While the financial cost of child care was not a challenge as a pre-apprentice because she received financial support from WINTER and her local school district, she also acknowledged that the cost of care and the commute to child care will become a challenge since she will most likely lose access to supportive services as an apprentice and will have to find a new child care provider that offers early care hours. Although a career in the trades presents many challenges, this young mother expressed excitement about the opportunity to focus on a craft she genuinely enjoys. From her experience, “a lot more women would jump in if we had child care.” Her support system has allowed her to succeed in her pre-apprenticeship, and as a single parent, she recognized how critical it is to continue to have a support system to achieve a career in the trades.[169]

Lack of Extended Hours and Weekend Care

For parents in trades, distance, variable schedules, and early work hours lead to a need for non-traditional care hours. In 2021, 12% of all child care requests in Los Angeles County were for nontraditional hours of care,[170] yet only 2% of licensed facilities offered evening, overnight, and/or weekend care.[171] In one survey by the California Childcare Resource & Referral Network, sixty-two % of parents reported they had to” give up a job offer or quit a job because you couldn’t find stable care during nontraditional hours.”[172]

Available data reveals that nontraditional care hours are more available through licensed family child care homes.[173] Nontraditional care providers work long hours, often six to seven days a week, and report feeling burned out and exhausted.[174] Additionally, providers of nontraditional care hours have less time to spend with family and to attend to personal matters, such as doctor appointments.[175] As noted earlier in this report, both Family Childcare homes and Family, Friend, and Neighbor caregivers are disincentivized in offering nontraditional hours due to limits on reimbursement rates and lack of overtime pay.[176]

There is an opportunity to boost the participation of women and parents in the workforce by reducing child care deserts and expanding the supply if nontraditional care hours. It is important to also create avenues for family members to support workers with child care responsibilities.

---

[169] WINTER pre-apprentice graduate, interview by Estolano Advisors, October 1, 2024
[170] “The 2021 Child Care Portfolio - Los Angeles County Family & Child Data.” California Child Care Resources & Referral Network, January 2023, https://rrnetwork.org/assets/general-files/Los-Angeles_2023-01-25-040611_owjl.pdf
[171] “Child Care Data Tool,” California Child Care Resource and Referral Network, Accessed October 9, 2024, https://rrnetwork.org/research/child-care-data-tool#!0
[172] “Nontraditional Hours and Child Care.” California Child Care Resources & Referral Network, October 2019, https://rrnetwork.org/assets/general-files/FINAL-NTH-Report-10.25-V2.1.pdf
[173] California Child Care Resources & Referral Network, “The 2021 Child Care Portfolio”
[174] California Child Care Resources & Referral Network, “Nontraditional Hours and Child Care”
[175] Ibid
[176] Ibid (p. 27)

Family members that can support minimally such as with pick-ups and drop-offs can reduce the distance travelled for women in construction.

The Care Transportation Triangle for Families

A major challenge reported by tradeswomen and advocates is the "child care triangle," or the geographic distance between home, child care, and work. Due to the limited supply of child care, families are traveling longer distances to access it. Additionally, the nature of construction work requires women to travel across the region, further complicating their child care needs by increasing commute times and distances.[177]

One resource navigator for women in the trades sector commented that “Parents with a voucher can’t have a license exempt provider care for their children in their own home, so parents have to transport their children to the provider’s home, often waking them up in the middle of the night and disrupting their sleep (and not allowing the children to sleep in their own beds).

Transportation is difficult for school aged children—getting from school to child care, or child care to school. Parents wish there was an affordable ride-share service their children could use.”[178] Both Family child care and FFN child care arrangements are often more flexible in terms of scheduling. Providers may be willing to accommodate irregular or non-traditional work hours, including early mornings, late evenings, or weekends, to support the varying schedules of working parents. Proximity and convenience for families occur when they are located within or near the family's own neighborhood or community, making it convenient for parents to drop off and pick up their children. This proximity reduces commuting time and provides a more seamless transition between home and child care.

Parents in the construction workforce need child care that is not only located near home but also meets their diverse needs. For example, parents with early or late work hours and school aged children may require care that operates outside standard hours, offers transportation, and is located near both the child's school and home. Finding care that meets these multiple needs adds another challenge to an already challenged child care system.

The Benefits Cliff and the Vulnerability of Year 1 and Year 2 Apprentices

Nationally, graduates of apprenticeship programs, or journey-level workers, earn an average salary of $77,000 upon completion. However, entry-level apprentices typically earn only 40 to 50 percent of that, around $39,000 annually. While eligibility for child care subsidies generally requires families to earn at or below 85% of the state median income, many states implement stricter criteria, often prioritizing those in greater need with income limits as low as $26,000. This leads to limited options for families with incomes just above these thresholds and for many apprentices, losing subsidies altogether.[179]

[177] Luz Flores, Director of Operations, WINTER, interview by Estolano Advisors, September 11, 2024
[178] California Child Care Resources & Referral Network, “Nontraditional Hours and Child Care” (p. 32)
[179] “3 Ways States Can Expand and Sustain the Infrastructure Workforce by Meeting Child Care Needs.” Center for American Progress, March 29, 2023, https://www.americanprogress.org/article/3-ways-states-can-expand-and-sustain-the-infrastructure-workforce-by-meeting-child-care-needs/

In Los Angeles, pre-apprentices in WINTER programs earn stipends totaling up to $2,000 per month and are eligible for other supportive services through CalWORKS. The income earned during pre-apprenticeship will vary depending on the program although not all programs offer stipends or income. Once graduates move to apprenticeships their wages will vary depending on the trade. In year one—Laborers earn $23.44 per hour and in year two earn $25.78 per hour. In California, families earning up to 85% of the State Median Income (SMI) level are eligible for child care subsidies. This means that families making over $73,536 for a family size of 1-2 for fiscal year 2023-2024 in ineligible.[180]

Table 4-1: Projected Benefits Cliff for Laborers in Los Angeles County

Level of Tradesperson, Laborer	Est. Monthly Earnings	Est. Monthly Child Care Cost for Center-based Care, Infant	Monthly 85% SMI Ceiling, Family size 1-2 for FY 23-24	Max Monthly Reimbursement Rate for Child Care Center Providers, Infant	Monthly Family Fee at 75-85% SMI
Pre-apprentice	$2,000	$1,600	$6,128	$1,688.28	$61.28
Apprentice Year-1	$3,750.4	$1,600	$6,128	$1,688.28	$61.28
Apprentice Year-2	$4,124.8	$1,600	$6,128	$1,688.28	$61.28
Apprentice Year-3	$4,500.8	$1,600	$6,128	$1,688.28	$61.28
Journey, Group 1	$7,500.8	$1,600	**Ineligible for subsidy**	-	-

**Estimate pre-apprentice earnings based on information from WINTER.*

Emerging Opportunities for Women in Construction

Child Care Benefits for Pre-Apprentices and Apprentices[181]

Navigating the child care system is a significant barrier for working parents.[182] Parents must navigate a mixed-delivery system with varying eligibility criteria depending on family demographics and federal and state programming.[183] For many, the first step to obtaining subsidized care is finding help. Public government agencies, resource and referral agencies, nonprofit organizations and community groups, and workforce development and training programs are all part of the ecosystem connecting working parents to providers.

[180] "State Fiscal Year 2023-24 Schedule of Income Ceilings (85 Percent of SMI)." Child Care Resource Center (CCRC), accessed October 9, 2024, https://ccrcca.org/publications/ap/SMI-Chart_%2023-24_Eng.pdf

[182] County of Los Angeles Child Care Planning Committee, "The State of Early Care and Education in Los Angeles County," (p. 13)
[183] Ibid (p.13)

Family fees for subsidized child care in California vary based on income levels, with families earning up to 85% of the state median income (SMI) qualifying for the program. Previously, these fees were often unaffordable for low to moderate-income families, forcing them to choose between child care and other essential needs like food and housing. However, the 2023-24 Budget Act has revised the family fee schedule to enhance affordability, eliminating fees for families below 75% of the SMI and capping fees at 1% for those earning 75% or more of the SMI, effective October 1, 2023.[184]

California's subsidized care programs include: California State Preschool Program, General Childcare and Development Program, California Work Opportunities and Responsibility to Kids (CalWORKS), Alternative Payment Program, Early Head Start, and Head Start.[185] Within these programs there are three defined stages of child care. The Los Angeles County agencies administering child care programming include: Los Angeles County Office of Education, Los Angeles County Office for the Advancement of Early Care and Education, Child360, Childcare Alliance of Los Angeles, First 5 LA, and Quality Start Los Angeles.[186] Other resource and referral agencies are: Childcare Resource Center, Connections for Children, African American Provider Network, Pathways LA.[187]

New Resources for Women in Construction

Women entering pre-apprenticeships can access child care through two main avenues. The first option is to apply for federal and state-funded programs available through local government agencies, resource and referral organizations, nonprofit groups, and workforce development programs. The second option is to obtain child care support specifically for trades workers by enrolling in pre-apprenticeship programs, which in Los Angeles County primarily receive funding through Equal Representation in Construction Apprenticeship (ERiCA) grants.[188]

ERiCA grants provide funding to agencies aimed at promoting the success of women and non-binary participants entering careers in the building and construction sectors. These grants focus on supporting women in trades by funding services in two key areas: child care and outreach. California has allocated $25 million for the program years 2023-2025. Eligible agencies include those with Department of Administrative Services (DAS)-registered construction pre-apprenticeship programs that foster equal representation in the construction workforce. Recipients of child care ERiCA grants can use the funds to provide direct stipends to pre-apprentices and apprentices for child care expenses, coordinating child care, or in-house child care. However, there are limits on the amount of funding available: pre-apprentices can receive up to $5,000, while apprentices can receive up to $10,000 for child care support.[189]

---

[184] Laura Pryor and Erik Saucedo. "Mending Harmful Family Fees." California Budget and Policy Center, July 2023, https://calbudgetcenter.org/resources/mending-harmful-family-fees-expanding-possibilities-for-california-families/
[185] County of Los Angeles Child Care Planning Committee, The State of Early Care and Education in Los Angeles County (p. 13-14)
[186] "Quality Start Los Angeles." Child Care Alliance of Los Angeles, August 24, 2018, https://www.ccala.net/connect-to-child-care/quality-start-los-angeles/
[187] CHANGE, "Caring Cities: Los Angeles"
[188] Luz Flores, Director of Operations, WINTER, interview by Estolano Advisors, September 11, 2024
[189] State of California Department of Industrial Relations, *Equal Representation In Construction Apprenticeship (ERiCA) Grant,* accessed October 9, 2024, https://www.dir.ca.gov/DAS/Grants/ERICA.html

In Los Angeles, LA/OC BTC-The Apprenticeship Readiness Fund (ARF) was awarded $1.5 million to distribute supportive child care resources to the region's women apprentices.[190] Los Angeles area ERiCA grantmaking by the ARF primarily supports women in the first two years of their apprenticeships, a critical period when they often experience a significant benefits cliff during their income level transition from pre-apprentice to apprentice wages.[191]

Despite the financial support provided by ERiCA grants, women in trades and their advocates report that these funds are insufficient to meet their needs. The overall supply of child care, particularly nontraditional care hours, remains limited, highlighting the need for more comprehensive solutions that address child care gaps rather than merely circumventing them.

Case Studies of Child Care Support for Women in Construction

TradesFutures Childcare Pilots, Milwaukee and New York City

Hoping to address the challenge of affordable and accessible child care for women in trades, TradesFutures, a national nonprofit promoting construction apprenticeship readiness for women and people of color, launched two pilot child care programs in 2022 on projects in Milwaukee, Wisconsin and New York City, New York.[192] The goal was to alleviate the burden of child care costs for trades workers by testing two different approaches. In Milwaukee, the program initially offered onsite child care near a construction site, while in New York City, vouchers were provided directly to child care providers. These pilots hoped to address the complex challenges of child care faced by women and working families in the trades, including the need for early hours of care, the limited availability of licensed facilities, and high cost of care, particularly for apprentices who earn lower wages.[193]

The New York City pilot partnered with the New York City Building and Construction Trades Council and served graduates of the Non-Traditional Employment for Women (NEW) program, including both apprentices and journey workers. The program aimed to assist at least 10 families, providing up to $1,000 a month in vouchers directly to graduates' child care providers for a year. For families using family, friend or neighbor care, the program offered a one-time payment of $500 to the caregiver, with the option to file a 1099 for tax purposes. Through this program, NEW has also hired a case manager to help families access transportation, nanny care, and other services necessary to manage their nontraditional work schedules.[194] The New York City program has since secured additional state funding to expand its services to other apprenticeship-readiness programs in the city.[195]

---

[190] Ibid
[191] Ben Garcia, Executive Director, Apprenticeship Readiness Fund, interview by Estolano Advisors, September 10, 2024
[192] "TradesFutures Childcare Pilot Program: Working to Make Childcare Accessible for North America's Skilled Tradespeople." TradesFutures, August 8, 2022. https://tradesfutures.org/initiatives/child-care-pilot/
[193] Nicole Shwartz. "Effective & Inclusive Childcare Solutions: Toolkit for Implementing CHIPS & Science Act Investments Webinar," June 20, 2023, https://vimeo.com/839835344/f111426cbd?share=copy
[194] Ibid
[195] Newberger, Robin. "Childcare for Women in the Trades: The Milwaukee Pilot Program." Federal Reserve Bank of Chicago, February 2024, https://www.chicagofed.org/publications/chicago-fed-insights/2024/childcare-women-trades-milwaukee

The Milwaukee pilot's original plan in 2022, with EmpowHer and Milwaukee Building and Construction Trades Council, was to reserve child care slot in a child care facility near the worksite.[196] This pilot faced challenges in recruiting participants. Interviews with potential participants revealed that many preferred child care near their homes and were unwilling to switch providers based on worksite location, particularly in a field like construction, where job sites frequently change. As a result, the pilot shifted to a voucher system, offering to pay half of the child care costs for up to a year to child care providers, along with providing a navigator to help families access care that fit their unique needs.[197] The pilot received $139,000 from trade union contributions, allowing the pilot to extend into a second year after an initial shift from offering onsite care to a voucher system that better suited participants' needs.

A key lesson learned from the Milwaukee pilot was the importance of conducting a thorough needs assessment before launching child care programs. This experience highlighted that there is no one size fits all model and that there is a need for flexible, adaptable programs tailored to workers' unique needs.[198] Through these pilots, TradesFutures seeks to underscore the importance of ongoing assessments directly with workers to ensure that such programs remain effective and responsive to evolving needs.

Care That Works, Boston, Massachusetts

Care That Works is a Boston-based pilot program aimed at providing child care for families with nonstandard work schedules, particularly those in construction. The program is assembling a network of licensed family child care providers who are willing to start their day early, offering care as early as 5:00 a.m. to accommodate parents with early-morning shifts. Unlike large group child care facilities, family child care providers are licensed to care for up to 10 children in their homes. The pilot will initially launch with five to ten providers and is expected to expand to meet the growing demand. Families will pay standard rates, while Care That Works will provide additional stipends to compensate providers for the schedule adjustments. The program connects to women in construction with union-represented state-licensed family child care providers. Funding for the program involves a mix of funds from unions, contractors, and the city of Boston.

In addition to connecting families with early-morning child care, the program emphasizes fair compensation for child care workers. By offering a rate differential, Care That Works acknowledges the challenges faced by providers in adjusting their schedules. The program is supported by various partners, including project labor agreements with building trades unions, and aims to address both the child care needs of working families and the financial well-being of child care providers. As the pilot expands, it will continue to recruit more providers and adapt to the evolving needs of families with non-traditional work hours.

[196] Shwartz, "Effective & Inclusive Childcare Solutions"
[197] Newberger, Robin. "Childcare for Women in the Trades: The Milwaukee Pilot Program." Federal Reserve Bank of Chicago, February 2024, https://www.chicagofed.org/publications/chicago-fed-insights/2024/childcare-women-trades-milwaukee
[198] Shwartz, "Effective & Inclusive Childcare Solutions"

Common Types of Child Care Arrangements:
The following are the most common types of child care arrangements for families:

- Family Childcare Homes: Family child care homes are operated by individuals in their own residences. They offer care for a small group of children, usually a mix of different ages. Family child care providers follow licensing regulations and provide a home-like environment with more individualized attention. They provide some of the most flexible care options in the child care system, including providing care during non-traditional hours.
- Family, Friend, and Neighbor care (FFN): Private arrangements with family and friends as child care providers refer to Family, Friend, and Neighbor care (FFN) where trusted family members or close friends take care of children. In these arrangements, child care is provided within the home environment of the caregiver, such as a grandparent's house or a friend's residence. Care arrangements with family and friends offer several potential benefits. They often provide a familiar and comfortable setting for the child, promoting a sense of security and continuity. Because the provider can come to the family's home, informal in-home care removes the burden of transporting children to and from care. Additionally, this form of care can offer flexibility in scheduling, especially if parents work nontraditional hours, such as second and third shifts, when most other types of care settings are closed. Often, this form of care also allows for more flexibility of care for households with multiple children and with varying ages.
- Center-based care: These are licensed facilities that provide care and early education for children in a structured setting. Child care centers typically have multiple classrooms and age-specific programs, accommodating infants, toddlers, and preschool-aged children. They often employ qualified staff and follow specific curriculum guidelines. Facilities can be on-site at workplaces or off-site. Most centers offer care during standard business hours and sometimes extended after school hours.
- Preschool Programs: Preschool programs focus on early education and school readiness for children typically between the ages of three and five. These programs offer structured learning experiences and may operate within schools, child care centers, or standalone preschools.
- Before and After School Programs: These programs cater to school-aged children and provide care during the hours before and after the regular school day. They offer a safe and supervised environment for children, often including recreational activities, homework assistance, and opportunities for social interaction.
- In-Home Child Care: In-home child care involves hiring a caregiver who provides care for children within the family's own residence. This can include nannies, au pairs, or other types of in-home caregivers. In-home child care offers the convenience of personalized care within the familiar home environment.
- Head Start and Early Head Start: Head Start and Early Head Start programs are comprehensive early childhood development programs primarily targeting low-income families. They provide educational, health, nutritional, and social services to promote school readiness and support children's overall well-being.

Changing Culture to Advance Gender Equity

With the increasing prevalence of targeted hire policies in public sector construction, tradeswomen's groups are calling attention to the need for parallel public investment into efforts that support the retention and advancement of women workers once they are recruited into the field. In a national survey of thousands of tradeswomen by the Institute for Women's Policy Research in 2021, respondents cited harassment and a lack of respect as the number one reason they left or have considered leaving the industry.[199] A Portland State University study found that 60% of white women and 64% of Black women apprentices experienced harassment or discrimination in the field, compared to just 19% of white men apprentices.[200] These dynamics likely influence differences in cancellation and graduation rates between male and female apprentices (see **Figure 2-27** on Page 82) and between female apprentices of color and white female apprentices (see **Figure 2-29** on Page 83).

While construction is hardly alone among U.S. industries in reckoning with the legacies of entrenched racism and sexism, it lags noticeably behind many industries that have made progress in promoting respectful workplace culture. The persistence of harassment, bullying, and hazing on construction worksites remains a leading factor that drives women, people of color, and LGBTQ workers out of careers in the building trades. For agencies like Metro committed to increasing the participation of women on their projects, failure to address workplace culture will continue to limit the effectiveness of even the most well-designed policies, programs, and investments.

In conjunction with the historic opportunity made possible by recent federal infrastructure investments, multiple federal agencies have released guidance for states and local governments on how to ensure these funds expand access to careers in construction for workers who have been historically excluded, especially women and people of color. The U.S. Departments of Transportation, Commerce, and Labor have all been explicit in naming culture change as essential to fully realizing this opportunity. Metro and others in the region can draw on this growing library of federal guidance outlining the responsibilities of public agencies in upholding respectful workplace culture on their project sites.

[199] Ariane Hegewisch and Eve Mefferd, "A Future Worth Building: What Tradeswomen Say about the Change They Need in the Construction Industry" (Washington, DC: Institute for Women's Policy Research, November 2021), https://iwpr.org/wp-content/uploads/2022/02/A-Future-Worth-Building_What-Tradeswomen-Say_FINAL.pdf.
[200] Kelly Haines et al., "Tools to Address Jobsite Culture in Construction" (Regional Respectful Workplace Model Review Committee, Oregon Tradeswomen, Oregon Metro, Portland Metro Workforce Development Board, October 2020), https://worksystems.org/wp-content/uploads/2023/06/Respectful-Workplace-Review-Committee-Recommendations-Report.pdf.

Fostering Respectful Workplace Culture in the Construction Industry

The consultant team interviewed labor representatives, tradeswomen advocates, public owners, and apprenticeship coordinators to learn about the need for culture change in the construction industry. Conversations with several participants revealed a shared perception of a positive generational shift in gender-based violence and harassment (GBVH) on jobsites. Younger generations of construction workers have more accepting attitudes towards gender-diverse worksites.[201] However, the prevalence of toxic workplace culture demands a proactive approach to ensure culture change occurs faster than a passive strategy that waits for generational turnover.

Hostile workplaces lead to significant work stress, which makes the workplace unsafe and increases the risk of injury.[202] Harassment, isolation, and bullying erode the trust that is an essential component of safety on the job. Excluding workers from a workplace culture leads to psychological stress and increases the risk of workplace accidents.[203] Advocates consider the psychological effect of isolation to be the greatest obstacle to the retention of tradeswomen.[204]

The construction industry and construction worksites need comprehensive culture change. While work stress is a particular barrier to the retention of women, it is not a gender-exclusive issue. All construction workers will benefit from a culture change away from worksite harassment, discrimination, and bullying.

In calling for a shift to respectful workplaces, tradeswomen's groups and their allies point to precedent in the successful transformation of the construction industry's culture around occupational health and safety. Because of industry-wide efforts, consensus grew among contractors, unions, and government regulators that construction needed to adopt a culture of workplace safety, such as normalizing personal protective equipment and lockout/tagout procedures. A similar shift is underway to incorporate GBVH into occupational safety regulations. Cal/OSHA is developing workplace violence prevention standards with adoption expected by the end of 2026.[205]

[201] Diana Limon and Antonio Sanchez, IBEW Local 11, interview by Estolano Advisors, September 23, 2024.
[202] Haines, "Tools to Address Jobsite Culture in Construction."
[203] Elyse Shaw, "Tools for Building an Equitable Infrastructure Workforce: Gender Equity Strategies as a Model" (U.S. Department of Labor Women's Bureau, September 2023), https://www.dol.gov/sites/dolgov/files/WB/media/508_WB_Issuebrief-Equity-Module_10022023.pdf.
[204] IBEW Local 11 interview by Estolano Advisors.
[205] "Cal/OSHA Workplace Violence Prevention Guidance and Resources," State of California Department of Industrial Relations, March 27, 2024, https://www.dir.ca.gov/dosh/Workplace-Violence.html.

Effective culture change initiatives empower workers to change their own workplaces. Metro and other public agencies can lead comprehensive initiatives by requiring contractors to implement **policies**, **programs**, and **physical jobsite standards** that tackle abusive culture head-on. As with any initiative whose success relies on the enthusiastic embrace of the workforce, the construction trade unions must be central to program design and the adoption of culture change initiatives.[206]

Recent federal guidance from the U.S. DOL Women's Bureau and the Equal Employment Opportunity Commission outlines three essential components of comprehensive culture-change initiatives:

1. **Policies**: Strong and comprehensive harassment policies, complaint procedures, and protections from retaliation.[207]

2. **Programs**: Regular, interactive harassment prevention and bystander intervention programs that go beyond ineffective, one-time "check the box" compliance trainings.

3. **Physical Jobsite Standards**: Basic requirements to equip jobsites with materials and facilities that keep all bodies healthy and safe.

[206] Shaw, "Tools for Building an Equitable Infrastructure Workforce."
[207] U.S. Equal Employment Opportunity Commission (EEOC), "Promising Practices for Preventing Harassment in the Construction Industry," accessed October 23, 2024, https://www.eeoc.gov/sites/default/files/2024-06/Construction%20Harassment%20Promising%20Practices_508.pdf.

Anti-Harassment Policies

Strong anti-harassment policies must be widely communicated and easily and equally accessible to all workers.[208] An Institute for Women's Policy Research study found that 72% of surveyed tradeswomen considered workplace policies an important element of their success in the trades.[209] The strongest policies are found and reinforced in municipal statutes, contract bid requirements, and project labor agreements.[210]

Comprehensive anti-harassment policies are:

- Zero tolerance, with clear consequences for bullying, harassment, and discrimination.
- Affirmative in prevention of gender-based violence and harassment.
- Clear in describing prohibited conduct (with examples), the complaint and reporting process, the investigation process, who is covered, and the employer's commitment to take immediate, reasonable, and proportionate corrective action.[211]
- Designed with independent, trauma-informed, gender responsive, consistent, and transparent processes for reporting concerns and remedying complaints. This must include support for affected parties.[212]
- Actively reviewed and updated with consideration of changing workplace structures.
- Unequivocal in prohibition of and protection against retaliation, with construction-specific examples such as transfers, blackballing, and cutting hours. Monitoring should include proactive cross-referencing of retaliation complaints and employee work history for correlation.[213]

These components draw from recommendations of the U.S. Equal Employment Opportunity Commission (EEOC) and U.S. Department of Labor (USDOL) Women's Bureau. The EEOC recommendations go beyond those listed above and are included in **Appendix C** to this report.

[208] Shaw, “Tools for Building an Equitable Infrastructure Workforce.”
[209] Hegewisch and Mefferd, “A Future Worth Building.”
[210] EEOC, “Promising Practices.”
[211] EEOC, “Promising Practices.”
[212] Shaw, “Tools for Building an Equitable Infrastructure Workforce.”
[213] EEOC, “Promising Practices.”

Harassment Prevention and Bystander Intervention Programs

Comprehensive programs of harassment prevention and bystander intervention are an elemental part of employer and workforce-driven culture change initiatives. Well organized training programs cover the rules, expectations, and consequences of harassment.[214] The USDOL has determined best practices for effective respectful workplace trainings that employers should consider when developing programs.[215] A comprehensive program goes beyond individual training and is modeled to permeate the culture of a worksite. A summary of the most important components follows.

- Programs must be developed and led by groups that are underrepresented in the trades, such as tradeswomen and workers of color.
- Curricula must help participants identify and respond to bullying, discrimination, and gender-based violence and harassment.
- All trainings are held on the jobsite and include all project personnel, including temps and apprentices. Leadership must also show active participation, including project owners, general contractor leadership, forepersons, and union representatives. However, separation of managers and non-supervisory employees for certain training portions can facilitate more open communication and frank conversations.
- Trainings should be reinforced frequently, on at least a monthly basis, through shorter meetings and toolbox talks.[216] Longer trainings must be repeated throughout a project's timeline to account for workforce turnover in phased construction.
- Programs should utilize a train-the-trainer model that develops worker leadership in localized culture change efforts and expands the program's reach. Local pre-apprenticeship programs are well poised to adopt and implement these programs.

Labor representatives suggested that while mandatory trainings are an important driver of culture change, such trainings can backfire culturally for the very groups that they seek to benefit. Instead of focusing on instances of discrimination towards women or people of color, trainings should holistically address disrespectful workplace dynamics with a variety of examples, including race- and gender-based violence and harassment.

The EEOC's Promising Practices for Preventing Harassment in the Construction Industry (**Appendix C**) provides additional recommendations and best practices for effective trainings, including curricular elements.

---

[214] EEOC, "Promising Practices."
[215] Shaw, "Tools for Building an Equitable Infrastructure Workforce" and EEOC, "Promising Practices."
[216] Maura Kelly, "Impacts of Implementing Respectful Workplace Models on Construction Job Sites: Findings and Recommendations from Evaluation Research" (Portland State University, June 2022), https://static1.squarespace.com/static/56c3899b4d088e9a22122e13/t/62bde2a38140c14992d250c8/1656611492173/2022+Respectful+workplaces+fact+sheet+pdf.pdf.

Examples of Training Programs

Traditional anti-harassment trainings focus on minimizing employer risk and lack effective tools for creating a culture of intervention.[217] In response, several tradeswomen-developed training programs are emerging across the U.S. that center workers' agency in stopping cultures of harassment. These programs shift how workers interact with one another on their jobsites.[218] An evaluation by the Regional Respectful Workplaces Committee in Portland, Oregon analyzed several intervention-oriented training programs for public owners to standardize curricula across the region.[219]

RISE Up 4 Equity

This program was designed by ANEW, a Washington-based pre-apprenticeship organization that promotes construction trades to underrepresented populations and supports these groups to complete apprenticeships.[220] ANEW develops RISE Up Respect, Inclusion, Safety and Equity in the Construction Trades) trainings in partnership with individual organizations, employers, and agencies, catering each program to the specific needs of the job site.[221]

ANEW designed RISE Up with the direct input of women and minorities in the trades and modeled it around bystander intervention strategies to prevent bullying and harassment.[222] The training scaled successfully among public owners throughout the Seattle area and is structured to expand to other metropolitan areas by training local providers as affiliates.

Green Dot for the Trades

Green Dot for the Trades is a program developed by Alteristic that aims to decrease hazing, harassment, and bullying through bystander intervention and a climate of dignity and respect.[223] The Virginia-based nationwide program developed in schools and communities before expanding into construction in 2015.[224] The curriculum design drew upon the expertise of actual construction workers.

---

[217] Estolano Advisors, "Improving the Effectiveness of Project Labor Agreements" (The San Francisco Foundation, December 2020), 46.
[218] Haines, "Tools to Address Jobsite Culture in Construction," 6.
[219] This committee is a Portland, Oregon based review committee comprised of public agencies, the Oregon Building Trades Council, and community-based organizations. Haines, "Tools to Address Jobsite Culture in Construction."
[220] ANEW is Apprenticeship and Non-Traditional Education for Women.
[221] "RISE up 4 Equity: About Us," 2024, https://riseup4equity.org/about-us/.
[222] Haines, "Tools to Address Jobsite Culture in Construction."
[223] "Green Dot for the Trades," Alteristic, accessed 2024, https://alteristic.org/trades.
[224] Haines, "Tools to Address Jobsite Culture in Construction."

Portland State University evaluated the program in jobsite studies at Multnomah County and TriMet, which are both public owners in Oregon. Researchers found that Green Dot exposure was effective in increasing the likeliness of worker intervention during harassment incidents.[225] At TriMet, 78% of workers agreed that Green Dot had reduced harassment on the jobsite.[226]

Physical Worksite Standards for Inclusion and Belonging

A culture of inclusion and respect comprises basic considerations of health and safety on the physical jobsite. While most occupational safety requirements impact all workers equally, tradeswomen's groups have identified specific jobsite elements that perpetuate exclusion, exacerbate feelings of isolation, and create unsafe conditions.

- Secure and sanitary bathrooms must be available for women and non-binary workers on the job site.[227]
- The Fair Labor Standards Act requires a private place for parents to pump milk at work. This should be a lockable, private space that is not a bathroom.[228]
- Personal Protective Equipment must be available in a diverse array of sizes. Many construction projects utilize a one-size-fits-all approach, which can lead to increased injuries and illnesses. The unavailability of proper PPE has exposed 77% of tradeswomen to unnecessary hazards. [229]

The consultant team's interviews with tradeswomen's representatives revealed concerning and regular incidents of bathroom unavailability and PPE shortages on Metro project sites. Fear of inaction and patterns of retaliatory layoffs by their employers prevent tradeswomen from reporting incidents.[230]

[225] Kelly, "Impacts of Implementing Respectful Workplace Models."
[226] Maura Kelly and Daniel Mackin Freeman, "Evaluation of Green Dot for the Trades for TriMet" (Portland State University, April 2022), https://static1.squarespace.com/static/56c3899b4d088e9a22122e13/t/628c0f7cc0c6d764726142d4/1653346173627/Green+Dot+for+TriMet+FULL+REPORT.pdf.
[227] The Portland, Oregon-area Regional Workforce Equity Agreement (RWEA) 2022 project labor agreement has strong language on toilet facilities: "Prime Contractors shall provide adequate toilet facilities for women on the job site, by maintaining a clean, accessible and locked toilet for female craft employees, and by removing graffiti immediately to help create a respectful environment." https://www.portland.gov/sites/default/files/2022/rwea-executed-final.2022.06.08.pdf, 25.
[228] U.S. Department of Labor Women's Bureau, "Nursing Employees Workplace Protections," accessed 2024, https://www.dol.gov/sites/dolgov/files/WB/media/508_Workplace_protections_pump.pdf.
[229] Doug Parker, "Making PPE the Right Fit for All," U.S. Department of Labor Blog, July 21, 2023, https://blog.dol.gov/2023/07/21/making-ppe-the-right-fit-for-all.
[230] IBEW Local 11 interview by Estolano Advisors.

Emerging Practices in Public Sector Action on Culture Change in the Construction Industry

Public owners in Oregon and Washington have benefitted from the local development of the Green Dot for the Trades and RISE Up harassment prevention programs. In addition, multiple agencies in those regions have incorporated extensive anti-harassment and respectful workplace language into their contracts, procurement processes, and project labor agreements.

City of Seattle Acceptable Work Site Policy

The City of Seattle's project site requirements utilize strong policy language with clear requirements for anti-harassment trainings for all workers. In 2017, the City of Seattle adopted an Acceptable Work Site (AWS) Contract Provision in its Standard Specifications for Municipal Construction to define and require respectful work site standards on city-funded construction projects.[231] This provision also outlines a monitoring and remedy process for violations and disparities on worksites. To support the policy, the City engaged ANEW (the same pre-apprenticeship organization that developed RISE Up) to develop trainings. A 2022 Portland State University evaluation of the AWS trainings found that workers who received training were more likely to respond to harassing behaviors than those without training.[232] Seattle's Acceptable Work Site contract language is included in **Appendix D** at the end of this report.

The Seattle contract language requires contractors to maintain respectful jobsites throughout the life of a project. Enforcement mechanisms are strong enough that the City has the power to order the removal of individuals from jobsites. Currently, Seattle administers an in-house training program for prime contractor leadership and mandatory orientation videos for employees that are reinforced through monthly jobbox talks.[233] The City also has staff available for technical assistance to support contractors in maintaining a respectful workplace.

Portland, Oregon Regional Workforce Equity Agreement

The Regional Workforce Equity Agreement (RWEA) is an inter-agency project labor agreement between public owners (Multnomah County, the City of Portland, and Oregon Metro) and local building trades unions. The RWEA models several innovative provisions to support harassment-free workplaces.

---

[231] "2017 City of Seattle Standard Specifications for Municipal Construction: Acceptable Work Site Contract Provisions," https://www.seattle.gov/documents/Departments/FAS/PurchasingAndContracting/WMBE/AWS-contract-provisions.pdf.

[232] Maura Kelly, "Assessing the Effectiveness of Acceptable Work Sites Trainings: Evaluation Conducted for the City of Seattle" (Portland State University, April 2022), https://static1.squarespace.com/static/56c3899b4d088e9a22122e13/t/628c1980544d6d0dbff56270/1653348737839/City+of+Seattle+FULL+REPORT.pdf.

[233] Allison Calvert, City of Seattle, interview by Estolano Advisors, October 24, 2024.

All bidders for RWEA-covered projects must submit a plan outlining how they will provide quality anti-harassment training and maintain a welcoming environment for women and people of color.[234] In addition, RWEA Article 10 dictates the expectations and requirements for contractors to uphold harassment-free workplaces, hold comprehensive trainings, and inform underrepresented workers of available support systems.[235] The agreement specifically names isolation as a barrier to retention for women and racial and ethnic minorities. It goes further to guarantee adequate toilet facilities and encourage mentorship opportunities for apprentices. The RWEA provisions on recruitment and retention, including many focused on respectful workplace practices, are included in **Appendix E**.

This type of language in a multi-agency labor agreement represents a comprehensive regional initiative to address harassment that combines strong policies, training programs, and worksite standards.

King County Contractor Requirements

King County, Washington, has received national distinction for its successful Priority Hire program, which targets disadvantaged worker recruitment in targeted zip codes and boasts a 13% women participation rate.[236] As part of its suite of labor equity and diversification efforts, the County has a respectful worksite policy that requires contractors to prevent, report, and promptly handle all instances of discrimination on public worksites. Importantly, the County issues financial penalties for non-compliance.[237] The policy language is in **Appendix F** at the end of this report.

The County's policy clearly defines respectful worksite expectations and commits the owner to thorough investigations and corrective action (including termination of individuals or entire contracts). Additionally, employees who report harassment, discrimination, and retaliation are protected from any form of retaliation, as stated in the policy. The rules concur with the King County Master Community Workforce Agreement between the County and local building trades unions.

[234] Oregon Metro. "Construction Career Pathways Regional Workforce Equity Agreement: Plan for Bids." https://www.oregonmetro.gov/sites/default/files/2022/10/11/Construction-Career-Pathways-regional-workforce-equity%20-agreement-plan-for-bids-20221011.pdf.
[235] "Regional Workforce Equity Agreement," February 7, 2022, https://www.portland.gov/sites/default/files/council-documents/2022/rwea-february-7-2022-final-rev.pdf.
[236] "White House Evidence Team Highlights King County's Priority Hire Program," King County Employee News, July 5, 2022, https://kcemployees.com/2022/07/05/white-house-evidence-team-highlights-king-countys-priority-hire-program/.
[237] "Respectful Worksite Language," King County, Washington, 2024, https://kingcounty.gov/en/legacy/depts/finance-business-operations/business-development-contract-compliance/programs/PriorityHire/RespectfulWorksiteLanguage.aspx.

Bid Preference and Other Procurement Levers to Advance Gender Diversity in the Construction Industry

Public agencies play a leading role in driving the demand for a diverse, skilled workforce in the construction industry. In addition to setting policy, public agencies can leverage their considerable purchasing power to ensure those who have historically been denied access to opportunity are positioned to benefit from current and future public investments. Through thoughtfully crafted procurement strategies, the deployment of public resources can incentivize equitable outcomes and advance public purposes.

Public agencies across the United States are increasingly using procurement to address workforce disparities on public construction projects. In the realm of public contracting, awarding incentives to contractor teams that include small businesses owned by people of color and women has become common practice, especially in California jurisdictions. Once a novel idea touted by equity advocates, there is now broad consensus on the shared benefits that accrue to communities, cities, and regions when governments prioritize Minority-Owned, Women-Owned and Disadvantaged Business Enterprises (MWDBE) in the purchasing of goods and services. While a newer application of this procurement lever, bid preferences and other incentives can also be used to increase the participation of women and other historically underrepresented groups in a field long dominated by men. Local, regional, and state governments have adopted measures that incentivize contractors to hire women and people of color by incorporating bid scoring methods and other incentives into public contracting on construction projects.

This section provides an overview of procurement approaches from the Pacific Northwest, Midwest, and San Francisco Bay Area that are reshaping how public projects are awarded, ensuring that contractors who commit to equity practices have a competitive edge. These approaches include models applied both to evaluative procurements like Requests for Proposals (RFPs) and to standard Invitations to Bid (ITB), in which agencies are typically bound to award to the lowest bidders. They represent promising new tools to connect women, people of color, and others who face barriers to employment with meaningful, well-paying jobs and family-sustaining careers.

Emerging Practices in Bid Preference

Examples from the Pacific Northwest

Over the last decade, public agencies in two Pacific Northwest metropolitan areas have been at the forefront of efforts to diversify the construction industry through public sector action. In Portland and Seattle, agencies have built strong regional collaboratives dedicated to fostering more diverse, sustainable pipelines of skilled construction workers in partnership with local building trades affiliates, tradeswomen groups, equity advocates, and community-based workforce providers. Seattle's Priority Hire Program, established in 2015, has been heralded the Biden Administration and U.S. Department of Transportation as a national model for its success in bringing people of color and women into the region's skilled trades workforce[238]. Portland's Construction Career Pathways Program, developed jointly and adopted by nine public agencies in the region to date, led, in 2022, to the groundbreaking Regional Workforce Equity Agreement, a multi-agency Project Labor Agreement (PLA) whose signatories include three public agencies, 18 trades unions, and community-based pre-apprenticeship training programs. Agencies in both regions have redesigned their procurement processes on construction projects to ensure that awarded contractors both understand and are equipped to meet the workforce equity requirements of public projects.

Oregon Metro: Bid Scoring on Construction Career Pathways and Regional Workforce Equity Agreement Projects

Oregon Metro, Portland's metropolitan planning agency, served as lead convener of the regional public agency collaborative that came together in 2018 to develop the Construction Career Pathways (CCP) Framework, which established shared targeted hire requirements for people of color and women on public projects. Along with Multnomah County and the City of Portland, the agency is also a signatory to the Regional Workforce Equity Agreement (RWEA), which incorporated CCP's workforce diversity hiring requirements as binding terms of the agreement. Today, the CCP applies to Oregon Metro construction projects between $200,000 and $5 million, while the RWEA governs projects above $5 million.

[238] U.S. Department of Transportation. "Investing in America: Best Practices to Expand Access to Jobs and Economic Opportunity Through Transportation Infrastructure Investments." Page 44.

One of Oregon Metro's key strategies to enhance workforce participation from underrepresented groups is the incorporation of public benefit programs into the bidding process. The CCP/RWEA workforce diversity and equity goals represent one of the agency's three public benefits programs that require contractors' participation, in addition to small business equity, environmental justice, and sustainable sourcing programs. Bids for construction contracts are scored not only on qualifications and cost but also on contractors' planned approaches to fulfilling the requirements of the public benefits programs. As part of their responses to both RFPs and Invitations to Bid (ITB), contractors are required to submit CCP/RWEA Plans that include a narrative outlining how they will meet the targeted hire goals associated with the project. For evaluative procurements, a contractor's response to the public benefit program requirements represents 20% of their overall score on a proposal.[239]

For low-bid procurements, the public benefit requirement response is evaluated by procurement staff and, if found to be insufficient, may render their bid "nonresponsive" and disqualified from the bidding opportunity. Upon award, a contractor's CCP/RWEA Plan becomes a binding term of the prime contract for the duration of the project.

1. **Evaluative Criteria on CCP Bids**[240]
   For Construction Career Pathways projects, a contractor's CCP Plan must include the following:
   - "A narrative of recruitment good faith efforts", outlining how the contractor will work with unions and apprenticeship programs to maximize the utilization of people of color and women on the project, across trades and across subcontractors at both the apprentice and journey level;
   - "A narrative of retention good faith efforts," outlining how the contractor will work with unions and apprenticeship programs to support the successful completion of apprenticeship training among women and people of color, including supports such as mentorship and coaching;
   - "A narrative of community engagement good faith efforts," outlining how the contractor will work with pre-apprenticeship programs and other community-based organizations to promote opportunities for underrepresented workers on the project and establish pathways into training programs and registered apprenticeship throughout the duration of the project.

2. **Evaluative Criteria on RWEA Bids**[241]
   For RWEA projects, a contractor's CCP-RWEA Plan must include the narrative elements described above, as well as the following:

[239] Interview with Nancy Strening, Oregon Metro, October 7, 2024.
[240] Oregon Metro. "Construction Career Pathways Program: Information for Bids." https://www.oregonmetro.gov/sites/default/files/2022/01/19/Construction-Careers-Pathways-Program-information-for-bids-20220118.pdf
[241] Oregon Metro. "Construction Career Pathways Regional Workforce Equity Agreement: Plan for Bids." https://www.oregonmetro.gov/sites/default/files/2022/10/11/Construction-Career-Pathways-regional-workforce-equity%20-agreement-plan-for-bids-20221011.pdf

- "Outline a plan to identify and provide quality anti-harassment or respectful workplaces training programs that maintain a welcoming and open environment toward women, people of color and all protected classes."

To support bidders in understanding and responding to the CCP/RWEA Plan requirements, Oregon Metro's procurement team conducts a virtual pre-bid meeting for each contracting opportunity that is exclusively focused on the project requirements associated with Oregon Metro's workforce equity and diverse hire program, separate from an on-site construction walk-through pre-bid conference[242]. They also host standing monthly information sessions that orient bidders to the agency's public benefit programs. Additionally, each RFP and ITB includes attached guidance documents that list ideas and examples of strong recruitment and retention practices contractors should consider as part their efforts to meet the agency's workforce diverse hire goals. Many of these practices, and others, are listed in the Regional Workforce Equity Agreement itself.

As binding contract terms, the CCP and CCP-RWEA Plans represent the good faith efforts for which contractors will be held accountable in pursuit of the project's targeted hire goals. If apprenticeship utilization and workforce diversity targets are not met, contractors must provide documented evidence of the actions taken in alignment with their CCP and CCP-RWEA Plans or risk facing financial penalties.

City of Seattle: Bid Scoring on Priority Hire Projects

In 2015, the City of Seattle established a Community Workforce Agreement (CWA) with the Seattle King County Building and Construction Trades Council, and Northwest National Construction Alliance II to meet the intent and obligations of the Priority Hire program, set by Seattle Municipal Code Chapter 20.37.[243] The Priority Hire program aims to promote the hiring of residents from economically distressed neighborhoods in both Seattle and King County, and sets to increase the participation of women and people of color on City construction projects over $5 million. Seattle's Priority Hire (PH) Program, codified in the city's Community Workforce Agreement (CWA), is notable both for its demonstrated success in diversifying the region's building trades and for its geographic boundaries that extend beyond city limits, recognizing the regional nature of the construction workforce.

Supplemental Bidder Responsibility Criteria (SBRC)

To increase contractor accountability on Priority Hire/CWA projects, the City of Seattle has adopted Supplemental Bidder Responsibility Criteria (SBRC) that must be met in addition to the state of Washington's standard responsible bidder criteria. For low-bid contracts, once a low-bidder has been established, the city evaluates whether a bidder is responsible according to the state and city criteria. Part of the Supplemental Criteria is whether a contractor has ever been out of compliance with the Priority Hire program requirements.

[242] Interview with Nancy Strening, Oregon Metro, October 7, 2024.
[243] City of Seattle. *Community Workforce Agreement*. Purchasing and Contracting, September 30, 2021, https://seattle.gov/documents/Departments/FAS/PurchasingAndContracting/Labor/fully-executed-2021-city-of-seattle-CWA.pdf.

As part of their bid, contractors must disclose previous non-compliance or instances of violation. If violations occur, contractors must provide an accurate account of why the violation occurred and what they will do differently to ensure it does not happen again. The city also independently verifies these claims by reviewing contractors' performance records to ensure accuracy and transparency.

Mandatory Social Equity Meetings
In addition to requiring workforce projections prior to contract execution, Seattle holds 2-hour social equity meetings with contractors on every project prior to issuing Notices to Proceed. These meetings provide an opportunity to review all PH and CWA requirements, as well as discuss prevailing wage and WMBE goals in detail with the Contract Compliance Team. City staff consider these meetings an important opportunity to clarify expectations early on and reinforce the city's commitment to both supporting contractors and holding them accountable in meeting workforce equity goals.

Examples from the Midwest

In recent years, state and local governments in Illinois have implemented a variety of innovative bid incentive programs designed to expand and diversify the region's supply of skilled trades workers. While the three models described below take different approaches, all enable contractors to earn and bank "credits" that have concrete economic value and can be applied to lower the calculation of their overall bid on future projects.

State of Illinois Bid Credit Program
In March 2024, Illinois Governor JB Pritzker announced the opening of applications for the Illinois Works (ILW) Bid Credit Program.[244] The program is part of a three-pronged strategy laid out in the Illinois Works Jobs Program Act of 2019 that makes sweeping new investments into the state's pre-apprenticeship and apprenticeship training infrastructure.[245] Modeled on similar bid incentive programs being used successfully by local jurisdictions and the Illinois Tollway Agency, the ILW Bid Credit Program allows contractors on state-funded public works projects to earn credits for apprentices hired and retained on their projects. Contractors can then apply earned credits on any state public works program to lower the calculation of their bid, increasing their competitiveness for state projects.[246]

[244] Illinois Department of Commerce and Economic Opportunity. "Governor Pritzker Announces Open Applications for the Illinois Works Bid Credit Program." March 27, 2024. https://dceo.illinois.gov/news/press-release.29808.html
[245] Illinois Department of Commerce and Economic Opportunity. "Illinois Works Jobs Program Act. Illinois Works: An Innovative Model to Reinvigorate our Workforce for the Future" https://dceo.illinois.gov/illinoisworks.html
[246] Illinois Department of Commerce and Economic Opportunity. "Illinois Works Bid Credit Program." https://dceo.illinois.gov/content/dam/soi/en/web/dceo/illinoisworks/documents/bid-credit-program-one-sheeter.pdf

In order generate bid credits for an employer, an apprentice must be a graduate of an Illinois state-funded pre-apprenticeship program. While the Bid Credit Program itself is race- and gender-neutral, its reliance on the ILW Pre-Apprenticeship Program provider network means that contractors must source workers from programs that disproportionately serve those who are currently underrepresented in the industry. By elevating a diverse talent pool and emphasizing retention, ILW's Bid Credit Program represents a powerful use of procurement levers to drive long-term change in the construction industry.

1. Calculating Bid Credits

According to the IL Department of Commerce and Economic Opportunity (DCEO), the final value calculation for the program's bid credits is currently in draft form and has not been officially released, pending the publishing of the program's full administrative rules. Current program materials and publicly released guidelines tie the value of bid credits to two factors: 1) the wage rate of the trade in which an apprentice is employed, and 2) retention-based milestones that increase as apprentices advance in their training.

The program's draft guidelines currently list $334,000 as the maximum bid credit value a contractor can earn on a hired and retained apprentice. A contractor can earn bid credits for a single working apprentice for up to six years, or until the apprentice has reached journey level. The following table, shared on a recent webinar introducing the Bid Credit Program, is an *example based on the program's draft guidelines* of how bid credits accrue:

Figure 4-1: State of Illinois Bid Credit Program Accrual Example

Summary:	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Apprentice	$33,696	$37,908	$46,332	$54,756	$63,180	$75,816
Hiring Incentive (after 90 days)	$3,000					
Promotion Incentive (Annually)	$2,000	$2,500	$3,000	$3,500	$4,000	$4,500
Total for Apprentice (Year 1 to Year 6)	$38,696	$40,408	$49,332	$58,256	$67,180	$80,316
Accumulative Total		$79,104	$128,436	$186,692	$253,872	$334,188

**both based on 40-hour week for 52 weeks (2,080 total hours)*

Although bid credits are reflected in dollar amounts, the program refers to credits as "virtual dollars", not actual dollars. When applied, earned credits can lower a contractor's bid for a specific project. However, the application of bid credits is restricted to the procurement process. It has no bearing on a project's assessed budget or the final contracted budget for an awarded project.

The program also allows contractors to pool their credits on teamed bids, further strengthening the competitiveness of contractors' teams with successful track records in hiring and retaining diverse workers on their projects.

2. Administering the Program

The State of Illinois DCEO administers a Bid Credit Registry and Bank that tracks earned credits for registered contractors. DCEO has also launched the Illinois Works Applicant Tracking System (ATS) to match ILW Pre-Apprenticeship Program graduates with opportunities on state-funded projects. Through the ATS, contractors can access information about a candidate's certifications, trade interests, and availability. This streamlined process enables contractors to connect directly with pre-apprenticeship graduates, offering immediate opportunities for employment and sponsorship into DOL-registered apprenticeships, further helping to close the gap between training and employment for women, people of color, and other underrepresented groups.

Illinois State Toll Highway Authority Bid Credit Program

The Illinois State Toll Highway Authority, or IL Tollway, maintains two bid credit programs that are similar in concept and application to the Illinois Works Bid Credit Program described above. Similar to the ILW program, IL Tollway's Earned Credit Program and ConstructionWorks Bid Credit Program allow contractors to earn credits for the hiring and utilization of diverse and underrepresented workers on IL Tollway construction projects. Contractors can then apply these credits, also referred to as "virtual dollars", to reduce the calculation of their bid amounts on low-bid procurements. The agency is in the process of transitioning all workforce-related bid credits for new contractors to the ConstructionWorks Bid Credits Program, while contractors previously registered through the Earned Credits Program will continue to have access to the through that program.[247]

The ConstructionWorks Program is a workforce development program funded by IL Tollway and administered by the Chicago Cook Workforce Partnership, the workforce board for the Chicago metropolitan region. The program recruits people of color, women, residents of economically distressed areas, and veterans into pre-apprenticeship and union apprenticeship programs that connect them with employment on Tollways construction projects.[248] IL Tollway created the ConstructionWorks Bid Credit Program to build contractors own investment in the success of the workforce development program. ConstructionWorks provides participants with wrap-around services and supports, including funds for equipment, union dues, and child care.

[247] Illinois State Toll Highway Authority. "Earned Credit Program." https://www.illinoistollway.com/doing-business/diversity-development/programs/ecp

[248] Chicago Cook Workforce Partnership. "ILLINOIS TOLLWAY PROMOTES CONSTRUCTIONWORKS EVENTS TO INTRODUCE COMMUNITY LEADERS TO INNOVATIVE WORKFORCE PROGRAM." September 18, 2024. https://chicookworks.org/illinois-tollway-promotes-constructionworks-events-to-introduce-community-leaders-to-innovative-workforce-program/

1. Bid Credit Accrual[249]

According to the ConstructionWorks Bid Credit Program guidelines, bid credits accrue at different rates depending on the skilled trade in which a worker is employed. Contractors can earn bid credits according to the following calculations:

- Operating Engineers and Structural Steel Ironworkers: $0.75 per wage dollar paid per work hour
- Other Skilled Trades and Fabricators: $0.65 per wage dollar paid per work hour
- Laborers: $0.55 per wage dollar paid per work hour
- A one-time new hire bonus of $5,000 in bid credits after an employee reaches 160 work hours

In addition to these earned bid credits, IL Tollway has recently introduced an additional incentive for contractors who hire ConstructionWorks program participants. IL Tollways will pay contractors $15 for each hour worked by a new hire employed on an IL Tollways project, with a maximum of $100,000.[250]

City of Chicago: Bid Incentives for Diverse Hire

The City of Chicago offers contractors a variety of bid incentives to increase the participation of historically underrepresented groups in the construction workforce, including women, people of color, and formerly incarcerated individuals. The incentives promote workforce diversity and social equity by awarding credits for firms that commit to hiring underrepresented workers into apprenticeships and journey-level roles. Some of the city's bid incentives are earned through commitments contractors make at the time of bid submission, or "Future Incentives", while others are earned when commitments have been successfully fulfilled, or "Earned Credits".[251]

On construction contracts valued at $100,000 or more, the city offers the following incentives for commitments made to diverse hire on awarded projects.

1. Equal Employment Opportunity Bid Incentive

The Equal Employment Opportunity (EEO) Bid Incentive is a Future Incentive that allows bidders to reduce the overall amount of their calculated bid if they make commitments hire to journey workers, apprentices, and laborers for a minimum percentage of project hours.

- **Cap on Utilization**: The city limits contractors to earning incentives on up to 70% of total worker hours for people of color and 15% for women across journey worker, apprentice, and laborer categories. Although contractors can hire more than these percentages, the city only considers the capped figures when determining bid credits.

[249] Illinois State Toll Highway Authority. "Bid Credit Overview." https://www.illinoistollway.com/doing-business/diversity-development/programs/ecp
[250] Illinois State Toll Highway Authority. "ConstructionWorks Program." https://www.illinoistollway.com/doing-business/diversity-development/programs/constructionworks#CWCompetitiveEdge
[251] City of Chicago Department of Procurement Services. "Resource Guide: Incentives and Programs."

- **150% Credit**: The city awards a 150% credit for every work hour performed by minority or female workers from socio-economically disadvantaged areas (SEDAs), creating additional incentives for engaging these underrepresented communities.

2. Returning Resident Apprentice Utilization Incentive

The Returning Resident Apprentice (RRA) Utilization Incentive is both a Future Incentive and an Earned Credit Incentive intended to create employment opportunities for formerly incarcerated individuals on city construction projects. This incentive encourages contractors to hire apprentices who have been convicted of imprisonable offenses and are returning residents of Chicago. Upon contract closeout, if a contractor has met its RRA utilization goals, the city issues an Earned Credit Certificate that can be applied to future bids.

- **Eligibility**: Returning residents must live in Chicago and have been convicted of a state or federal offense. The apprentices must enroll in a union-based training program that the U.S. Department of Labor or the State of Illinois approves.

- **Incentive Values**: If contractors commit to employing returning residents for 5–10% of the total labor hours, they receive a credit of 0.5% of the contract's base bid. By committing to hiring 11–15% returning residents, contractors earn a 1% credit.

- **Earned Credit for Future Contracts**: Contractors who meet these utilization goals earn a credit certificate, which they can apply to future bids. These credits remain valid for three years and apply to contracts of equal or greater value.

3. Enforcement

To ensure compliance, the city enforces bid incentive guidelines in a number of ways. Contractors receiving the EEO Bid Incentive who failed to meet their committed utilization percentages for women and people of color are subject to liquidated damages. The city calculates these penalties based on the level of deficiency in meeting the targets. Those who failed to meet proposed RRA apprentice utilization goals may be found by the city to be a "non-responsible bidder", negatively affecting a contractor's ability to bid competitively on future projects.

Example from the San Francisco Bay Area

City/County of San Francisco Public Utilities Commission Social Impact Partnership Program

San Francisco's Social Impact Partnership (SIP) Program, launched by the San Francisco Public Utilities Commission (SFPUC), aims to engage contractors working on public infrastructure projects in contributing to local communities, particularly in fostering workforce participation among women and underrepresented communities. By incentivizing contractors to make commitments through financial, in-kind, or volunteer contributions, the program seeks to enhance social equity in communities affected by SFPUC's projects.

1. Workforce Participation and Social Impact Goals

SFPUC's SIP Program is designed to leverage the power of public contracts to benefit marginalized communities. The program allows contractors to voluntarily pledge resources toward specific community needs, which include job awareness, workforce training, internships, small business support, and education. Contractors are expected to make these commitments as part of their bids for public contracts exceeding $5 million. This focus ensures that large-scale projects not only provide infrastructure but also enhance the socio-economic fabric of the communities, particularly through workforce opportunities for women and people of color.

2. Scoring Criteria and Contractor Selection

The SIP Program directly influences contractor selection by assigning points to contractors based on their proposed social impact commitments. Contractors can earn up to 5% additional points available in a bid evaluation, providing an incentive for contractors to propose robust commitments. For instance, in a solicitation with a maximum score of 100 points, contractors participating in the SIP Program could receive up to 5 points for their social impact pledges. This mechanism encourages contractors to include diversity-focused initiatives in their bids to remain competitive. A contractor declining to participate in SIP would forgo those points, making it more difficult to win a contract.

In practical terms, this scoring system creates strong incentives for contractors to align their projects with workforce diversity goals, such as hiring women and people of color or providing training and apprenticeship programs aimed at these groups. By linking points to these commitments, SFPUC ensures that social equity is a key component of the bidding process, thus promoting a diverse workforce on its construction projects.

3. A Focus on Key Metrics

In 2023, SFPUC instituted new program guidelines to increase transparency on SIP projects and ensure commitments by contractors are delivering tangible community benefits. They include new requirements that SIP plans include key metrics by which contractor's success will be measured. These success metrics are incorporated into SIP plans, which become binding terms of prime contracts. SFPUC now tracks the implementation of the SIP Program on a public dashboard on the agency's website.

Public agencies in cities and regions across the county are using procurement levers to create lasting change in the construction industry by increasing diversity and advancing equity on public projects. By integrating innovative bid preferences and evaluation criteria, public agencies, in partnership with labor and community partners, are reshaping the labor market to ensure that women and people of color have access to meaningful employment and family-sustaining careers. While these programs have had significant success, they also highlight the importance of strong enforcement mechanisms to ensure contractors fulfill commitments. These efforts not only enhance workforce supply but also contribute to broader economic and social equity goals.

5. RECOMMENDATIONS

Strengthen Accountability on Female Hire Goals and Build on What's Working

Creating strong employer demand for women workers on construction projects is a powerful strategy for addressing gender disparities. In the absence of clear expectations from public project owners, contractors often revert to traditional business practices that perpetuate bias. Metro is the only public agency in LA region establishing specific goals for female participation on public funded projects assisted by the guidance from federal Department of Transportation (DOT) guidance. Under Executive Order 11246, contractors and subcontractors with federal or federally assisted construction contracts exceeding $10,000 must make good faith efforts—guided by 16 affirmative action steps to ensure that 6.9% of project hours are performed by women and meet region-specific targets for hours worked by people of color.

Although Prop. 209 limits the ability of establishing hard goals, federally funded projects continue to require contractors to pursue workforce goals as part of their contractual obligations. As the largest project owner and builder in Southern California, Metro can leverage its experience to help contractors and partner agencies increase the participation of women in construction on these critical projects. By continuing to set goals for women, holding contractors accountable, fostering collaboration, and ensuring sustainable community involvement, Metro can further strengthen its position as a regional leader in workforce equity and enhance the inclusion of women in public construction projects.

The following recommendations outline key strategies to build on the agency's current efforts:

Recommendation 1: Continue Regional Leadership in Setting Goals

I. **Maintain leadership in the region**: Set clear, measurable goals for female participation on public construction projects and showing stronger accountability measures for contractors and targeted and investments can help achieve these goals.

II. **Promote consistent messaging:** Encourage others to set equity standards as a critical element of public contracting. Share success stories and best practices in both finding the necessary labor pool needed to complete projects while growing family sustaining careers for low-income women workers in the LA region.

Recommendation 2: Strengthen Contractor Accountability and Good Faith Efforts

To ensure contractors meet female hire goals, Metro should set clear expectations, ensure accountability on good faith efforts, provide consistent communication, and offer targeted support.

I. **Require Documentation**: Contractors must submit records demonstrating their good faith efforts toward meeting female participation goals.
II. **Enhance Communication**: Promote effective communication between contractors, agency staff, compliance teams, and oversight committees to support goal attainment.
III. **Facilitate Community Connections**: Assist contractors in building partnerships with community organizations and training providers to support inclusive hiring practices.

Recommendation 3: Continue to Allocate Resources for Training and Support

I. **Metro continues efforts to help contractors achieve success:**

   a. **Hosting Metro Pre-Bid Orientation Sessions**: Sessions to acquaint prospective contractors with workforce equity policies and expectations.

   b. **Metro Project Briefings**: Holding workshops at the beginning of projects to emphasize equity goals, fostering a shared understanding among all unions, workforce and community partners.

   c. **Investing in workforce equity training** tailored to Metro construction project managers to enhance their capacity to implement inclusion efforts in construction projects.

II. **Consider leveraging the Department of Labor's Mega Construction Project Program as a model.** This program emphasizes early engagement intensive "front-end" approach from the earliest stages of a designated project that regularly engages a wide range of stakeholders, including contractors, through Equal Employment Opportunity (EEO) Committees.

Recommendation 4: Expand Workforce Utilization Monitoring Efforts through Existing and New Channels.

Metro can build on the agency's current monitoring capacity and structures to increase accountability across its construction ecosystem. Key opportunities include expanding the existing Labor-Management Committee process to also review project-level female worker utilization rates and engage unions on strategies to address shortfalls and gaps. Metro can also expand the scope and capacity of its current job site monitoring program to include respectful workplace practices that support the retention of women and other underrepresented workers.

I. **Leverage Project Labor Agreement Labor-Management Committees (LMCOCs) to monitor and address workforce equity issues**: Use LMC's, as outlined in Project Labor Agreements (PLAs), to provide structured oversight and accountability on targeted hire goals. This structure can assist Metro in tracking progress and addressing challenges related to meeting workforce goals. Consider adding workforce partners and women in trades representatives to committee to foster transparency, facilitate problem-solving on major projects.

II. **Invest in Project Administration**: Invest resources to support Metro Project Managers and Job Coordinators to manage robust labor and community efforts on projects. Allocate financial resources to support ongoing collaboration between community partners, labor organizations, and contractors.

III. **Promote Joint Problem-Solving and Monitoring**: Invite unions and contractors to participate in Jobs Coordinator meetings. Create an *Access and Opportunity Committee* of tradeswomen and tradeswomen-serving organizations to help socialize Metro's strategy and build buy-in with contractors, unions and the industry more broadly.

IV. Monitor Job Sites for Anti-Harassment and Respectful Workplace Practices: Implement job site monitoring to ensure respectful workplace practices are upheld consistently on Metro projects. Currently, Metro's labor compliance team conducts job site monitoring to ensure prevailing wage and health and safety rules are being followed on Metro's job sites. Metro should expand the scope of job site monitoring to include respectful worksite practices. Job site monitoring should focus on ensuring the following:

- Women, apprentices, and all underrepresented workers are receiving equal access to meaningful work and training in their trade, overtime hours, and other job site opportunities.
- Anti-harassment policies and procedures are posted in a visible location at the worksite.
- Bathrooms are clean, safe, and accessible.
- All workers have well-fitting PPE.

Jobsite monitoring efforts should include anonymous surveys with workers to gauge the prevalence of harassment and discrimination at Metro's work sites and identify where corrective action is needed.

<u>Recommendation 5</u>: Provide Financial Support for Community Partners

1. **Ensure women-serving organizations have a role to play to support contractor and union efforts:** Provide necessary funding to those helping place low-income women and communities of color on the job sites.

2. **Invest in partnerships over the life of projects with prolonged completion periods:** Since public projects can span several years, it is essential to adequately compensate community-based, workforce partners with their time and expertise to ensure ongoing engagement.

Invest in Supportive Services with an Effective Child Care Strategy

Registered apprenticeships provide a pathway to good, family-sustaining wages; however, first-year apprentices often earn only a fraction of what journey-level workers make. While completing these earn-as-you-learn programs will lead to family sustaining construction careers, many low-income women entering such apprenticeships encounter a significant "benefits cliff"—earning enough to disqualify them from subsidies or public assistance but not enough to cover essential expenses like child care, transportation, and housing. Many women workers face financial difficulties and struggle to afford necessary items such as tools, clothing, and child care.

To address these challenges, it is crucial to fund and expand comprehensive support service programs. Allocating resources to remove barriers to entry and retention for diverse workers through wrap-around services and mentorship opportunities offer a direct way to address disparities in the sector. Supportive services help pre-apprentices and apprentices address financial challenges transitioning into the demanding yet rewarding construction industry. A critical component of this support is the provision of affordable and reliable child care, which is vital for building a sustainable workforce in construction. The sector requires a variety of high-quality, flexible child care options to meet its diverse and evolving needs. Child care is often an invisible yet essential part of the workforce infrastructure, enabling all other work to occur. By implementing the following strategies, agencies can create a supportive ecosystem that encourages contractor investments in a joint child care fund, benefiting workers and the broader community.

Recommendation 1: Fund child care costs/tuition for early years of apprenticeships: To address the true cost of child care for apprentices and stabilize support for their families, Metro can take key steps to establish funding for the cost of child care for early year apprentices, especially funding for infant and toddler care. This recommendation would be best implemented in a two-pronged process; 1) through direct investment by Metro into supportive services fund for apprentices on Metro projects and 2) through regional partnerships with other public owners of projects to ensure apprentices across the region can access this funding.

Why a child care fund?

- **Address the "Benefits Cliff":** Women pre-apprentices need to complete 4–5-year apprenticeships to fully benefit from a career in construction. While an apprentice may work on a Metro project intermittently during various phases, it is in the agency's interest to invest in the regional supply of women workers in different trades.
- **Building on successful models: of California's ERiCA grants:** this approach would involve joint investments from contractors and unions, providing direct payments to the child care providers of the workers' choice. This investment would cover the costs when subsidized programs are no longer available to the worker. There is more demand than supply of child care funding through ERiCA grants.

Metro's funding would build upon an innovative model with buy-in from local building trades unions and women supporting workforce partners.

- **Incentives for local child care providers to expand hours:** This child care funding can incentivize local providers to care for children to offer early morning and late-day hours, further supporting working families when offered guaranteed tuition over two years.
- The Seattle area's transit agency, **Sound Transit** contributes five cents ($0.05) per hour worked by employees covered under a Project Labor Agreement (PLA) to the Regional Apprenticeship Preparation Integrated Delivery System (RAPID) fund. This funding supports outreach, training, and retention efforts including funding for supportive services. The agency collaborates with organizations like Apprenticeship & Nontraditional Employment for Women (ANEW), Helmets to Hardhats, and others to help veterans, women, and people from disadvantaged backgrounds enter construction careers.

Recommendation 2: Create a regional Joint Child Care Fund: Co-invest in child care fund for apprentices with contractors and potentially other public agencies as well, to establish a joint child care fund to cover child care costs for apprentices and workers in the trades. This fund should be co-designed with worker input and in collaboration with child care experts and unions.

I. **Institute a contractual performance requirement to mandate contractors' contributions:** Require contribution contributions and ensure contribution formula is adjusted periodically.
   - The **Social Justice Labor Management Cooperation Trust Fund** is established under the Port of Oakland's Maritime and Aviation Project Labor Agreement (MAPLA) to support the MAPLA Social Justice Program. Contractors performing work under MAPLA are required to contribute thirty cents ($0.30) for each hour worked by their employees into this fund, in addition to established employee benefits. This payment must be included in the contractors' bids and is deducted monthly from the progress payments requested by the prime contractor for their workforce and subcontractors. The deductions are based on the total hours reported in the MAPLA Program Summary by Project Goals Report, ensuring that contributions are aligned with the hours worked.

<u>Recommendation 3</u>: Build robust long-term partnerships to address child care challenges with worker input.

I. **Engage those directly impacted in crafting solutions:** Work together with female apprentices and journey-level workers as well women supporting trades organizations and unions in in co-designing child care programs.

II. **Survey workers and be prepared to adjust long the way:** Metro and contractors work together with unions and women workers to assess effectiveness of child care support programs and funding targets through worker surveys and workforce data analysis. Monitor contractor participation in the child care fund, assess the impact on child care access for workers, and adjust strategies as needed to ensure goals are being met.
    - Hold informational sessions or workshops to engage contractors, trade unions, and local businesses. Discuss the importance of child care in workforce retention and productivity and present the joint child care fund as a community investment.

III. **Communicate Success Stories:** Share success stories and data demonstrating the positive impact of the joint child care fund on workforce stability and productivity. This can encourage more contractors to participate and highlight the value of investing in child care.

<u>Recommendation 4</u>: Build on Existing regional child care systems by partnering with child care organizations, public sector partners and with those engaging providers and workers.

Metro can leverage existing systems and programs to advance its own child care goals. Contractors and public project owners can benefit from improving these systems but need to help expand capacity and create more inclusive child care options for their employees. Utilizing local initiatives like subsidization programs can help grow the supply of child care providers and address the issue of low wages and minimal benefits for child care workers while also supporting local businesses in achieving their child care goals.

I. **Formalize Partnerships with Child Care Experts and Workers:** Los Angeles Metro has numerous opportunities to collaborate with child care experts, such as the Los Angeles County Childcare Planning Committee, the Policy Roundtable for Child Development, the LA County Office for the Advancement of Early Care and Education, and child care worker union SEIU Local 99, to co-plan and invest in solutions that expand the regional child care sector.

Enhance Procurement Levers to Support Female Hire

Addressing complex system challenges to expand access for women on Metro projects requires an integrated approach that aligns Metro's policies, investments, and procurement practices. In calling for a refresh of the 2019 workforce disparity study, the Metro Board directed staff to explore procurement approaches to increasing the participation of tradeswomen on Metro construction projects, including the use of bid preferences and a revision to the Cultural Competency Plan requirement recently piloted on three of the agency's design-build RFPs. A national scan conducted for this study revealed that local, regional, and state governments across the U.S. have adopted measures that incentivize contractors to hire women and people of color through bid preferences on public construction projects. Although California's Proposition 209 restricts Metro's ability to implement such a model for female hire directly, other avenues exist for Metro to promote the recruitment, retention, and advancement of tradeswomen through procurement.

Recommendation 1: Institute new contractor requirements on policies, procedures, and training programs to combat harassment and discrimination in the workplace.

Strengthening career pathways for women on Metro construction projects requires proactive efforts to ensure respect and safety for women and other underrepresented workers on Metro job sites. The persistence of harassment, bullying, and hazing on construction worksites remains a leading factor that drives women, people of color, and LGBTQ workers out of careers in the building trades. Interviews conducted for this study revealed multiple instances of retaliation against women who complained about a lack of safe and accessible bathrooms at the worksite. These experiences underscore the importance of comprehensive culture change approaches that include strong anti-harassment policies and procedures, regular training programs, and physical job site standards that support safety and belonging in the workplace. The recommendations below draw on recently released guidance from the EEOC on preventing harassment and discrimination in the construction industry[252]. While these recommendations are aimed at increasing the retention and advancement of tradeswomen specifically, incorporating respectful worksite practices will benefit not only underrepresented workers but all workers on Metro's job sites.

[252] U.S. Equal Employment Opportunity Commission. *Promising Practices for Preventing Harassment in the Construction Industry*. June 2024. https://www.eeoc.gov/promising-practices-preventing-harassment-construction-industry

I. **Clear Anti-Harassment Policies and Procedures**: As part of all construction contracts, Metro should require contractors to develop a Respectful Workplace Policy that:
   a. Defines harassment, discrimination, hazing, and bullying, with specific examples relevant to the construction industry.
   b. Clearly outlines the process for reporting prohibited conduct that provides multiple reporting channels.
   c. Clearly outlines the contractor's process and timeline for investigating complaints.
   d. Includes a disciplinary process that is consistent and proportionate to the severity of the misconduct.
   e. Affirms the contractor's commitment to prompt action to respond to and remedy complaints.
   f. Upholds the protection of individuals who report instances of harassment and discrimination and the prohibition of retaliation in response to complaints.
   g. Includes the name and contact information of the appropriate individual designated to receive and respond to complaints.

   As a contract requirement, this policy should be posted and made visible at every Metro worksite for the duration of the contract. To support contractors in developing or improving existing anti-harassment policies, Metro can draw on the EEOC guidance released in June 2024.[253]

II. **Comprehensive Training Programs**: As part of all construction contracts, Metro should require contractors to implement respectful workplace training programs. These training programs should go beyond one-off, compliance-driven models to prepare participants to recognize harassment and discrimination and equip them with tools to intervene when it occurs. Several high-quality harassment-prevention training programs have been implemented with success in the construction industry, including RISE Up, developed by a national tradeswomen's group. To comply with the requirement, training programs should meet the following criteria:

   a. Train participants in the contractor's anti-harassment policy, complaint procedures, and investigation and discipline process;
   b. Incorporate a bystander invention model that trains participants in identifying and responding to harassment, discrimination, and bullying;
   c. Include all project personnel on a worksite, including journey-level workers, apprentices, and temporary workers;
   d. Held at least annually throughout a project lifecycle to account for workforce turnover and be reinforced more frequently, such as monthly, through shorter meetings and "job box" talks;
   e. Incorporate a train-the-trainer model to build and expand capacity to advance culture change within the unionized workforce.

[253] Ibid.

Given the regional nature of the construction workforce, Metro should convene stakeholders regionally to identify a shared training program. This recommendation is outlined further in Section 4.III.3 below.

<u>Recommendation 2:</u> Revise Cultural Competency Plan requirement to include distinct Community Benefits and Workforce Equity components.

While it is too early to assess Metro's Cultural Competency Plan pilot as a whole, the approach holds promise for facilitating accountability to communities surrounding Metro construction sites and connecting local residents and businesses with economic opportunities created by Metro projects. Should the Cultural Competency Plan requirement become standard practice in Metro's construction procurement process, Metro should make sure any workforce development activities funded and implemented through Cultural Competency Plans align with and advance Metro's workforce equity goals and programs, including the PLA/CCP targeted hire requirements and female hire goals. In RFPs, the Cultural Competency Plan requirement can be an opportunity for Metro to evaluate contractors on the strategies they will use to meet targeted and female hire goals and their track record recruiting and retaining a diverse workforce on past projects. Currently, contractors are not asked to outline these strategies until the creation of the Employment Hiring Plan once a Notice to Award has been issued. Incorporating this evaluation through the Cultural Competency Plan requirement can also help ensure that workforce development activities initiated and funded by Metro are creating a pipeline for project area residents into quality jobs in the trades, such as through certified MC3 pre-apprenticeship programs, partnerships with local tradeswomen groups, and supportive services proven to support the success of women, disadvantaged workers, and others who face barriers to employment.

In future applications of the Cultural Competency Plan requirement on evaluative procurements like Design-Build, Metro should refine the Plan framing to establish and clarify distinct community benefit and workforce equity requirements:

- Outline "A. Community Benefit Component" and "B. Workforce Equity Component."
- For "B. Workforce Equity" component, require that contractors outline in narrative form how they plan to meet Metro's targeted hire and female hire goals. The narrative should describe the strategies they will use to do the following:

    1. Recruit targeted, disadvantaged, and female apprentices and journey workers.
    2. Retain targeted, disadvantaged, and female apprentices and journey workers.
    3. Ensure a respectful worksite that is free from harassment, discrimination, hazing, and bullying.

    Responses to the Workforce Equity Component should include a contractor's past experience meeting workforce utilization goals for Metro's and other public projects in the LA region and describe partnerships, especially with tradeswomen groups, they have built.

- To aid contractors in understanding and responding to this requirement, Metro can direct them to the Women in the Trades Resource Guide for suggested recruitment, retention, and respectful worksite strategies. In conjunction with the release of the 2024 workforce disparity refresh and report, Metro should revise its Women in Trades Resource Guide to ensure the inclusion of emerging best practices and up-to-date information on the local landscape supporting women in construction.

Recommendation 3: Make female hire goals an explicit part of Metro's procurement process for Jobs Coordinators.

Metro maintains a pool of qualified Jobs Coordinators who are hired by prime contractors to lead outreach and recruitment efforts on their construction projects. Jobs Coordinators play a critical role in recruiting diverse workers into Metro's construction workforce. Their effectiveness is essential to Metro's ability to succeed in meeting its targeted hire requirements outlined in the PLA/CCP and female hire goals. Currently, the Request for Interest and Qualifications for Jobs Coordinators outlines Metro's targeted worker, disadvantaged worker, and apprenticeship utilization goals on both federally funded and non-federally funded projects in detail and describes the responsibilities of Jobs Coordinators in helping the agency attain them. However, Metro's female hire goals are not mentioned anywhere in RFQI language.

Before the next Jobs Coordinator solicitation opens, revise the RFIQ to include reference to Metro's female hire goals. In the proposal content and evaluation criteria, incorporate language that speaks to proposer's past experience working with tradeswomen groups and outreach methods used on past projects to promote the recruitment and retention of women.

Establish a Regional Collaborative to Address Systems Change in the Construction Industry

As the Greater LA Area diversifies, public project owners have an opportunity to address systemic disparities faced by women in the construction sector by embracing a regional approach to workforce diversification. Pervasive challenges—such as limited child care options, job site culture, and bias in recruitment and hiring—cannot be resolved by a single project or agency, no matter how strong their policies. Women in construction operate within a regional labor market and often encounter similar obstacles across projects and employers. A coordinated effort to reduce these barriers will lead to more women successfully completing apprenticeships, advancing in their careers, and establishing lasting success in the industry.

Imagine a construction sector where, regardless of the project, women apprentices are guaranteed a set of fundamental rights and support systems, from on-site anti-harassment training to child care funding. Regional collaboration makes this vision achievable by facilitating a unified response to the industry's demand for a skilled workforce, allowing partners to set shared diversity and recruitment goals, pool resources for retention efforts, and tackle common issues like affordable child care. Such a collaborative approach not only builds a stronger, more inclusive talent pipeline but also promotes economic mobility for communities of color and working families. By partnering on established regional initiatives, public project owners can reduce barriers and open pathways to high-quality construction careers for women, people of color, and justice-involved individuals across the sector.

I. **Recommendation 1: Formalize a regional collaborate to advance women in construction.**

Establish a regional collaboration of public agencies and partners interested in increasing the number of women in the construction sector: Currently, there are no regional collaborations specifically focused on increasing the number of women on construction projects in the LA area. However, potential partnerships are highlighted in the *Local Efforts* section of this report, which includes active and proposed multi-jurisdictional initiatives like Infrastructure LA and the City of LA Workforce Infrastructure Network, led by the Mayor's Office and the Economic and Workforce Development Department (EWDD), has established goals to address gender gap in high growth sectors. The efforts aim to close child care funding gaps and partner with stakeholders to increase outreach efforts.

- In the Portland metro area, nine public agencies have formed a formal collaboration to implement a shared approach to diversifying their construction workforce. This approach, known as the **Construction Career Pathways Framework (CCPF)**, provides high-level guidance for public owners dedicated to meeting the region's growing construction needs through a diverse workforce. CCPF emphasizes cross-sector collaboration by engaging public agencies, labor organizations, community-based groups, contractors, and educational institutions to achieve a broad regional impact. Each agency, based on its specific size and capacity, establishes individual thresholds for meeting diversity goals. The Framework focuses on seven key actions for public owners: setting clear diversity goals, defining project thresholds, tracking progress, creating workforce agreements, implementing on-site anti-harassment and culture-change strategies, investing collectively in supportive services, and fostering regional collaboration to build a robust, diverse workforce. Recent accomplishments include:

- Establishment of a **Regional Funding Collaborative** to strategically invest in training, outreach, wrap around services and other retention strategies for diverse workers in the region.
- Coordination on developing and delivering a respectful workplace and anti-harassment training curriculum across projects and jurisdictions.
- Coordination of public tracking and data sharing on achieving workforce goals on projects including alignment on software to monitor labor demographics and other data components on projects.
- Establishment of first of its kind multi-jurisdictional workforce equity agreements (PLA) between public agencies and the construction trades that embeds workforce equity goals for women and people of color.

II. **Support the formation a regional woman in trades advisory group to work alongside the regional collaboration.** Similar to LA County Public Works Women in Trades Advisory Council (WITAC), a regional Council can help facilitate discussions and strategies to increase female recruitment, training, placement, and retention in the construction industry.

Recommendation 2: Invest in and grow the regional supply of child care.

Without a plan to expand the number of providers or improve wages for child care workers, incentives may unintentionally worsen local supply issues by failing to balance increased demand with an already limited supply, leading to higher prices and reduced availability for families in the community. Additionally, efforts to enhance child care within the construction industry should not displace other low-wage workers in the region who also require care.

I. **Create a regional Joint Child Care Fund:** Co-invest in child care fund for apprentices with other public agencies as well, to establish a joint child care fund to cover child care costs for apprentices and workers in the trades. This fund should be co-designed with worker input and in collaboration with child care experts and unions.

II. **Grant programs to address child care deserts:** Examples of collaboration to grow to supply of child care could include establishing grant programs to support start-up costs and facility development expenses for family child care homes and center-based care in child care deserts, for those that serve infants and toddlers; supporting efforts to create Apprenticeships for becoming child care providers (City of Los Angeles has efforts currently); and direct facility renovations grants to child care facilities so they can expand their operations.

III. **Partner with other public jurisdictions to have a unified regional approach to increase child care capacity:** The consultant team's interviews revealed that several governments in LA County area are already extending grant programs and policies to grow the child care supply and address child care deserts. This underscores the need for a shared, regional approach that fosters collaboration, increases investments, and reduces duplication of efforts. For example, the cities of Los Angeles and Long Beach are actively engaging in efforts to expand the supply of child care providers, particularly by investing in small, minority- and women-owned businesses, and nonprofits in underserved communities. A unified regional effort, driven by a community-focused planning process with child care advocates, unions, policy experts and governmental partners, can bolster efforts to further expand child care access and create a sustainable ecosystem across the region.

Recommendation 3: Align demand and supply strategies across jurisdictions and projects to send clear market signals that women belong in the construction sector:

I. **Share Best Practices and Align Supportive Services for Recruitment and Retention Strategies:** A regional approach can create opportunities for agencies to share best practices and strategies for diversifying the workforce on projects. It also provides a platform for governments to better understand the systemic barriers women workers face across projects, such as child care, job site culture, and capacity building for workforce partners. Additionally, many agencies have established funding mechanisms to support workers in gaining career pathways, such as the High Road Workforce Grants and child care funding in the City of LA. Aligning investment strategies across the region for supportive services that impact retention rates for women will strengthen the efforts of workforce and union partners to recruit and train women in the construction sector**.**

II. **Align data collection and tracking compliance mechanisms for contractors:**

   a. Develop and implement data systems to track pre-apprentices and apprentices throughout their training, from entry to graduation, to help monitor their career progress towards journey-level status and identify areas for intervention. Data-driven strategies are essential for tracking measurable outcomes and ensuring effective workforce development across projects and jurisdictions. By collecting data on individual workers as they move from one project to another across various public agencies, Metro and its partners can better understand the challenges they face and develop targeted strategies to support their career pathways.

b. Establishing and regularly maintaining a countywide database of construction workers and work hours by public agency, year, trade, and gender by project and contractor. While some public agencies currently use workforce tracking tools, LCPtracker is the most common among LA County agencies, and a standardized database could enhance its clarity and transparency, allowing agencies to collaborate to evaluate contractor success across the region. This database can build upon the California Department of Industrial Relations Division of Apprenticeship Standards (DAS) database, by crafting a more precise regional picture for publicly funded projects that are utilizing supportive services and other mechanism to advance diversity on their projects.

III. **Adopt a regional approach to culture change on job sites:** Given the regional nature of the construction workforce, implementing standardized culture change policies and training across job sites can help shift the sector's overall culture. Public agencies can enforce these requirements through their procurement processes on construction projects. By collaborating regionally, agencies can jointly evaluate effective training programs and support partners in scaling up offerings. To ensure a unified approach with consistent language, Metro should convene a committee to assess training programs with proven success in the construction industry and recommend one for use across the LA region.

Appendix A: Definition of Key Terms

Apprentice – Apprentice workers that are registered and participating in Joint Labor/Management Apprenticeship Programs approved by the State of California, Department of Industrial Relations, Division of Apprenticeship Standards (DAS), or in the case of projects with federal funding, approved by the US Department of Labor (DOL) and California DAS.

Construction Workforce Availability - The supply of construction laborers, which is defined in either the total work hours or number of workers that are available to work on a construction project.

Construction Workforce Demand - The demand for construction laborers, which is defined in either the total work hours or number of workers needed to work on a construction project.

Executive Order (EO) 11246 - Executive Order (EO) 11246 requires all government contractors and subcontractors to take affirmative action to expand job opportunities for minorities. In 1978, the Carter Administration amended the EO to set a nationwide goal for hiring women on federally funded construction projects in excess of $10,000 in each trade. The current nationwide female participation goal is 6.9%.

Proposition 209 – A California ballot initiative, approved by voters in 1996, which prohibits any state, regional, or local public agency from considering "race, sex, color, ethnicity, or national origin" in any decisions involving public contracting, employment, or education.[254]

Female Participation - The percentage is calculated as the number of work hours performed by female workers out of the total work hours on a construction project. The female participation goal is defined as 6.9% of the total hours of training and employment performed by female construction workers as set forth by Executive Order 11246. The consultant team also uses the term Female Utilization to refer to Female Participation.

Greater Los Angeles (LA) Area - The study analyzes construction workforce availability in the entire region since it is common for construction workers to travel into Los Angeles for work. The consultant team define the region as the Greater Los Angeles (LA) Area, which encompasses the following five (5) counties of Southern California (Los Angeles, Orange, Riverside, San Bernardino, and Ventura).

[254] "Prohibition Against Discrimination or Preferential Treatment by State and Other Public Entities. Initiative Constitutional Amendment," California Secretary of State, 1996, https://web.archive.org/web/20060213080538/http://vote96.ss.ca.gov/Vote96/html/BP/209.htm.

Los Angeles/Orange Counties Building and Construction Trades Council (LA/OCBCTC) - The Council negotiates Project Labor Agreements (PLA) with developers and owners to bring collective bargaining to projects in the private and public sectors. The Council currently has PLAs with the Los Angeles Unified School District, Los Angeles World Airports, Port of Long Beach, Port of Los Angeles, Metro, NBCUniversal, Paramount Pictures, BNSF, Occidental Petroleum and many others. The Council consists of 48 local unions and district councils in 14 trades.

Journey Worker - A person who has completed an apprenticeship program and is considered an experienced worker, not a trainee. Journey workers are fully qualified and can perform a specific trade without supervision.

Project Labor Agreement (PLA) – This is an agreement to help facilitate careers in the construction industry and to promote employment opportunities during the construction of public Capital Improvement Projects. In 2012, Metro entered an agreement between the Los Angeles/Orange Counties Building and Construction Trades Council.

Trade - The analyses in this study are based on a compilation of data from various sources that classify construction trades differently (e.g., trade, craft, construction occupation, etc.). In this study, the consultant team refers to the “construction trades” based on a categorization crosswalk between the Metro crafts, the associated trades, and the Standard Occupational Classification (SOC) codes, as shown in **Table 2-1**. The crosswalk focuses on 15 major trades associated with Metro construction projects.

Union – Refers to Los Angeles/Orange Counties Building and Construction Trades Council affiliated with the Building & Construction Trades Department (AFL/CIO), Craft International Unions and any other labor organization signatory to Metro’s PLA.

Appendix B: Construction Workforce Hiring Requirements and Goals across LA County Agencies

Public Agency Labor Agreement Effective Dates	**Hiring Requirement***	**Definition**
LA County Metro Project Labor Agreement and Construction Careers Policy 2017 - 2027	***Metro: Non-Federally Funded (and FTA-funded, 2021-2025)***	
	40% Local Targeted	
	First Priority: Community Area Residents	Residence within an ED or EED area within a 5-mile radius of covered project.
	Second Priority: Local Residents from Extremely Economically Disadvantaged (EED) areas	Residence within an EED area in LA County. EED area is median annual household income less than $32,000 per year.
	Third Priority: Local Residents from Economically Disadvantaged (ED) areas	Residence within an ED area in LA County. ED area is median annual household income less than $40,000 per year.
	10% Disadvantaged	Residence within LA County, resides within EED or ED area, and meets at least two barriers: homeless, custodial single parent, receiving public assistance, lacking GED or high school diploma, criminal record or involvement with criminal justice system, suffering from chronic unemployment, emancipated from foster care system, veteran of Iraq/Afghanistan war, apprentice with less than 15% of required hours.
	20% Apprentices	
	50% of apprenticeship hours performed by Local Targeted Workers	Participant in California Division of Apprenticeship Standards approved program.
	6.9% Female Utilization Goal*	Exceed Federal Executive Order 11246 goal.
	Metro: Federally Funded	
	40% National Targeted	
	First Priority: National Extremely Economically Disadvantaged areas	Residence within an EED area in the US.
	Second Priority: National Targeted Worker	Residence within an EED or ED area in the US.
	10% Disadvantaged	Resides within EED or ED area, and meets at least two barriers: homeless, custodial single parent, receiving public assistance, lacking GED or high school diploma, criminal record or involvement with criminal justice system, suffering from chronic unemployment, emancipated from foster care system, veteran of Iraq/Afghanistan war, apprentice with less than 15% of required hours.
	20% Apprentices	
	50% of apprenticeship hours performed by National Targeted Workers	Participant in US Department of Labor or California Division of Apprenticeship Standards approved program.
	6.9% Female Utilization Goal*	Exceed Federal Executive Order 11246 goal.
City of LA Dept. of Public Works Project Labor Agreement 2021 - 2031	**30% Local Resident**	
	First Priority: Tier 1 zip codes	Zip codes specified in PLA where median household income is less than 50% LA County, or where unemployment rate exceeds 200% of LA County.
	Second Priority: Tier 2 zip codes	Zip codes specified in PLA where median household income is less than that of LA County, or where unemployment rate exceeds that of LA County.
	10% Transitional	
	First Priority: Group 1	(1) Tier 1 or 2 zip codes or anywhere in City of Los Angeles and (2) a veteran, involvement with justice system, or homeless.
	Second Priority: Group 2	(1) Tier 1 or 2 zip codes or anywhere in City of Los Angeles, and (2) MC3 graduate or two of the following: household income less than 50% county median income, emancipated from foster care system, receiving public assistance, lacking GED or high school diploma, apprentice with less than 15% of required hours, custodial single parent, suffering long-term unemployment.
	50% of apprenticeship hours performed by Local Residents or Transitional Workers	

City of Long Beach Project Labor Agreement 2021-2031	**40% Local Resident**	
	First Priority: Tier 1	City of Long Beach residents.
	Second Priority: Tier 2	Gateway Cities residents.
	Third Priority: Tier 3 areas	Los Angeles and Orange County residents.
	10% Transitional or Veteran	Veteran or one of the following: homeless, custodial single parent, receiving public assistance, lacking GED or high school diploma, involvement with criminal justice system, suffering from chronic unemployment, emancipated from foster care system, veteran of Iraq/Afghanistan war.
LA Community College District Project Labor Agreement 2020-2030	**35% Local Resident**	
	First Priority: Campus Community Zip Codes	Resides in each campus's specified zip codes.
	Second priority: Other zip codes	Resides within designated zip codes.
	Third priority: Los Angeles or Orange County	Resides within Los Angeles or Orange County.
	10% Disadvantaged or Veteran	Veteran or resides in a District-wide zip code and one of the following: no GED or high school diploma, criminal justice record, 90 days or more unemployed, recipient of public benefits, custodial single parent, homeless, household income in poverty guideline or less than 50% of AMI.
	50% of apprentice workforce are first year apprentices	
LA County Dept. of Public Works Countywide Community Workforce Agreement 2023 - 2028	**30% Local Resident**	
	First Priority: Tier 1 Qualified Local Resident	Residency in LA County within 5 miles of project site in zip code where percentage of households below 200% federal poverty level is greater than county average.
	Second Priority: Tier 2 Qualified Local Resident	Residency in LA County within 5 miles of project site in zip code where at least 30% of population is living in poverty and unemployment rate is at least 150% of national average.
	10% Targeted	Resident of LA County and one of the following: income at or below poverty level, no GED or high school diploma, at least 6 months unemployed, recipient of public benefits, homeless or recently homeless, custodial single parent, former foster youth, veteran or eligible spouse, migrant and seasonal farmworker, English language learner, 55+ in age, disabled, or low level of literacy.
Los Angeles World Airports Project Labor Agreement 2021 - 2030	**30% Impact Area or Local Resident**	Impact Area is designated zip codes near Los Angeles International Airport. Local Resident is remaining zip codes in Culver City, Hawthorne, and City of Los Angeles.
LA Unified School District Project Stabilization Agreement 2024 - 2033	**50% Local Resident**	(1) Resident of zip codes overlapping LAUSD or (2) graduate of LAUSD, veteran, or MC3 graduate.
Port of Long Beach Project Labor Agreement 2023 - 2033	**40% Local Resident**	Resident of LA or Orange County.
	10% Transitional or Veteran	One of the following: homeless, custodial single parent, receiving public benefits, no GED or high school diploma, unemployed, former foster care, income is below 70% of Lower Living Standard Income Level for living area, less than 15% apprentice hours, MC3 graduate.
	25% of apprentice workforce are first year apprentices	

Port of Los Angeles Project Labor Agreement 2017 - 2027	**30% Local Resident**		
		First Priority: Tier 1 Zip Codes	Zip codes in the Port's impact zone.
		Second Priority: Tier 2 Zip Codes	Additional zip codes in the Port's impact zone.
		Third Priority: Remaining zip codes in City of LA	
	10% Transitional		
		First Priority: Tier 1 Zip Codes	Reside in zip codes, and one of the following (veteran, involvement with justice system, homeless) or two of the following (household income below 50% LA County median annual household income, former foster care, receiving public benefits, no GED or high school diploma, apprentice with less than 15% hours, custodial single parent, long-term unemployed).
		Second Priority: Tier 2 Zip Codes	
		Third Priority: Remaining zip codes in City of LA	
	20% Apprentices		
		50% of apprentice hours Local Resident	
Burbank Airport Project Labor Agreement 2016 - 2026	**30% Area Resident or Veteran**		
		First Priority: Tier 1 Area Resident	Veteran or resident of Burbank, Glendale, and Pasadena.
		Second Priority: Tier 2 Area Resident	Resident of zip codes in City of Los Angeles in vicinity of Airport.

Key:
Geographic
Categorical
Apprentice
Female Utilization

*Metro's 6.9% female utilization target is a goal, not an explicit requirement

APPENDIX C

PROMISING PRACTICES FOR PREVENTING HARASSMENT IN THE CONSTRUCTION INDUSTRY

U.S. Equal Employment Opportunity Commission

www.EEOC.gov

PROMISING PRACTICES FOR PREVENTING HARASSMENT IN THE CONSTRUCTION INDUSTRY

The U.S. Equal Employment Opportunity Commission (EEOC) is the primary federal agency charged by Congress with enforcing the nation's workplace civil rights laws. The EEOC is responsible for enforcing federal laws that make it illegal to discriminate against a job applicant or an employee because of race, color, religion, sex (including gender identity, sexual orientation, and pregnancy, childbirth, or related medical conditions), national origin, age (40 or older), disability or genetic information. The EEOC's mission is to prevent and remedy unlawful employment discrimination—including harassment and retaliation—and advance equal employment opportunity for all through education and outreach, technical assistance, and enforcement.

Harassment remains a serious problem in our nation's workplaces. Over a third of the charges the EEOC received between fiscal year (FY) 2019 and FY 2023 included an allegation of harassment based on one or more of the characteristics protected under federal employment law.[1] While workplace harassment is an issue in all sectors and industries, it is prevalent on many construction jobsites,[2] and some of the most egregious incidents of harassment investigated by the EEOC have arisen in the construction industry.[3] The nature of the construction industry includes a number of risk factors that may increase the likelihood of harassment, including workforces that are primarily male, workplaces where there is pressure to conform to traditional stereotypes, and decentralized workplaces.[4] These factors may be exacerbated by the presence of multiple employers on a worksite,[5] and the cyclical, project-based nature of construction.

Harassment imposes immediate costs on those who are subject to it, and harassment based on race, sex, and national origin is also a significant barrier to recruiting and retaining women and people of color in construction.[6] It is also a workplace safety issue. Because construction work is

---

[1] *Enforcement and Litigation Statistics*, U.S. Equal Employment Opportunity Commission.

[2] *See* Ariane Hegewisch and Eve Mefferd, *A Future Worth Building: What Tradeswomen Say about the Change They Need in the Construction Industry*, Institute for Women's Policy Research, (November 2021) (in a 2021 survey of over 2,600 tradeswomen, nearly 1 in 4 women reported experiencing near constant sexual harassment, and 1 in 5 women of color reported "always" or "frequently" experiencing racial harassment on the job); *see generally Building for the Future: Advancing Equal Employment Opportunity in the Construction Industry*, Report of Chair Charlotte A. Burrows, U.S. Equal Employment Opportunity Commission (May 2023).

[3] *See id.*

[4] *See* EEOC Select Task Force on the Study of Harassment in the Workplace, *Report of Co-Chairs Chai R. Feldblum and Victoria A. Lipnic* (June 2016); *see infra*, Appendix A for further discussion of risk factors.

[5] The presence of multiple employers on the worksite also impacts which entities may be considered the employer of any particular worker for purposes of establishing legal liability. This document's reference to a worker's "employer" typically refers to their employer of record and should not be considered instructive on questions of whether an additional employer may also have liability.

[6] *Knocking Down Walls: Discrimination and Harassment in Construction*, U.S. Equal Employment Opportunity Commission Hearing (May 17, 2022), Written Testimony of Ariane Hegewisch, Senior Research Fellow, Institute for Women's Policy Research (IWPR) ("Not surprisingly, almost one in two tradeswomen respondents to the 2021 IWPR Tradeswomen Survey (47.7 percent) have seriously considered leaving their careers altogether.").

potentially hazardous and often performed in teams, harassment on construction sites can endanger workers' physical safety and increase the chance of injury.[7]

The EEOC's Strategic Enforcement Plan (SEP) for Fiscal Years 2024-2028 prioritizes combatting systemic harassment in all forms and on all prohibited bases. The SEP also includes a focus on industries where women and workers of color are underrepresented, especially industries that benefit from substantial federal investment, like construction. The EEOC intends to address systemic harassment in construction using a variety of tools, such as encouraging commitment and coordination from every entity with a presence on a construction worksite, including all employers (contractors and subcontractors), unions, apprenticeship programs, and staffing agencies.

This document identifies promising practices for industry leaders to help prevent and address harassment in the construction industry. It recommends that general contractors take on a coordination and leadership role on the construction worksite. This document draws from and builds upon the EEOC's existing resources on workplace harassment, including the 2024 Enforcement Guidance on Harassment in the Workplace, the 2016 Report of the Co-Chairs of the Select Task Force on the Study of Harassment in the Workplace ("the Co-Chair Task Force Report"), and subsequent companion documents on promising practices.[8] The practices discussed in this document may assist covered entities in meeting their legal obligations to maintain harassment-free workplaces and remedy harassment if it arises, which will in turn promote safety on the job.[9]

The contents of this document do not have the force and effect of law, do not create any new obligations or duties under federal law, and are not meant to bind the public in any way. This document is intended only to provide promising practices that employers may wish to consider in working to prevent and address harassment in the construction industry.

Core Principles and Promising Practices for Combatting Harassment

The Co-Chair Task Force Report identified five core principles that have generally proven effective in preventing and addressing harassment:

- Committed and engaged leadership;
- Consistent and demonstrated accountability;
- Strong and comprehensive harassment policies;

---

[7] *See* Hannah M Curtis et al., "Gendered Safety and Health Risks in the Construction Trades," *Annals of Work Exposures and Health*, Volume 62, Issue 4, 405-06, 410 (May 2018); *see also Knocking Down Walls: Discrimination and Harassment in Construction*, U.S. Equal Employment Opportunity Commission Hearing (May 17, 2022); Written Testimony of Kenneth D. Simonson, Chief Economist, Associated General Contractors of America ("[S]uccess in construction requires constant teamwork that is impossible without mutual respect and support.").

[8] *See, e.g., Promising Practices for Preventing Harassment in the Federal Sector,* U.S. Equal Employment Opportunity Commission (April 2023).

[9] Some entities may have additional legal obligations arising under laws or regulations enforced by the U.S. Department of Labor's Office of Federal Contract Compliance Programs, Occupational Safety and Health Administration, the Office of Apprenticeship, or other local, state, or federal agencies.

- Trusted and accessible complaint procedures; and
- Regular, interactive training tailored to the audience and the organization.

This document applies these core principles to the specific challenges and opportunities in the construction industry. Although this document focuses on construction, many of the promising practices identified may also be helpful in other industries and workplaces.

A. Leadership and Accountability

The cornerstone of a successful harassment prevention strategy is leadership's consistent and demonstrated commitment to create and maintain a culture in which harassment is not acceptable. Worksite leaders—from the project owner to crew leads to union stewards—should clearly, frequently, and unequivocally message and demonstrate that harassment is prohibited. Approaches include:

Treating Harassment Prevention Holistically

Project owners and general contractors should consider prioritizing and emphasizing worksite-wide collaboration to prevent and correct harassment. While every onsite entity has its own legal obligations and potential liabilities, the project owners and general contractor can play an important oversight and coordination function by maintaining an overarching focus on the shared responsibility of fostering a harassment-free workplace. The EEOC recommends that:

- Project leaders strive to prevent and address harassment against ALL workers on a site, whether or not those workers are covered by anti-discrimination laws.
- General contractors refer smaller subcontractors or staffing agencies[10] that may need assistance with their legal responsibilities under federal anti-discrimination laws to the EEOC's resources for employers and small businesses, including employer checklists, harassment risk factors and responsive strategies, harassment policy tips, and contact information for the EEOC's small business liaisons.

[10] *Enforcement Guidance: Application of EEO Laws to Contingent Workers Placed by Temporary Employment Agencies and Other Staffing Firms*, U.S. Equal Employment Opportunity Commission (1997).

Unions can help prevent and address harassment in construction workplaces by:

- Including and consistently abiding by a commitment to preventing and remedying harassment in their governing documents and in negotiated workplace agreements.
- Serving as a critical resource for members who may need assistance in identifying the appropriate reporting channels to utilize, such as in situations when it is unclear which entities are responsible for remedying harassment.
- Continuing to support and promote efforts to help ensure apprenticeship and pre-apprenticeship programs are fully inclusive and do not have unnecessary barriers to entry for workers from underrepresented groups.
- Supporting efforts to help ensure that apprenticeship and pre-apprenticeship programs are fostering and maintaining harassment-free worksite training environments.[11]
- Developing guidance and promising practices for representing members subject to harassment, including offering advice for addressing allegations of harassment against a fellow union member.[12]

Including Anti-Harassment Measures in Contract Bids

Any project owner or sponsor—including a state or local government—should consider requiring that contract bids include a plan to prevent and address workplace harassment. Similarly, general contractors can include corresponding provisions in any agreements with subcontractors and staffing agencies to ensure ongoing compliance. These bid requirements (verified at the time of award) and corresponding contract provisions could include that the bidder maintain:

- An effective and comprehensive harassment policy that accounts for anticipated potential accessibility barriers, such as limited literacy skills or language access needs;
- An accessible complaint system with multiple reporting channels that are clearly identified and provide contact information;
- Regular and effective training for all workers about the harassment policy and complaint system, including training that retaliation for reporting or reasonably opposing harassment is against the law, as well as training for designated individuals about how to prevent, recognize, and respond to objectionable conduct without retaliation; and/or
- A discipline policy that is prompt, consistent, and proportionate to the severity of the harassment or related misconduct, such as retaliation.

[11] Registered apprenticeships are governed by the U.S. Department of Labor's Equal Employment Opportunity (EEO) regulation for Registered Apprenticeship Programs. *See* U.S Department of Labor, Office of Apprenticeship, Prevent Harassment | Apprenticeship.gov.

[12] *See* AFL-CIO, *Addressing Sexual Harassment in the Workplace: There Is Power in my Union* (Feb. 2019).

General Contractors Serving in a Coordinating Role

In addition to ensuring compliance with its own internal policies, the general contractor is typically well positioned to coordinate harassment prevention across a worksite and serve as a backstop for resolving difficult issues. For example, the EEOC recommends that general contractors:

- Consider providing or coordinating sitewide preventive measures, such as training.
    - General contractors may be well positioned to determine the scope and substance of training, including whether bystander training[13] may be appropriate.
- Consider monitoring the actions of subcontractors and staffing agencies to ensure adherence to such measures and providing supportive resources as needed.
- Convene, in coordination with a union if applicable, a sitewide leadership committee that meets regularly to coordinate on preventing discrimination and harassment and to identify emerging issues and collaborate to develop solutions. Such a committee could seek to include input from civic groups that are representative of the broader community, such as tradeswomen organizations and pre-apprenticeship and apprenticeship programs, to benefit from their expertise. The committee should be led by an individual with knowledge of EEO policies and authority to implement change.
    - If a workplace safety committee already exists, consider whether it is appropriate to expand its scope to issues that may give rise to safety incidents such as workplace harassment, mental health, and substance use disorders.
- Periodically verify that their subcontractors are following through with their harassment-prevention commitments by:
    - Ensuring that subcontractors are complying with obligations set out in their contracts;
    - Monitoring the effectiveness of subcontractors' efforts to prevent and correct harassment, which could include conducting tests or spot checks of their harassment complaint procedures;
    - Reviewing training materials to determine whether they include accurate and sufficient information about harassment policies, complaint procedures, and related topics, such as retaliation; and
    - Ensuring that concerns or complaints regarding harassment policies, complaint systems, or trainings are addressed appropriately and that any necessary changes are implemented and communicated to workers.
- When subcontractors lack the experience or resources to resolve an issue, take inadequate steps to address or prevent harassment, or fail to take reasonable corrective action in response to harassment, consider facilitating and assisting subcontractors in finding

[13] Bystander intervention training typically enables bystanders to recognize problematic behaviors, motivates them to step in, conducts skills-building exercises to provide bystanders with the tools and confidence to intervene, and provides bystanders with resources they can call upon and support their intervention. Training could include interventions such as rallying others, including those in positions of authority, to intervene and checking in with the person being harassed.

solutions, especially when harassment is occurring between workers from different employers.
- When circumstances warrant, work with the subcontractor's management team to remove or bar harassers from the worksite.
- As appropriate, acknowledge and thank individuals on the worksite who take action to prevent or address workplace harassment.

Evaluating Policies and Seeking Feedback

When building in workforce accountability, general contractors are encouraged to seek feedback from workers about the worksite's collective anti-harassment efforts. For example, the general contractor or relevant committee should consider:

- Conducting anonymous worker surveys on a regular basis to assess whether harassment may be occurring. Worksite leaders may wish to explore ways to seek quick, simple feedback, including through mobile phones, to serve as an early indicator of any emerging concerns, rather than relying on lengthy surveys designed to be taken on a computer. This provides an opportunity to intervene and correct any problems at an early stage. Repeating the survey regularly could get the views of new workers at later stages of the project and evaluate progress.
- Partnering with researchers to evaluate the worksite's harassment prevention strategies.

B. Comprehensive and Clear Harassment Policies

A comprehensive, clear policy against harassment sets forth the behaviors that are unacceptable in the workplace, the procedures workers are encouraged to follow when reporting harassment, and the steps that the employer will follow when responding to complaints or reports of harassment. The policies should be developed with input from supervisors and managers who have a role in implementing them. Employers should solicit input of workers to ensure the policies are understandable to individuals at all levels, positions, and locations. Policies should be communicated regularly in an accessible format to all workers on a worksite, including employees, independent contractors, and workers placed by a staffing agency. When communicating these policies, employers should take into account the language access needs of workers, including those with limited literacy skills or limited proficiency in English, or workers with a disability. The policies should be communicated whenever workers cycle onto a project—distributing or posting the policy once at the outset of a project is likely insufficient to inform workers who join the project after it begins. In some cases, a general contractor may wish to make available its own policies or suggested model policies for subcontractors to adopt.

The EEOC recommends including the following elements in a comprehensive anti-harassment policy:

- **A clear description of who is covered by the policy**, such that people covered by the policy can understand that it prohibits certain conduct by and toward coworkers, apprentices, applicants, independent contractors, temporary workers, worksite inspectors, onsite vendors, or any other people likely to be on the worksite.

- **A clear description of prohibited conduct, with examples tailored to the work environment,** such as taunting tradeswomen when they are performing a difficult or dangerous task or vandalizing the toolboxes or personal protective equipment of Black workers. Certain conduct may be more likely to constitute unlawful harassment when it occurs in high-risk environments like construction.
- **An unequivocal statement that harassment is prohibited**. Anti-harassment policies do not have to be limited to characteristics explicitly covered by law, and employers should consider extending their policies to cover additional factors that may make a worker more vulnerable to harassment in a construction environment (e.g., apprenticeship status, undocumented status).
- **A description of complaint and reporting processes** and where to find more information about them.
- **A statement that workers are encouraged to report harassment, bullying, or other inappropriate conduct** even if they are not sure if the conduct violates the policy. Early notification enables the employer to promptly address problematic conduct before it may result in a legal violation, and limits potential harm to workers.
- **A commitment that the employer will provide a prompt, impartial, and thorough investigation**, and that the employer will keep the identity of individuals who report harassment, alleged targets, witnesses, and alleged harassers confidential to the extent possible and permitted by law, to allow the employer to conduct an effective investigation.
- **A statement that workers are encouraged to respond** to questions or to otherwise participate in investigations regarding alleged harassment.
- **An assurance that the employer will take immediate, reasonable, and proportionate corrective action** if it determines that harassment has occurred. The policy should outline the range of possible consequences for engaging in prohibited conduct and not rely on the term "zero-tolerance," which may have the unintended consequence of deterring reporting.[14]
- **An unequivocal statement that retaliation is prohibited**, and that individuals who report harassing conduct, participate in investigations, or take any other actions protected under federal employment discrimination laws will not be penalized or retaliated against for doing so.
    - In construction, such retaliation may include blackballing, transferring to a different worksite, or cutting hours worked of the target of harassment (and/or anyone who supported the target and their allegations). Retaliatory transfers and hours reductions may significantly impact workers' ability to build long-term trusted relationships with coworkers and impair career advancement.
    - For example, one way to identify and address possible retaliation would be for any entity with access to hours worked information to cross-reference retaliation complaints and hours worked and scrutinize any correlation.

[14] *See* EEOC Select Task Force on the Study of Harassment in the Workplace*, Report of Co-Chairs Chai R. Feldblum and Victoria A. Lipnic* (June 2016) for a description of "Zero Tolerance Policies."

The EEOC recommends that employers ensure that anti-harassment policies are accessible to all workers in the following ways:

- **Written and communicated in a clear, easy to understand style and format in all languages commonly used by workers at the site**. Because of the decentralized nature of many construction worksites, consider creative ways to make policies readily available on an ongoing basis, including through a company app, messaging app, or web portal that workers can access on their mobile phones.
- **Posted in consistent and easy-to-find places** like the location of the morning meeting, or near restrooms, breakrooms, or timeclocks. A general contractor could consider:
    - Posting its own anti-harassment policy;
    - Providing a space for other relevant entities (such as subcontractors and staffing agencies) to post their anti-harassment policies;
    - Making the anti-harassment policy continuously available on the employer's website and/or digital platforms used by applicants and employees;
    - Notifying all workers that they should have received an anti-harassment policy at the time of hire, and describing where such policies are located;
    - Offering to help workers locate any policy upon request; and
    - Identifying individuals who can answer questions about harassment policies and complaint procedures.
- **Kept up to date.** Ensure that the latest version of each entity's policy is reviewed regularly, updated as needed, and posted and distributed to all workers.

If multiple entities on site have their own policies, it may be advantageous for all policies to be reviewed for consistency by a single designated person (or relevant committee) at the worksite. Absent a workplace committee, the general contractor may be well positioned to review each policy for content and overall alignment and share feedback with the subcontractor, staffing agency, or other entity that created the policy.

C. Effective and Accessible Harassment Complaint System

In the construction context, the complexity of the multiple employer/entity environment introduces challenges to traditional reporting structures, but also presents opportunities to turn multiple channels into a "no wrong door" environment.[15] While each onsite employer should have its own complaint system, the general contractor may also wish to coordinate supplemental channels that are available to workers regardless of their employer of record. Additionally, registered apprentices should be able to report harassment to their program sponsor.

An effective harassment complaint system welcomes questions, concerns, and complaints; encourages employees to report potentially problematic conduct early; treats alleged targets of harassment, complainants, witnesses, alleged harassers, and others with respect; operates

[15] Specifically, a worksite may choose to have a policy requiring that any entity that receives a complaint about a worker for which they are not the employer of record endeavor to properly re-route the complaint appropriately.

promptly, thoroughly, and impartially; and imposes appropriate consequences for harassment or related misconduct, such as retaliation.

The EEOC recommends that a harassment complaint system:

- **Be fully resourced and accessible in languages commonly used by workers**, enabling the employer to respond promptly, thoroughly, and effectively to complaints.
- **Include multiple ways to complain, both formally and informally**. Reporting channels should be clearly identified, and the policy should include contact information for those who can receive complaints. Workers may be reluctant to file a formal complaint reporting harassment. While a formal complaint leading to an investigation may often be the best route, there may be circumstances in which a target of harassment primarily wants the harassment to stop and prefers an alternative option.
    - In addition to existing legal posting requirements, a strong harassment policy educates workers on available avenues to contact local, state, and federal enforcement agencies to learn more about their rights or to file a complaint.
- **Have more than one channel.** Providing multiple channels for workers to complain about harassment helps to ensure that a complainant who is harassed by their immediate supervisor can lodge a complaint with a different employer representative, which reduces the risk of retaliation.
- **Describe the information the entity may request** from complainants, including: the identity of the alleged harasser(s), alleged target(s), and any witnesses; the date(s) of the alleged harassment; the location(s) of the alleged harassment; and a description of the alleged harassment.
    - Given the multiple employer/entity nature of many construction worksites, a complainant may not be able to provide all requested information, such as the identity or employer of an alleged harasser. In those cases, the EEOC recommends that employers encourage complainants to provide as much information as possible, while also assuring them that the employer(s) responding to the complaint will assist the complainant with identifying an alleged harasser, if in question, and their employer, to the extent feasible.
- **Include processes to determine whether alleged targets of harassment, individuals who report harassment, witnesses, or other relevant individuals are subjected to retaliation, and impose sanctions on those responsible**.
    - The cyclical, project-based nature of construction may facilitate or mask retaliation. The EEOC recommends that a complaint system actively account for those risks, such as monitoring whether any site transfers involve individuals participating in a harassment investigation, and whether the individual consents to the transfer.
- **Ensure that the individuals who are responsible for receiving complaints are well-trained** and are granted the requisite authority to meaningfully investigate complaints.
- **Clarify that once a complaint is made and an investigation underway, relevant supervisors should remain vigilant** and use the tools at their disposal to mitigate ongoing harassment and retaliation in a way that doesn't penalize the person who filed a

complaint. A complaint filing should not suggest to supervisors that they take no action of any kind.

- **Upon completing its investigation, the employer should inform the complainant and alleged harasser of its determination** and any corrective action that it will be taking, subject to applicable privacy laws.

The general contractor can play an oversight and coordinating role with regard to complaint systems across a worksite by:

- Seeking to ensure that all workers have multiple reporting channels to complain.
    - For example, confirming that every subcontractor has implemented a complaint channel, and then also providing an anonymous hotline for all workers.
- Considering use of shared, site-wide alternate complaint channels such as an ombudsperson or a hotline that accepts anonymous complaints.
- Training all workers on existing complaint channels, such as through an apprentice's registered program.
- Requiring each onsite employer to notify the general contractor of complaints it receives so that the general contractor can ensure that complaints are resolved promptly and effectively, without retaliation. The general contractor may also wish to periodically review complaints holistically and take action to address any patterns.
- Requiring each onsite employer to notify the general contractor of any complaint it may receive about the conduct of any worker, even if that worker is employed by a different entity. This enables the general contractor to facilitate re-routing the complaint to the most appropriate employer. It also provides visibility so that the general contractor can look out for and prevent any cross-entity retaliation.
- Periodically testing the complaint systems in place throughout the worksite to ensure they are working as intended and identifying and addressing any breakdowns. For example, an HR representative could call the hotline and ensure that the required next steps are followed.

D. Effective Harassment Training

Regular, interactive, and comprehensive training of all workers on a construction site can help ensure that the workforce understands applicable rules, policies, procedures, and expectations, as well as the consequences of misconduct. As with all aspects of harassment prevention, the training should be provided in a clear, easy to understand style in all languages commonly used by onsite workers.

Harassment Trainings may be most effective when they are:

- Tailored to the workforce and work environment.
- Developed and presented with input from worksite leaders and a cross-section of workers, including those in different trades, positions, and at different seniority levels. This will help ensure that the content, format, and delivery is inclusive, effectively tailored, and better received by the audience.

- Championed by senior leaders, including project owners/sponsors, general contractor leadership, crew leads/forepersons, and union representatives.
- Repeated and reinforced regularly, and, if appropriate, presented in brief segments, such as at the worksite morning meeting or through a toolbox talk. Such training can be repeated throughout a project's lifecycle to reach workers newly arrived onsite.
- Interactive. In most situations, live, interactive trainings are recommended. Given the dynamic nature of construction workforces, providing training through an interactive module accessible via mobile phone, or watching a series of shorter video clips and having a follow-up guided discussion about the clips, may be more feasible than live trainers.
    - Workers should be provided adequate time during the workday to complete training, whether online or in-person, including any follow up discussions or supplemental training.
- Structured to facilitate open communication. This may be best accomplished by holding separate sessions for supervisors/managers and non-supervisory employees to better tailor the sessions to their responsibilities and to encourage more frank conversations.
- Provided to workers, temps, apprentices, and supervisors (this applies regardless of whether they are employees or independent contractors or other types of workers), at all levels, supported by union representatives, and reinforced by apprenticeship programs, which should have their own policies and procedures.
- Routinely evaluated by participants and revised as necessary.
- Multifaceted to include expectations of civil and respectful treatment of others in the workplace. Such training should be structured so as not to discourage workers from reporting or opposing harassing conduct or otherwise interfering with their statutory rights.

The EEOC recommends comprehensive harassment trainings that include:

- Descriptions of prohibited harassment, including offensive or unsafe conduct that may constitute harassment in the particular context of construction.
- Descriptions and tailored examples of conduct that could constitute retaliation, along with an explanation of the types of activities that are protected from retaliation under federal employment discrimination laws.
- Information about what workers should do if they experience, observe, or become aware of conduct that they believe may be prohibited, and encouraging people to report it.
- A clear, simple, and specific explanation of the complaint process and all available complaint options, what happens after a complaint is made (typically investigation), and previewing that the range of disciplinary consequences will be proportionate to the conduct.
- Opportunities to ask questions about the training, harassment policy, complaint system, and related rules and expectations.

Additionally, worksites may benefit from training on how colleagues or others may choose to intervene when they witness harassment (bystander training) or are asked for help.

Additional training may be necessary for those with legal responsibilities.

Worksite leaders are encouraged to identify those with managerial or supervisory responsibility for preventing, stopping, and correcting harassment and ensure they have specific training on these legal obligations. Senior worksite leaders may also find it helpful to include additional employees who exercise authority, such as team leaders, or members of any committees focused on worker well-being.

Anti-harassment training for workers with managerial or supervisory responsibility or other worksite leadership roles might include, for example:

- Information about how to prevent, identify, stop, report, and correct harassment, such as:
    - Identification of potential risk factors for harassment and specific actions that may minimize or eliminate the risk of harassment;
    - Easy to understand, realistic methods for addressing harassment that they observe, that is reported to them, or that they otherwise learn of;
    - Clear instructions about their obligation to report harassment observed or reported to appropriate personnel; and
    - Explanations of confidentiality associated with harassment complaints.
- An unequivocal statement that retaliation is prohibited, a description and examples of conduct that could constitute retaliation and an explanation of the types of activities that are protected from retaliation under federal employment discrimination laws, such as:
    - Complaining or expressing an intent to complain about harassing conduct;
    - Resisting sexual advances or intervening to protect others from such conduct; and
    - Participating in an investigation about harassing conduct or other alleged discrimination.
- Explanations of the consequences (for example, discipline) of failing to fulfill their responsibilities related to harassment, retaliation, and other prohibited conduct.

APPENDIX A:
Construction Industry Risk Factors for Harassment

The Co-Chair Task Force Report identified a number of "risk factors" in a workplace that increase the risk of harassment.[16] The existence of one or more risk factors in a workplace does not necessarily mean that harassment will occur but may indicate an environment in which harassment may be more likely to arise. As such, it is particularly important for employers to remain vigilant and to take steps proactively to prevent harassment in industries where risk factors are present. Of the twelve risk factors identified in the Co-Chair Task Force Report, several are particularly applicable in the construction industry:

1. **A homogenous workforce.** The risk of harassment may increase where there is a lack of diversity in the workplace. Women and certain people of color are historically and currently underrepresented in the construction industry, especially in the higher-paid, higher-skilled trades. Women make up just 11% of all workers in the construction industry—a figure that includes office and clerical positions—and only about 4% of workers in the trades, even though they make up 47% of the labor force.[17] Black workers were nearly 13% of the U.S. labor force in 2023 but less than 7% of the construction workforce.[18] Asian workers also make up a very small percentage of the construction workforce (1.7%) compared to their share of the overall labor force (6.9%).[19] In addition, Black and Hispanic or Latino workers and women are disproportionately concentrated in lower-paying construction jobs.[20]
2. **Workplaces where there is pressure to conform to traditional stereotypes.** Harassment may be more likely to occur where a subset of workers do not conform to stereotypes. Such workers might include, for example, a woman who challenges gender norms by presenting as "tough enough" to do a job in a traditionally male-dominated environment like construction.
3. **Decentralized workplaces.** Decentralized workplaces—those enterprises where corporate offices are far removed physically and/or organizationally from front-line

---

[16] EEOC Select Task Force on the Study of Harassment in the Workplace, Report of Co-Chairs Chai R. Feldblum and Victoria A. Lipnic (June 2016).

[17] *See* Household Data Annual Averages, Table 18, Employed persons by detailed industry, sex, race, and Hispanic or Latino ethnicity, 2022, *Labor Force Statistics from the Current Population Survey*, Bureau of Labor Statistics (last modified Jan. 26, 2024); Ariane Hegewisch and Eve Mefferd, A Future Worth Building: What Tradeswomen Say about the Change They Need in the Construction Industry, Institute for Women's Policy Research (November 2021). *See also Building an Equitable Construction Workforce: Understanding and Increasing the Proportion of Women and People of Color in Construction*, Insight Policy Research (March 2024).

[18] *See* Household Data Annual Averages, Table 18, Employed persons by detailed industry, sex, race, and Hispanic or Latino ethnicity, 2022, *Labor Force Statistics from the Current Population Survey*, Bureau of Labor Statistics (last modified Jan. 26, 2024).

[19] *See* Household Data Annual Averages, Table 18, Employed persons by detailed industry, sex, race, and Hispanic or Latino ethnicity, 2022, *Labor Force Statistics from the Current Population Survey*, Bureau of Labor Statistics (last modified Jan. 26, 2024); Household Data Annual Averages, Table 11, Employed persons by detailed occupation, sex, race, and Hispanic or Latino ethnicity, *Labor Force Statistics from the Current Population Survey,* Bureau of Labor Statistics (last modified Jan. 26, 2024).

[20] Household Data Annual Averages, Table 11, Employed persons by detailed occupation, sex, race, and Hispanic or Latino ethnicity, *Labor Force Statistics from the Current Population Survey*, Bureau of Labor Statistics (last modified Jan. 26, 2024). *See* Construction and Extraction Occupations, *Occupational Outlook Handbook*, Bureau of Labor Statistics (last modified Sept. 8, 2022).

employees or first-line supervisors—may foster a climate in which harassment may go unchecked. For workers on construction sites, being unable to "go down the hall" to HR or lacking the ability to seek out a more senior person besides a direct supervisor, may make seeking advice or reporting harassment more challenging. The lack of proximity to a central headquarters may also embolden potential harassers, who feel less direct accountability.

There are two additional features of construction worksites that can exacerbate the risk factors discussed above:

4. **Worksites with Multiple Employers Present.** Typical workers on a construction worksite might be employed by the project owner (the entity initiating the project and hiring the general contractor), a general contractor, or various subcontractors, or could be a self-employed specialist or a temporary worker through a staffing agency. Though technically employed by different entities, these workers may work alongside each other on a daily basis. This structure also introduces the additional challenge of a dynamic workforce in which project supervisors and coworkers may shift throughout a project's duration. It also introduces additional complexity in identifying retaliation, since a complaining worker may experience retaliation from their own employer and potentially other employers. It differs dramatically from many U.S. workplaces, in which a single employer is responsible for, and oversees compliance with, nondiscrimination requirements.
5. **Cyclical, project-based work.** Work in the construction industry can be highly cyclical with seasonal downturns and variable demand, and only a small fraction of workers are employed as permanent core staff for one company. Most construction workers move from contract to contract and from jobsite to jobsite and are laid off after a project ends. The temporary nature of the work may make construction employees particularly vulnerable to retaliation, due to fears about the impact to livelihood that can result if a worker is blacklisted in the industry following a complaint of discrimination. The transitory nature of construction work may also present challenges when seeking culture change because worksite leaders may need to set expectations and implement new reporting processes at every new project. Finally, underrepresented workers may be discouraged from reporting harassment due to the cyclical nature of the work —after finding it necessary to "prove themselves" to coworkers and earn their trust and escape harassing treatment, the project ends, and the process starts all over again.

APPENDIX B
Additional Resources

EEOC Resources

Enforcement Guidance on Harassment in the Workplace, U.S. Equal Employment Opportunity Commission (April 2024).

Building for the Future: Advancing Equal Employment Opportunity In the Construction Industry, Report of Chair Charlotte A. Burrows, U.S. Equal Employment Opportunity Commission (May 2023).

Promising Practices for Preventing Harassment in the Federal Sector, U.S. Equal Employment Opportunity Commission (April 2023).

Promising Practices for Preventing Harassment, U.S. Equal Employment Opportunity Commission (November 2017).

Enforcement Guidance on Retaliation and Related Issues, U.S. Equal Employment Opportunity Commission (August 2016).

EEOC Select Task Force on the Study of Harassment in the Workplace, *Report of Co-Chairs Chai R. Feldblum and Victoria A. Lipnic*, U.S. Equal Employment Opportunity Commission (June 2016).

Other Resources

Best Practices to Expand Access to Jobs and Economic Opportunity Through Transportation Infrastructure Investments, U.S. Department of Transportation (February 2024).

Tools For Building An Equitable Infrastructure Workforce, U.S. Department of Labor Women's Bureau (September 2023).

The Good Jobs Initiative, U.S Department of Labor.

Appendix D: City of Seattle Standard Specifications for Municipal Construction, Acceptable Work Sites

Acceptable Work Site
Acceptable Work Site is defined as a work site that is appropriate, productive, safe, free from bullying, hazing or harassment. An Acceptable Work Site is free from behaviors that may impair production, and/or undermine the integrity of the work conditions including but not limited to job performance, safety, productivity, or efficiency of workers.

Work Site
The Project Site and any field or company offices used for the Project, or other locations used in conjunction with the Project where Work is performed.

Non-Discrimination Requirements (1-07.11 (3))
The Owner will not enter into contracts with Contractors that do not agree to use Affirmative Efforts to employ or contract with women and minority group members as required under SMC 20.42, who do not agree to ensure an Acceptable Work Site, or who violate any provisions of that chapter, or those requirements set forth below.

Acceptable Work Site (New Section (1-07.11(4)A)
The Contractor must ensure an Acceptable Work Site and must include this Section in all subcontracts.

The intent of the person that appears to violate the Acceptable Work Site is not a measure of whether such behaviors are appropriate; rather the standard is whether a reasonable person should have known that such behavior would cause a worker to be humiliated, intimidated, or otherwise treated in an inappropriate, discriminatory, or differential manner.

Behaviors that violate an Acceptable Work Site include but are not limited to:

1. Persistent conduct that to the reasonable person would be perceived as offensive and unwelcome;
2. Conduct that a reasonable person would perceive to be harassing or bullying in nature;
3. Conduct that a reasonable person would perceive to be hazing;
4. Verbal references that a reasonable person would perceive to be offensive stereotypes or racial/gender slurs;
5. Jokes about race, gender, or sexuality that a reasonable person would perceive to be offensive;
6. Task assignments that stratify, or give a perception of stratification, based on race, gender, or other defining characteristics;

7. Language that a reasonable person would perceive to be offensive based on race, gender, or oriented towards sexuality;
8. Name-calling, cursing, or unnecessary yelling, including from a supervisor, foreman, or other more senior person, that a reasonable person would perceive as offensive;
9. Repeating rumors about individuals in the Work Site that a reasonable person would perceive as harassing or harmful to the individual's reputation;
10. Refusal to hire someone based on race, gender, sexuality, or any other protected class; and
11. References to or requests for immigration status other than those required by law, religious affiliation, gender affiliation, criminal background, or other related aspects of a worker unless mandated by federal law.

To maintain an Acceptable Work Site, all Work must be assigned in a manner that respects training objectives for apprentices and ensures an equitable distribution of meaningful work, training, and assignments among all workers.

While maintaining and managing an Acceptable Work Site is the Contractor's responsibility, each Subcontractor must also have accountability for performance in sustaining and managing their Work Sites. CPCS will monitor Work Sites to ascertain whether a risk or circumstance exists that may merit a remedy. Monitoring may include proactive observations of the Work Site, interviews of individuals familiar with the Work Site, collection of data that may evidence disparities, investigation of complaints by an individual familiar with the Work Site, or collection of other evidence. If risks or circumstances that may merit a remedy are discovered, CPCS will notify and collaborate with the prime Contractor to discuss appropriate remedies, and may likewise notify Subcontractors and appropriate unions when necessary for the resolution of the situation, except when unusual circumstances require confidentiality. CPCS may also require other remedies such as those found in Section 1-08.1(3), if CPCS regards the situation as urgent, of potential harm, or without timely resolution.

This Section is for the benefit of the Owner and its interest in the Project. It does not create any third-party beneficiaries or form the basis of any action against the Owner by a third party.

"2017 City of Seattle Standard Specifications for Municipal Construction: Acceptable Work Site Contract Provisions," https://www.seattle.gov/documents/Departments/FAS/PurchasingAndContracting/WMBE/AWS-contract-provisions.pdf.

Appendix E: Regional Workforce Equity Agreement

10.4 Recruitment and Retention Strategies. Prime Contractors, Subcontractors and Unions shall take the following steps to recruit and retain a diverse workforce: A. Prior to the start of construction, the Prime Contractor shall meet with the Unions and the Owner for the purpose of reviewing this Agreement and the projection of the workforce needs over the course of construction of each Covered Project.

B. Prime Contractors, Subcontractors and Unions shall work aggressively to recruit women and people of color for Covered Projects.

C. On at least an annual basis, Unions and Public Owners shall conduct or designate one or more events with women and people of color to enlist their assistance as recruiters and solicit their ideas on how to increase employment of underutilized groups. Such events shall be conducted or designated to function as recruiting sites for underutilized groups of workers, and shall be developed and operated in connection with local pre-apprenticeship programs. Prime Contractors, Unions, and each Subcontractor, in each case working on a Covered Project at the time of the events, shall attend and participate in such events.

D. Each Prime Contractor and Subcontractor shall provide all apprentices referred to such Prime Contractor or Subcontractor a fair chance to perform successfully, allowing for possible lack of previous experience, and shall recognize that such Prime Contractor or Subcontractor is responsible for providing on-the-job training and that all apprentices should not be expected to have previous experience.

E. Prime Contractors, Subcontractors and Unions shall participate in job fairs, school to-work, and community events to recruit women and people of color into the construction trades. The Prime Contractors, Subcontractors and Unions shall participate at least semi-annually for the duration of a Covered Project.

F. The Prime Contractor shall allow scheduled job site visits by participants in community programs, in conformance with the Prime Contractor's Project safety plan and requirements, to increase awareness of job and training opportunities in the construction trades.

G. Prime Contractors and Subcontractors shall ensure that their employees performing Covered Work are knowledgeable about the Prime Contractor's or Subcontractor's policies if they need to report a harassment problem. Prime Contractors will provide a complete orientation to the job site to all workers performing Covered Work, including procedures for reporting problems, and expected crew behaviors.

H. Prime Contractors and Subcontractors shall be BOLI-recognized Training Agents and abide by the apprenticeship standards of the BOLI-registered or BOLI-recognized program for the appropriate craft(s) from which they employ apprentices. Prime Contractors and Subcontractors shall make reasonable attempts to keep apprentices working and train them in all work processes described in the apprenticeship standards. Public Owners shall have the right to review training plans, apprentice work progress reports and hiring/worker retention to ensure compliance with this Agreement.

I. Each Prime Contractor and Subcontractor will review and disseminate, at least annually, their EEO policy and affirmative action obligations under this Agreement with all employees having any responsibility for hiring, assignment, layoff, termination or other employment decisions.

J. Prime Contractors and Unions shall regularly provide cultural competency training to all managers, supervisors and principals, and conduct a review, at least annually, of their adherence to and performance under EEO policies and any affirmative action obligations.

K. Prime Contractors and Unions shall take steps to reduce feelings of isolation among racial and ethnic minorities and women by making every attempt to have several racial and ethnic minorities and women at the job site and by informing such workers about available support systems.

L. Prime Contractors shall provide adequate toilet facilities for women on the job site, by maintaining a clean, accessible and locked toilet for female craft employees, and by removing graffiti immediately to help create a respectful environment.

M. Prime Contractors, Subcontractors, and Unions shall team minority, female, or disadvantaged apprentices who may need support to complete their apprenticeship programs with a late-term or journey-level mentor.

N. Prime Contractors, Subcontractors, and Unions shall maintain documentation of their compliance with the recruitment and retention strategies set forth above and shall submit such documentation to the Public Owners and the Regional Oversight Committee when requested, but not more frequently than semi-annually.

10.5 Anti-Harassment Protections. Prime Contractors, Subcontractors, Unions and Public Owners shall maintain Covered Project sites as harassment-free workplaces, and shall maintain a welcoming and open environment toward women, people of color, and all protected classes. The Parties shall work collaboratively to develop strengthened anti-harassment systems, and shall identify quality training programs regarding respectful workplaces and avoidance of harassment and discrimination on job sites. Unions, Prime Contractors and Subcontractors shall participate in such systems and programs as required by a Public Owner for that Public Owner's Covered Projects.

10.6. No Discrimination. The parties recognize and agree that the discrimination against and the harassment of an individual because of the individual's sex, gender identity/expression, race, religion, age, national origin or disability, and other state or federally protected class is adverse to the interest of workers, Unions, Prime Contractors, Subcontractors, and Public Owners. Such discrimination and harassment is prohibited by this Agreement, and constitutes grounds for discipline against employees, and contractual remedies against parties that initiate, permit, or facilitate it. It is the duty of the employer to provide a work environment free from unlawful discrimination, workplace harassment, and sexual harassment. It is the duty of employees to conduct themselves in a professional and respectful manner. It is the duty of Unions and Public Owners to prohibit and avoid discrimination and harassment in all operations related to Covered Projects. Those in leadership, supervisory, or management roles shall be held to a higher standard and must be proactive in creating and maintaining operations free of harassment and discrimination.

"Regional Workforce Equity Agreement," February 7, 2022, https://www.portland.gov/sites/default/files/council-documents/2022/rwea-february-7-2022-final-rev.pdf.

Appendix F: King County Respectful Worksites Policy

WHAT IS A RESPECTFUL WORKSITE?

Respectful Worksite means a worksite that is respectful and free of all forms of harassment, including sexual harassment and bullying. A Respectful Worksite is void of behaviors that would reasonably offend, intimidate, embarrass, or humiliate others, whether deliberately or unintentionally that may harm production, and or work conditions including but not limited to job performance, safety or the productivity of workers.

THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING A RESPECTFUL WORKSITE AND FOR:

The Contractor is responsible for maintaining a Respectful Worksite and for:

a. Acting promptly and appropriately to prevent discrimination, harassment, retaliation, or inappropriate conduct in the workplace.
b. Reporting any incident of discrimination, harassment, retaliation, or inappropriate conduct that they witness or is otherwise brought to the attention of the Contractor; and,
c. Receiving and handling allegations of discrimination. harassment, retaliation, or inappropriate conduct promptly and appropriately.

CONSEQUENCES OF NON-COMPLIANCE

The Contractor and all parties subcontracting under the authority of this Contract shall comply fully with all applicable federal, state, and local laws, ordinances, executive orders, and regulations that prohibit discrimination. These laws include, but are not limited to, RCW Chapter 49.60, Titles VI and VII of the Civil Rights Act of 1964, the American with Disabilities Act, and the Restoration Act of 1987. In addition, KCC 12.16, 12.17 and 12.18 are incorporated herein by reference and the requirements in these code sections shall specifically apply to this contract. Any violation of the requirements of the provisions of this Section 00120 shall be a material breach of contract, which may result in termination of this Contract or such other remedy as the County deems appropriate, including but not limited to damages or withholding payment, cancellation or suspension, in whole or in part, of the Contract by the County, or invoking the enforcement provisions of KCC 12.16 that provide for penalties, liquidated damages or other remedies, and may result in ineligibility for County contracts.

RESPONSIBILITES AND COMMITMENTS

- King County is committed to maintaining a respectful, productive, inclusive, and equitable worksite.
- King County expects that all Contractors and their officers, employees, agents, or subcontractors of all tiers will act with fairness, civility, integrity, and treat all employees equitably.
- Discrimination, harassment, retaliation, and other inappropriate conduct that undermines the integrity of the employment relationship are prohibited.

- King County will investigate all complaints of conduct inconsistent with these expectations, regardless of whether the conduct rises to the level of unlawful discrimination, harassment, or retaliation.
- Substantiated complaints will result in prompt, corrective action, up to and including termination of the employee from the Worksite and or cancellation of the contract or subcontract for default at no cost to King County, and any other remedy allowed by law.
- King County prohibits discrimination or harassment related to a person's race, color, sex, age, creed, disability, marital status, national origin, religion, pregnancy, gender, gender identity or expression, genetic information, sexual orientation, veteran or military status, use of a service animal, and any other status protected by federal, state, and local law.
- King County prohibits retaliation of any kind against employees, who in good faith, report harassment, discrimination, or retaliation, or assist in the investigation of such complaints.

DEFINITIONS

Respectful Worksite

Respectful Worksite means as a Worksite that is appropriate, safe, productive, and free of bullying, hazing, or harassment. An Acceptable Worksite is free from behaviors that may impair production, and/or undermine the integrity of the work conditions including but not limited to job performance, safety, productivity, or efficiency of workers.

Worksite

Worksite refers to the location at which construction, equipment or services furnished by the Contractor under the Contract will be performed, completed and or delivered.

Discrimination

Discrimination occurs when an employer takes a discrete adverse employment action against an employee and the employee's protected status was a substantial factor in the employer's decision.

Discrete Adverse Employment Action

Discrete Adverse Employment Action is an action that substantially affects the terms, conditions, or privileges of employment. It includes, but is not limited to, discipline, discharge, layoff and a failure to hire or promote.

- In the case of retaliation, an action would discourage a reasonable employee from making a complaint or participating in a discrimination, harassment, or retaliation investigation or proceeding.

Protected Status

Protected Status includes an employee's sex, age, creed, disability, marital status, national origin, race, color, religion, pregnancy, gender, gender identity or expression, genetic information, sexual orientation, veteran or military status, use of a service animal, and any other status protected by federal, state, and local law.

Harassment
Harassment is unwelcome conduct that can take many forms, including but not limited to, innuendoes, unwelcome compliments, suggestive or insulting noises, facial expressions, vulgar language, nicknames, slurs, derogatory comments, cartoons, jokes, pranks, written materials, and offensive gestures or touching. It is illegal when:

- Enduring the conduct becomes a condition of continued employment; or
- The conduct is severe or pervasive enough to create an environment that a reasonable person would consider intimidating, hostile, or abusive.

Sexual Harassment
Sexual Harassment occurs when unsolicited and unwelcome sexual advances, requests for sexual favors, displays of sexually oriented material, or other verbal or physical conduct of a sexual nature:

- Is explicitly or implicitly made a term or condition of employment.
- Is used as a basis for an employment decision; or
- Unreasonably interferes with an employee's work performance, or creates an intimidating, hostile, or otherwise offensive environment.
- Both the victim and the harasser can be the same gender or gender identity.

Retaliation
Retaliation occurs when a supervisor or manager takes a discrete adverse employment action against an employee because the employee reported discrimination, harassment or retaliation or assisted in the investigation or proceeding of such complaints.

Inappropriate Conduct
Inappropriate Conduct is conduct that, while not rising to the level of unlawful discrimination or harassment, communicates a hostile, derogatory, or negative message about persons based on protected status. Inappropriate conduct can be either verbal or nonverbal and includes slights, insults, and other conduct that a reasonable person would find offensive.

"Respectful Worksite Language," King County, Washington, 2024, https://kingcounty.gov/en/legacy/depts/finance-business-operations/business-development-contract-compliance/programs/PriorityHire/RespectfulWorksiteLanguage.aspx.

APPENDIX G

Task 3: Workforce Demand and Gap Analysis Report

November 2024

Submitted to:
Riley O'Brien, Estolano Advisors
Michael Flores, Los Angeles County Metropolitan Transportation Authority (Metro)
Sidney Urmancheev, Metro

Submitted by:
Renee Rainey, ICF
Dominic Modicamore, ICF
Hannah Shepard-Moore, ICF

Table of Contents

Introduction **3**
A & B: Current and Future Workforce Demand **3**
1. Historical and Current Workforce Demand 8
   1.1 Historical Occupational Trends 8
   1.2 Historical and Current Hiring Trends 13
   1.3 Occupational Landscape and Current Female Employment 14
2. Future Workforce Demand 18
   2.1 Projected Employment Demand in 2026 and 2033 18
   2.2 Projected Demand on Metro Projects in Annual Hours by Craft and Trade, 2026 and 2033 21
C& D Current and Future Workforce Gap Analyses **29**
3. Current and Future Workforce Gap Analyses 29
   3.1 Projected Female Metro Workforce Gap 29
   3.2 Projected Female Metro Workforce Gap by Trade 33
   3.3 Projections for Achieving 6.9% Female Utilization 37

Appendices **38**
Appendix A: Occupation Mapping 38
Appendix B: Historical and Current Monthly Average Hires by Occupation in Greater LA Area 40
Appendix C: STATA Correlation Table 42
Appendix D: Projected Labor Demand and Female Labor Demand Gap from 2024 – 2033 43
Appendix E: Projected Female Labor Demand Gap from 2024 – 2033, by Trade 66
Appendix F: Percent Female Labor Supply Available for Metro Projects (Average 2019-2023) 74
Appendix G: Calculated Annual Female Utilization Rates by Trade, 2024-2045 75

Introduction

The ICF Team was contracted by Estolano Advisors as a subcontractor for Los Angeles County Metropolitan Transportation Authority (Metro) to identify current and projected future workforce demand amongst selected construction-related occupations and the current and projected future gap of female workers in the Greater Los Angeles (LA) Area. This data analysis is part of the larger analysis conducted by Estolano Advisors to determine availability of unionized female workers in construction to support Metro's motion to meet a female labor utilization goal of 6.9% for hours worked on federally funded construction projects and identify strategies and recommendations for mitigating the underrepresentation of women in construction. The 2024 study is an update of the Metro Disparity Workforce Study[1] conducted in 2019. At the end of 2023, Metro was averaging 3.78% female participation on active projects and 3.65% on all active and closed projects.[2] By April 2024, female participation on active projects increased to 3.88% and 3.68% on active and closed projects combined.[3]

A & B: Current and Future Workforce Demand

The Greater LA Area remains in a period of robust construction activity shaped by Federal and local investments including:

- **Federal Infrastructure Investment and Job Act (IIJA)** – also known as the Bipartisan Infrastructure Law – under which California has received over $30B in investments to upgrade roads, bridges, rail, public transit, airports and ports and other infrastructure.[4]
- **Federal Inflation Reduction Act (IRA)** – which requires prevailing wage standards in Clean Energy construction projects[5] and provided a $412M grant to the Port of Los Angeles to electrify operations.[6]
- **Measure M** – a LA County sales tax for transportation investment passed in 2016 that includes a 40-year investment and expenditure plan to improve equity and transportation infrastructure.[7]
- **Metro's Twenty-Eight by '28 Initiative** – an accelerated set of transit, highway, and bike projects planned to be completed by the 2028 Olympics and Paralympic Games.[8]
- **California Senate Bill 1 (Road Repair and Accountability Act of 2017)** – a statewide gas-tax that increased transportation infrastructure investments in roads, freeways, bridges, and transit by $5.4 billion annually.[9]

Metro has recently concluded or will conclude shortly several large capital construction projects including:

- **Regional Connector Transit Corridor** – a two-mile light rail connector in downtown Los Angeles, which cumulatively over its lifetime will represent over 5M in construction hours.[10]

---

[1] Estolano LeSar Advisors with ICF and Inclusive Economics (2019). *Metro Disparity Workforce Study.*

[2] PLA Reports provided by Metro.

[3] Female Participation Score Card, sourced from the Project Labor Agreement (PLA)/ Construction Careers Policy (CCP) Report Construction Committee Update on May 16, 2024 and Metro shared data from June 2024 internal PLA report.

[4] About IIJA, IIJA: Bolstering California's transportation investments.

[5] Center for American Progress, September 14, 2022, The Inflation Reduction Act Provides Pathways to High-Quality Jobs - Center for American Progress

[6] Port of Los Angeles, October 29, 2024, Port of Los Angeles Awarded $412 Million Grant from U.S. EPA for Zero-Emission Transformation | News | Port of Los Angeles

[7] Metro, L.A. Metro Releases Measure M Five-Year Comprehensive Assessment, Equity Report, November 1, 2023, https://www.metro.net/about/l-a-metro-releases-measure-m-five-year-comprehensiveassessment-equity-report/

[8] Metro 28 Projects by 28, 28 Projects by 2028 Games - LA Metro.

[9] Landmark Transportation Investment, About SB 1.

[10] Metro provided PLA Reports and Metro Project Management Dashboard, https://mtadash.mlmprojectservices.com/projects/5773#/scope.

- **Airport Metro Connector –** a transportation center along the Crenshaw/LAX Line in the final stages of construction that will connect the Metro bus and rail system to Los Angeles International Airport (LAX).[11]
- **Crenshaw/LAX Transit Corridor –** completed in 2022 and providing major transit links between LAX and cities to the south including Inglewood, El Segundo and Hawthorne. It represented over 9.5M hours in construction labor.[12]

Construction continues or is in the pre-construction assessment and planning phases for other major regional projects through Metro and other agencies. Notable projects include:

- **Metro Westside Purple Line Extension Projects** (Sections 1, 2, 3) to be completed in 2025, 2026, 2027.[13]
- **Metro Gold Line Foothill Extension –** phases expected to be completed in 2025 and 2028.[14]
- **Metro Southeast Gateway Line –** a $7B 14.5-mile light rail transit line to southeast LA County projected to open in 2035.[15]
- **Southern California Optimized Rail Expansion (SCORE) program** – through the Southern California Regional Rail Authority, a series of ongoing Metrolink commuter rail enhancement and expansion projects totaling over $10 billion to improve regional rail service completed from 2023-2028[16]
- **Metro East San Fernando Valley Light Rail Transit Project –** a $3.57B project to improve connections to East San Fernando Valley. The 6.7-mile southern segment includes 11 new stations and a Maintenance & Storage Facility and is forecasted to open in 2031.[17]
- **Link Union Station –** a mega-project transforming Union Station from stub end tracks station into a run-through tracks station creating a primary transportation hub for the region that could begin construction as early as 2025.[18]
- **Los Angeles International Airport (LAX) Modernization** – $30 billion in Capital improvement projects, many of which are already complete or underway. Los Angeles World Airports (LAWA) has indicated projects will shift from terminal builds to improving existing infrastructure in reaction to slower post-pandemic passenger volume returns.[19]
- **LA Convention Center (LACC) Expansion and Modernization Project** – an LA City $1.5B design/build expansion in partnership with the private sector is slated to start construction in 2025 and be complete by 2028.[20]
- **Los Angeles County Harbor-UCLA Medical Center Replacement Project** – led by Los Angeles County Public Works, a $1.7B project that will construct six new buildings on the Harbor-UCLA campus by 2027.[21]
- **Los Angeles Community College District infrastructure projects –** such as the new academic building at LA Pierce College funded by $15B in bond investments.[22]

---

[11] Metro provided PLA Reports and Metro Project Management Dashboard, https://mtadash.mlmprojectservices.com/projects/1403#/status

[12] Metro provided PLA Reports and Metro Project Management Dashboard, https://mtadash.mlmprojectservices.com/projects/1203#/status.

[13] Metro Program Management Master Schedule, January 2024 and https://mtadash.mlmprojectservices.com/?portfolio=Transit

[14] Metro Program Management Master Schedule, January 2024 and Metro Projects, https://www.metro.net/projects/foothill-extension/

[15] https://la.streetsblog.org/2024/10/31/metro-breaks-ground-on-early-phase-of-southeast-gateway-light-rail-construction

[16] SCORE | Metrolink

[17] L.A. Metro Awarded an $893 Million U.S. Department of Transportation Grant to Help Fund New 6.7 Mile East San Fernando Valley Light Rail Transit Project, September 6, 2024. https://www.metro.net/about/l-a-metro-awarded-an-893-million-u-s-department-of-transportation-grant-to-help-fund-new-6-7-mile-east-san-fernando-valley-light-rail-transit-project/

[18] Metro Link Union Station, https://www.metro.net/projects/link-us/

[19] LA Times, https://www.latimes.com/california/story/2024-09-06/lax-shifts-focus-from-terminal-expansion-to-infrastructure-updates-as-passenger-forecasts-drop. September 6, 2024.

[20] https://la.urbanize.city/post/city-council-gives-go-ahead-convention-center-expansion-plan

[21] Harbor-UCLA Medical Center Replacement Program - LA County Public Works

[22] https://www.build-laccd.org/about-buildlaccd/the-bond-measure/ and https://www.laccd.edu/news/construction-starts-new-academic-east-building.

The California Employment Development Department (EDD) projected that from 2020-2030, the Los Angeles region construction industry would see 15.7% growth (1.6% annualized).[23]

Federal funding from the IIJA and the IRA as well as demand for housing developments has spurred the demand for construction and infrastructure projects. However, there are forces that may temper construction growth such as inflation, price volatility of material costs, and labor shortages.[24]

For the purposes of this analysis, the Greater LA Area consists of five counties including LA County, Orange County, Riverside County, San Bernardino County, and Ventura County.[25] Per Metro request, the 34 occupations identified for analysis, mirror the 34 occupations used in the 2019 study. Occupations are characterized according to the Bureau of Labor Statistics' (BLS) standard occupational classification (SOC) system[26] (Exhibit 1). The ICF Team collected unionized and non-unionized employment data for the 34 occupations across all industry sectors.

Exhibit 1: Selected SOC Occupations

SOC	Occupation
17-1022	Surveyors
37-3011	Landscaping and Groundskeeping Workers
47-2021	Brickmasons and Blockmasons
47-2022	Stonemasons
47-2031	Carpenters
47-2042	Floor Layers, Except Carpet, Wood, and Hard Tiles
47-2051	Cement Masons and Concrete Finishers
47-2053	Terrazzo Workers and Finishers
47-2061	Construction Laborers
47-2071	Paving, Surfacing, and Tamping Equipment Operators
47-2072	Pile-Driver Operators
47-2073	Operating Engineers and Other Construction Equipment Operators
47-2081	Drywall and Ceiling Tile Installers
47-2082	Tapers
47-2111	Electricians
47-2121	Glaziers
47-2131	Insulation Workers, Floor, Ceiling, and Wall
47-2132	Insulation Workers, Mechanical
47-2141	Painters, Construction and Maintenance
47-2151	Pipelayers

[23] California Employment Development Department. (2023). *Employment Projections*. Retrieved July 03, 2024. https://labormarketinfo.edd.ca.gov/data/employment-projections.html

[24] Los Angeles County Metropolitan Transit Authority. (2024, March). 2023 Construction market analysis: https://boardagendas.metro.net/board-report/2024-0009/

[25] United States Office of Management and Budget (2018). *OMB BULLETIN NO. 18-04*. Retrieved from https://www.whitehouse.gov/wp-content/uploads/2018/09/Bulletin-18-04.pdf.

[26] United States Department of Labor, Bureau of Labor Statistics. *Standard Occupational Classification (SOC)*. Retrieved July 12, 2024 from https://www.bls.gov/soc/.

SOC	Occupation
47-2152	Plumbers, Pipefitters, and Steamfitters
47-2161	Plasterers and Stucco Masons
47-2171	Reinforcing Iron and Rebar Workers
47-2181	Roofers
47-2211	Sheet Metal Workers
47-2221	Structural Iron and Steel Workers
47-4011	Construction and Building Inspectors
47-4021	Elevator and Escalator Installers and Repairers
47-4041	Hazardous Materials Removal Workers
47-4061	Rail-Track Laying and Maintenance Equipment Operators
49-9051	Electrical Power-Line Installers and Repairers
51-4032	Drilling and Boring Machine Tool Setters, Operators, and Tenders, Metal and Plastic
51-9023	Mixing and Blending Machine Setters, Operators, and Tenders
53-3032	Heavy and Tractor-Trailer Truck Drivers

The ICF Team conducted analyses using labor market information from Lightcast Developer, a labor market analytics tool from Lightcast (formerly Emsi Burning Glass), a leading labor market data vendor.[27] Lightcast compiles data from a wide variety of government sources and job postings including information on employment, skills, and labor force supply and demand and includes both union and non-union employment.

ICF also utilized LCPtracker data, provided by Estolano Advisors and Metro, to determine Metro's unionized workforce projections and employment rates relative to the Greater LA Area. The LCPtracker data included employment information by craft for contractors working on Metro projects. A separate LCPtracker dataset covered the Greater LA area (five county area) and included employment information for contractors and workers subject to prevailing wage laws. Metro crafts were mapped to their most closely associated SOC occupation, based on the mapping conducted in 2019 using the California Apprenticeship Coordinators Association (CalApprenticeship.org) and updated in 2024 to include new crafts. Each craft from LCPtracker was successfully mapped to an associated SOC occupation. See Occupation Mapping in Appendix A.

Given that Metro's construction workforce is comprised of unionized workers, the ICF Team identified the 2023 national average union membership among the selected 34 SOC occupations to determine the percentage of unionized workers in each SOC occupation. To identify the percentage of labor union membership for each SOC occupation, the ICF Team mapped each SOC occupation to its equivalent Census Occupation Code (COC), a designation used in the Union Membership and Coverage Database prepared using data from the Census Bureau's Current Population Survey (CPS).[28] The equivalent COC occupations represent the following industries: "Architecture and Engineering Occupations," "Construction and Extraction Occupations," "Installation, Maintenance, and Repair Occupations," and "Transportation and Material Moving Occupations." Once mapped, the ICF Team leveraged the *Union Membership, Coverage, Density, and Employment by*

[27] Lightcast Data is a combination of labor market information, job postings, global data, skills data, compensation data, and online profiles. Lightcast compiles data from more than 90 government and private-sector sources (including official, published data from BLS, BEA, Census, and other agencies). More information on Lightcast data can be found here: https://lightcast.io/products/data/overview

[28] Barry T. Hirsch, David A. Macpherson, and William E. Even. Hirsch, B.T., Macpherson, D. A, and Even, W.E. (2024). *Union Membership, Coverage, and Earnings from the CPS.* Retrieved August 05, 2024 from http://www.unionstats.com/. and
Hirsch, B.T., Macpherson, D. A. & Even, W. E. (2024, January 16). *Union Membership, Coverage, Density, and Employment by Occupation, 1983-2023.* Union Membership and Coverage Database from the CPS. Retrieved August 05, 2024 from http://www.unionstats.com/.

Occupation[29] data table for 2023 to populate the national average labor union metric for each SOC occupation shown below in Exhibit 2.

Six sets of SOC occupations ("Reinforcing Iron and Rebar Workers" and "Structural Iron and Steel Workers"; Brickmasons and Blockmasons" and "Stonemasons"; "Cement Masons and Concrete Finishers" and "Terrazzo Workers and Finishers"; "Operating Engineers and Other Construction Equipment Operators" and "Pile-Driver Operators"; "Drywall and Ceiling Tile Installers" and "Tapers"; and "Insulation Workers, Floor, Ceiling, and Wall" and "Insulation Workers, Mechanical) have the same union data percentages because they are grouped under the same COC. In the Greater LA Area in 2023, 15.1% of all workers were members of a union, which is about the same as the rates in California as a whole (15.4% in 2023). For the private construction industry in the Greater LA Area, 15.1% of workers were members of a union while the statewide rate was 16.8%.[30] The rate of union membership for the construction industry in the Greater LA Area and California was higher than the national average (10.7%) in 2023.[31]

Exhibit 2: National Average of Union Membership in 2023

SOC	SOC Occupation	% Employed Members of a Union
47-4021	Elevator and Escalator Installers and Repairers	75.00%
47-4061	Rail-Track Laying and Maintenance Equipment Operators	48.52%
47-2171	Reinforcing Iron and Rebar Workers	41.49%
47-2221	Structural Iron and Steel Workers	41.49%
49-9051	Electrical Power-Line Installers and Repairers	35.99%
47-2211	Sheet Metal Workers	34.67%
47-2111	Electricians	28.63%
47-2121	Glaziers	24.97%
47-2152	Plumbers, Pipefitters, and Steamfitters	22.29%
47-4011	Construction and Building Inspectors	21.18%
47-2051	Cement Masons and Concrete Finishers	21.12%
47-2053	Terrazzo Workers and Finishers	21.12%
47-4041	Hazardous Materials Removal Workers	21.08%
47-2131	Insulation Workers, Floor, Ceiling, and Wall	18.06%
47-2132	Insulation Workers, Mechanical	18.06%
47-2072	Pile Driver Operators	17.80%
47-2073	Operating Engineers and Other Construction Equipment Operators	17.80%
47-2071	Paving, Surfacing, and Tamping Equipment Operators	17.78%
47-2021	Brickmasons and Blockmasons	17.34%
47-2022	Stonemasons	17.34%
47-2161	Plasterers and Stucco Masons	16.95%

[29] Ibid.

[30] Ibid.

[31] Bureau of Labor Statistics, Union Membership (Annual) News Release (2024, January 23), *Table 3. Union affiliation of employed wage and salary workers by occupation and industry, 2022-2023 annual*. Retrieved from: https://www.bls.gov/news.release/pdf/union2.pdf.

SOC	SOC Occupation	% Employed Members of a Union
47-2031	Carpenters	13.84%
51-4032	Drilling and Boring Machine Tool Setters, Operators, and Tenders, Metal and Plastic	11.10%
47-2061	Construction Laborers	10.35%
53-3032	Heavy and Tractor-Trailer Truck Drivers	9.60%
47-2042	Floor Layers, Except Carpet, Wood, and Hard Tiles	6.85%
17-1022	Surveyors	6.54%
47-2181	Roofers	6.09%
51-9023	Mixing and Blending Machine Setters, Operators, and Tenders	5.97%
37-3011	Landscaping and Groundskeeping Workers	5.81%
47-2141	Painters, Construction and Maintenance	5.36%
47-2081	Drywall and Ceiling Tile Installers	3.76%
47-2082	Tapers	3.76%
47-2151	Pipelayer	3.03%

Source: Hirsch, B.T., Macpherson, D. A. & Even, W. E. (2024, January 16). *Union Membership, Coverage, Density, and Employment by Occupation, 1983-2023*. Union Membership and Coverage Database from the CPS. Retrieved August 05, 2024 from http://www.unionstats.com/. and Hirsch, B.T. & Macpherson, D. A. (2003). *Union Membership and Coverage Database from the Current Population Survey.* Industrial and Labor Relations Review, Vol. 56, No. 2, 349-54. Retrieved August 05, 2024 from http://www.unionstats.com/.

1. Historical and Current Workforce Demand

This section examines historical and current employment trends, hiring trends, and female employment (both unionized and non-unionized) in the Greater LA Area across the selected 34 occupations.

1.1 Historical Occupational Trends

The ICF Team analyzed data from 2008 to 2023 in the Greater LA Area and calculated the percentage change across that 15 year-span and between each five-year increment. Exhibit 3 includes the 34 SOC occupations (comprised of unionized and non-unionized employment) with their associated percentage change every five years and the net percentage change from 2008 to 2023. While 2008 was a peak year for the construction industry, a significant decline in construction employment is evident between 2008 and 2013 due to the 2007-2009 economic recession. Construction was one of the hardest-hit industries by the Great Recession, experiencing its largest percentage decline in employment since the mid-1940s.[32] According to BLS data, between 2007 and 2012, employment in construction fell by 35% in the U.S. and 51% in California.[33] Between 2013 and 2018, employment in construction slowly recovered, but only slightly above half (55%) of the 34 target occupations surpassed 2008 levels.

Of note, the "Floor Layers, Except Carpet, Wood, and Hard Tiles" occupation (including unionized and non-unionized workers in the Greater LA Area) experienced the most growth during this 15 year-span, as the number of jobs more than doubled from

[32] United States Department of Labor, Bureau of Labor Statistics. (2012). Spotlight on Statistics: The Recession of 2007-2009. Retrieved from https://www.bls.gov/spotlight/2012/recession/.

[33] United States Department of Labor, Bureau of Labor Statistics. (2018). Quarterly Census of Employment and Wages. Retrieved from https://www.bls.gov/qcew//.

1,525 in 2008 to 3,490 in 2023 (an increase of 129%). Additionally, while the "Hazardous Materials Removal Workers" occupation had 1,666 union and non-union jobs in the Greater LA Area in 2008, this occupation experienced 103% growth by 2023. On the other hand, "Terrazzo Workers and Finishers" had 419 workers in 2008 and only 29 workers in the Greater LA Area in 2023 (a decrease of 93%) and "Drilling and Boring Machine Tool Setters, Operators, and Tenders, Metal and Plastic," and the "Tapers," occupations also greatly declined over the past 15 years, having reductions of 76% and 49%, respectively. Of the top volume occupations, "Heavy and Tractor-Trailer Truck Drivers" grew from 80,995 jobs in 2008 to 124,236 jobs in 2023, a 53% growth rate and "Electricians" grew from 27,352 to 33,968, a 24% growth between 2008 and 2023.

Despite the declines in employment during the recession, from 2008 to 2023, the Greater LA Area experienced nearly 5% growth in employment across the selected 34 SOC occupations. In the more recent period, 2018-2023, employment grew more slowly across selected occupations with an increase from 504,022 jobs to 507,238 (.64% growth). Overall, the breakdown of the historical employment trends by occupation in Exhibit 3 demonstrates significant historical growth for some occupations (indicating strong and consistent demand for these specific jobs and their required skill sets) and substantial decline for others.

Exhibit 3: Historical Employment Trends (Unionized and Non-unionized) by Occupation in Greater LA Area from 2008-2023

SOC	Occupation	Jobs (2008)	Jobs (2013)	% Change (2008-2013)	Jobs (2018)	% Change (2013-2018)	Jobs (2023)	% Change (2018-2023)	% Change (2013-2023)	% Change (2008-2023)
17-1022	Surveyors	2,628	1,709	-34.98%	1,625	-4.89%	1,792	10.24%	4.85%	-31.83%
37-3011	Landscaping and Groundskeeping Workers	81,476	75,638	-7.17%	75,029	-0.80%	70,376	-6.20%	-6.96%	-13.62%
47-2021	Brickmasons and Blockmasons	5,038	3,247	-35.55%	2,920	-10.07%	2,595	-11.12%	-20.07%	-48.48%
47-2022	Stonemasons	1,564	1,030	-34.17%	1,356	31.74%	854	-37.00%	-17.00%	-45.37%
47-2031	Carpenters	67,009	59,437	-11.30%	70,714	18.97%	65,452	-7.44%	10.12%	-2.32%
47-2042	Floor Layers, Except Carpet, Wood, and Hard Tiles	1,525	1,349	-11.56%	2,118	57.02%	3,490	64.78%	158.73%	128.83%
47-2051	Cement Masons and Concrete Finishers	10,404	9,038	-13.13%	11,992	32.67%	13,277	10.72%	46.90%	27.62%
47-2053	Terrazzo Workers and Finishers	419	236	-43.66%	118	-50.14%	29	-75.22%	-87.64%	-93.04%
47-2061	Construction Laborers	71,778	65,041	-9.39%	72,066	10.80%	63,086	-12.46%	-3.01%	-12.11%
47-2071	Paving, Surfacing, and Tamping Equipment Operators	1,933	2,166	12.03%	1,354	-37.50%	1,002	-25.94%	-53.71%	-48.14%
47-2072	Pile Driver Operators	147	148	0.40%	186	26.08%	295	58.44%	99.77%	100.56%
47-2073	Operating Engineers and Other Construction Equipment Operators	11,238	10,271	-8.60%	11,436	11.34%	13,954	22.02%	35.86%	24.17%
47-2081	Drywall and Ceiling Tile Installers	14,245	11,760	-17.45%	15,858	34.85%	14,939	-5.79%	27.03%	4.87%

SOC	Occupation	Jobs (2008)	Jobs (2013)	% Change (2008-2013)	Jobs (2018)	% Change (2013-2018)	Jobs (2023)	% Change (2018-2023)	% Change (2013-2023)	% Change (2008-2023)
47-2082	Tapers	4,012	3,041	-24.21%	3,423	12.57%	2,037	-40.48%	-33.00%	-49.22%
47-2111	Electricians	27,352	28,226	3.20%	33,851	19.93%	33,968	0.35%	20.34%	24.19%
47-2121	Glaziers	2,504	2,398	-4.25%	2,897	20.84%	3,464	19.57%	44.49%	38.34%
47-2131	Insulation Workers, Floor, Ceiling, and Wall	924	775	-16.12%	1,025	32.21%	676	-34.08%	-12.85%	-26.89%
47-2132	Insulation Workers, Mechanical	677	678	0.08%	356	-47.41%	381	7.01%	-43.72%	-43.68%
47-2141	Painters, Construction and Maintenance	27,830	26,415	-5.08%	28,071	6.27%	24,764	-11.78%	-6.25%	-11.02%
47-2151	Pipelayers	1,806	1,686	-6.64%	1,203	-28.65%	1,084	-9.93%	-35.74%	-40.01%
47-2152	Plumbers, Pipefitters, and Steamfitters	21,864	20,107	-8.04%	23,409	16.43%	22,706	-3.01%	12.92%	3.85%
47-2161	Plasterers and Stucco Masons	6,614	3,662	-44.63%	4,059	10.82%	3,612	-11.02%	-1.39%	-45.39%
47-2171	Reinforcing Iron and Rebar Workers	2,439	1,838	-24.62%	2,188	19.02%	1,862	-14.93%	1.25%	-23.68%
47-2181	Roofers	8,081	7,808	-3.37%	9,408	20.48%	9,277	-1.39%	18.80%	14.80%
47-2211	Sheet Metal Workers	6,460	5,987	-7.32%	5,892	-1.60%	4,654	-21.00%	-22.26%	-27.95%
47-2221	Structural Iron and Steel Workers	3,055	3,041	-0.45%	4,469	46.94%	3,816	-14.62%	25.46%	24.90%
47-4011	Construction and Building Inspectors	5,071	4,507	-11.12%	5,348	18.67%	6,386	19.39%	41.68%	25.93%
47-4021	Elevator and Escalator Installers and Repairers	1,139	962	-15.56%	1,202	25.03%	1,092	-9.21%	13.52%	-4.14%
47-4041	Hazardous Materials Removal Workers	1,666	1,854	11.27%	2,981	60.84%	3,382	13.44%	82.45%	103.00%
47-4061	Rail-Track Laying and Maintenance Equipment Operators	432	460	6.52%	405	-12.09%	424	4.81%	-7.87%	-1.86%
49-9051	Electrical Power-Line Installers and Repairers	3,047	3,397	11.49%	3,703	9.00%	3,900	5.34%	14.82%	28.01%
51-4032	Drilling and Boring Machine Tool Setters, Operators, and Tenders, Metal and Plastic	1,957	1,631	-16.68%	1,189	-27.06%	467	-60.76%	-71.38%	-76.15%
51-9023	Mixing and Blending Machine Setters, Operators, and Tenders	7,263	6,295	-13.33%	7,178	14.03%	3,909	-45.54%	-37.89%	-46.17%
53-3032	Heavy and Tractor-Trailer Truck Drivers	80,995	77,813	-3.93%	94,992	22.08%	124,236	30.79%	59.66%	53.39%
	Total	**484,592**	**443,649**	**-8.45%**	**504,022**	**13.61%**	**507,238**	**0.64%**	**14.33%**	**4.67%**

Source: Lightcast and ICF.

Nearly 60% of the 34 target occupations (20 of 34) have declined below peak 2008 levels. Between 2018 and 2023, the average target occupation grew only 0.64%, but Exhibit 4 shows that the year-to-year changes in employment were more volatile around the time of the pandemic. After modest growth from 2018-2019, the onset of the pandemic in 2020 was associated with an almost 5% employment drop in the construction occupations. While over 70% of occupations experienced a decline in employment, the greatest declines from 2019-2020 include "Drilling and Boring Machine Tool Setters, Operators, and Tenders, Metal and Plastic" (29% decline) and "Mixing and Blending Machine Setters, Operators, and Tenders" (16% decline). In the two years that followed, around half of the 34 target occupations saw growth each year and the average employment growth was around 2%. Most recently, employment growth stalled from 2022 to 2023 (0.06% growth), which industry reports have linked to several pressures on the industry including high inflation rates, continued volatility of materials prices, and skilled labor shortage driven by an aging workforce and a lack of young people entering the construction industry.[34]

Exhibit 4. Historical Employment Trends (Unionized and Non-unionized) by Occupation in Greater LA Area as impacted by the pandemic (2018-2023)

SOC	Occupation	Pre-Pandemic			Peak Pandemic				Post-Pandemic			
		Jobs (2018)	Jobs (2019)	% Change (2018 – 2019)	Jobs (2020)	% Change (2019 – 2020)	Jobs (2021)	% Change (2020 – 2021)	Jobs (2022)	% Change (2021 – 2022)	Jobs (2023)	% Change (2022 – 2023)
17-1022	Surveyors	1,625	1,543	-5.05%	1,451	-5.99%	1,665	14.78%	1,718	3.21%	1,792	4.26%
37-3011	Landscaping and Groundskeeping Workers	75,029	72,433	-3.46%	68,577	-5.32%	71,063	3.62%	70,459	-0.85%	70,376	-0.12%
47-2021	Brickmasons and Blockmasons	2,920	2,677	-8.33%	2,633	-1.64%	2,634	0.06%	2,515	-4.52%	2,595	3.19%
47-2022	Stonemasons	1,356	1,472	8.54%	1,360	-7.63%	975	-28.28%	1,067	9.44%	854	-19.94%
47-2031	Carpenters	70,714	72,523	2.56%	69,051	-4.79%	67,093	-2.84%	67,649	0.83%	65,452	-3.25%
47-2042	Floor Layers, Except Carpet, Wood, and Hard Tiles	2,118	2,527	19.33%	2,558	1.24%	2,560	0.08%	2,948	15.15%	3,490	18.36%
47-2051	Cement Masons and Concrete Finishers	11,992	12,455	3.86%	11,903	-4.43%	11,323	-4.88%	12,610	11.37%	13,277	5.29%
47-2053	Terrazzo Workers and Finishers	118	175	48.89%	240	36.88%	273	13.71%	31	-88.76%	29	-4.82%
47-2061	Construction Laborers	72,066	69,801	-3.14%	65,660	-5.93%	65,713	0.08%	64,622	-1.66%	63,086	-2.38%
47-2071	Paving, Surfacing, and Tamping	1,354	1,393	2.95%	1,439	3.28%	1,506	4.67%	1,097	-27.20%	1,002	-8.58%

[34] Associated Builders & Contractors (ABC) of Southern California. (2024, January). *2023 Construction Sector Analysis: Navigating Inflation, Material Cost Fluctuations, and Rising Labor Expenses*. https://abcsocal.org/2023-construction-sector-analysis/

SOC	Occupation	Pre-Pandemic			Peak Pandemic				Post-Pandemic			
		Jobs (2018)	Jobs (2019)	% Change (2018 – 2019)	Jobs (2020)	% Change (2019 – 2020)	Jobs (2021)	% Change (2020 – 2021)	Jobs (2022)	% Change (2021 – 2022)	Jobs (2023)	% Change (2022 – 2023)
	Equipment Operators											
47-2072	Pile-Driver Operators	186	207	11.27%	267	29.18%	359	34.34%	301	-16.33%	295	-1.93%
47-2073	Operating Engineers and Other Construction Equipment Operators	11,436	12,017	5.09%	11,839	-1.49%	12,435	5.03%	13,457	8.22%	13,954	3.69%
47-2081	Drywall and Ceiling Tile Installers	15,858	16,065	1.31%	15,338	-4.53%	15,517	1.17%	15,092	-2.74%	14,939	-1.01%
47-2082	Tapers	3,423	3,187	-6.89%	2,798	-12.21%	2,390	-14.57%	2,166	-9.39%	2,037	-5.94%
47-2111	Electricians	33,851	35,345	4.42%	33,365	-5.60%	32,567	-2.39%	34,455	5.80%	33,968	-1.41%
47-2121	Glaziers	2,897	2,960	2.18%	2,985	0.83%	3,185	6.71%	3,314	4.03%	3,464	4.54%
47-2131	Insulation Workers, Floor, Ceiling, and Wall	1,025	1,009	-1.55%	914	-9.44%	768	-15.92%	695	-9.57%	676	-2.75%
47-2132	Insulation Workers, Mechanical	356	397	11.45%	434	9.32%	508	16.97%	412	-18.89%	381	-7.43%
47-2141	Painters, Construction and Maintenance	28,071	28,296	0.80%	25,763	-8.95%	25,261	-1.95%	25,448	0.74%	24,764	-2.69%
47-2151	Pipelayers	1,203	1,118	-7.08%	1,023	-8.53%	976	-4.58%	1,087	11.38%	1,084	-0.30%
47-2152	Plumbers, Pipefitters, and Steamfitters	23,409	23,360	-0.21%	21,949	-6.04%	21,594	-1.62%	22,097	2.33%	22,706	2.76%
47-2161	Plasterers and Stucco Masons	4,059	4,430	9.14%	4,145	-6.43%	4,581	10.51%	4,196	-8.39%	3,612	-13.93%
47-2171	Reinforcing Iron and Rebar Workers	2,188	2,241	2.42%	2,200	-1.83%	1,992	-9.45%	2,115	6.19%	1,862	-12.00%
47-2181	Roofers	9,408	9,705	3.16%	9,102	-6.21%	9,076	-0.28%	9,194	1.29%	9,277	0.91%
47-2211	Sheet Metal Workers	5,892	5,631	-4.43%	5,215	-7.38%	4,997	-4.19%	4,962	-0.70%	4,654	-6.19%
47-2221	Structural Iron and Steel Workers	4,469	4,444	-0.57%	4,121	-7.25%	4,066	-1.35%	4,103	0.91%	3,816	-7.00%
47-4011	Construction and Building Inspectors	5,348	5,569	4.13%	5,676	1.91%	5,662	-0.24%	6,306	11.37%	6,386	1.26%

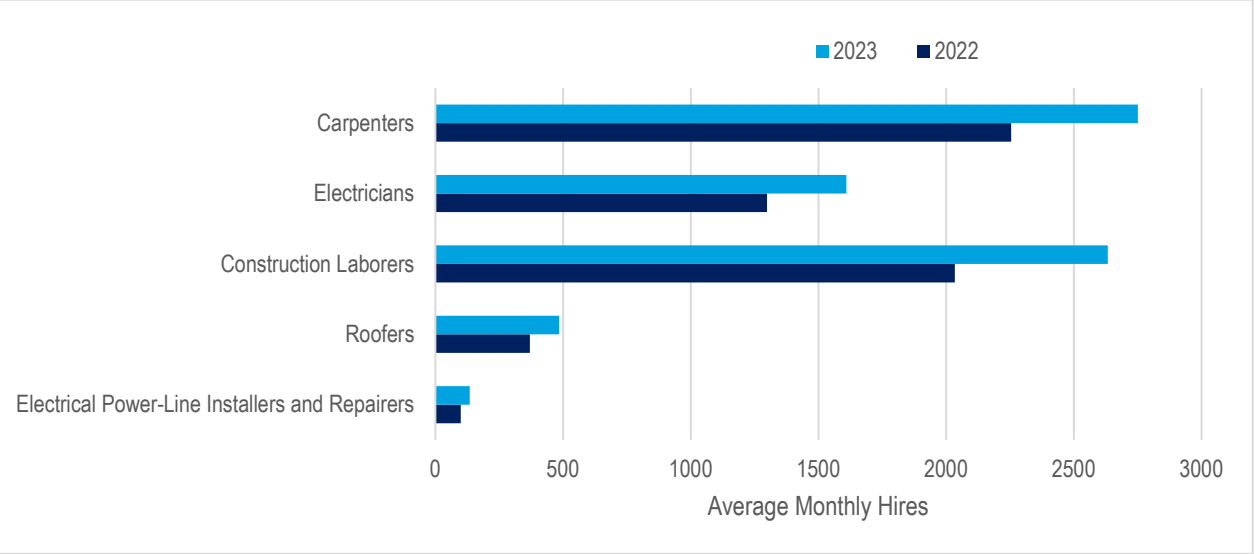
SOC	Occupation	Pre-Pandemic			Peak Pandemic				Post-Pandemic			
		Jobs (2018)	Jobs (2019)	% Change (2018 – 2019)	Jobs (2020)	% Change (2019 – 2020)	Jobs (2021)	% Change (2020 – 2021)	Jobs (2022)	% Change (2021 – 2022)	Jobs (2023)	% Change (2022 – 2023)
47-4021	Elevator and Escalator Installers and Repairers	1,202	1,309	8.87%	1,138	-13.04%	1,050	-7.78%	1,181	12.52%	1,092	-7.58%
47-4041	Hazardous Materials Removal Workers	2,981	3,046	2.15%	3,067	0.69%	3,146	2.60%	3,147	0.03%	3,382	7.46%
47-4061	Rail-Track Laying and Maintenance Equipment Operators	405	412	1.82%	630	52.86%	469	-25.55%	484	3.31%	424	-12.45%
49-9051	Electrical Power-Line Installers and Repairers	3,703	3,481	-5.99%	3,688	5.94%	4,196	13.78%	4,041	-3.70%	3,900	-3.48%
51-4032	Drilling and Boring Machine Tool Setters, Operators, and Tenders, Metal and Plastic	1,189	1,211	1.79%	863	-28.70%	599	-30.66%	595	-0.53%	467	-21.62%
51-9023	Mixing and Blending Machine Setters, Operators, and Tenders	7,178	6,450	-10.14%	5,432	-15.79%	4,319	-20.48%	4,027	-6.76%	3,909	-2.92%
53-3032	Heavy and Tractor-Trailer Truck Drivers	94,992	99,945	5.21%	98,449	-1.50%	112,990	14.77%	119,325	5.61%	124,236	4.12%
	Total	**504,022**	**508,834**	**0.95%**	**485,273**	**-4.63%**	**497,509**	**2.52%**	**506,915**	**1.89%**	**507,238**	**0.06%**

Source: Lightcast and ICF

1.2 Historical and Current Hiring Trends

Using Lightcast data, the ICF Team examined the average monthly hires across the 34 SOC occupations in the Greater LA Area from 2022 to 2023. The ICF Team calculated the percentage change from 2022 to 2023 to examine increased and decreased hiring by occupation in the Greater LA Area. Overall, the change in employment for the 34 targeted occupations from 2022 to 2023 was 2%, though there was substantial variation between occupations. Exhibit 5 displays the average monthly hires for the five SOC occupations that experienced the largest percentage increase between 2022 and 2023. For instance, the "Electrical Power-Line Installers and Repairers" occupation experienced 35.6% growth (99 to 135 average monthly hires), and the "Roofers" occupation experienced 30.9% growth (370 to 484 average monthly hires) during this time.

Exhibit 5: Top 5 SOC Occupations in Greater LA with the Highest Growth in Average Monthly Hires (2022-2023)



Source: Lightcast and ICF

The increase in hiring for some occupations may be associated with construction projects brought by federal and local infrastructure investments and the need for new housing developments in the LA region. However, while these occupations grew significantly in the number of average monthly hires from 2022 to 2023, a third (n=22, 65%) of the 34 occupations experienced a decrease. Eight of 10 target occupations that were identified as the most difficult to fill by Southern California construction contractors experienced a decrease in hiring between 2022 and 2023. These included "Pile Driver Operators" (45.8% decrease), "Stonemasons" (33.5% decrease), and "Reinforcing Iron and Rebar Workers" (7.8% decrease).[35] Two occupations experienced less than 1% change in the average monthly hires during this period, indicating a consistent but flat growth in demand for these occupations. These occupations were "Paving, Surfacing, and Tamping Equipment Operators" and "Elevator and Escalator Installers and Repairers." For a complete breakdown of historical and current monthly average hires by occupation in the Greater LA Area, see Appendix B.

1.3 Occupational Landscape and Current Female Employment

To obtain an understanding of the current workforce within the 34 selected occupations across the Greater LA Area, the ICF Team used Lightcast data to look at median hourly earnings, education and work experience requirements, typical on-the-job training offered, and female employment (unionized and non-unionized) participation in those occupations (Exhibit 6).

Overall, female workers comprised 5.7% percent of the unionized and non-unionized Greater LA Area workforce across these 34 SOC occupations in 2023.[36] A statistical analysis was completed in Stata (Appendix C) to determine if strong relationships exist between occupations that employ a larger percent of women and the requisites for those positions in terms of wages, education level, work experience, and on-the-job training. Conducting this analysis may help Metro identify which occupations could be pipelines for future female employment. Using data from all 34 occupations, there is a statistically significant negative relationship between an occupation's percentage of female workers and typical on-the-job training (e.g., apprenticeship, short-

[35] Los Angeles County Metropolitan Transit Authority. (2024, March). *2023 Construction market analysis: Supplemental contractor interview responses on labor availability*. https://metro.legistar1.com/metro/attachments/1f8e3b2c-a459-4b37-89f1-f176a74c322f.pdf

[36] Lightcast and ICF.

term on-the-job training) required. In other words, these results convey that there is a greater than 95% chance that there is a relationship between an occupation's percentage of female workers and on-the-job training requirement. In this case, the relationship is negative, suggesting that the less intensive the training, the more likely more women are employed. This may be driven by the fact that women are still under-represented nationally and in California construction apprenticeships, which has the most intensive on-the-job training.[37] Observationally, 23 of the 34 targeted SOC occupations were 6% or less female and all the 34 SOC occupations requiring apprenticeship are 6% or less female. Additionally, in Exhibit 6 and Exhibit 2, several occupations that have high female participation such as "Surveyor" and "Mixing and Blending Machine Setters, Operators and Tenders" have some of the lowest percentages of union membership (6.54% union membership for "Surveyor" and 5.97% for "Mixing and Blending Machine Setters, Operators and Tenders). Conversely, some occupations with overall low female participation have high national union membership rates (e.g., "Elevator and Escalator Installers and Repair," "Rail-Track Laying and Maintenance Equipment Operators," "Reinforcing Iron and Rebar Workers," and "Electrical Power-Line Installers and Repairers"), reinforcing that women are still underrepresented in unionized workforces.

There was not a statistically significant correlation between an occupation's percentage of female workers and median hourly earnings, work experience requirements, or education requirements. Additionally, a statistically significant relationship was found between median hourly earnings and typical entry-level education. This makes intuitive sense, as the more education a worker has, the more they are likely to be compensated.

When this analysis was conducted in 2019, there also was no statistically significant correlation between the female percent of occupation and median hourly earnings or education requirements. However, there was a moderate correlation between the female percent of occupation and work experience requirement (at the 0.05 level), suggesting that the more work experience required, the more likely more females were employed. and unlike in the present analysis, there was no statistically significant relationship between the occupation's percentage of female workers and the typical on-the-job training an employer may provide. Given all the insights enumerated above, the small sample size of 34 variables (one that represents each SOC occupation) used in this analysis reduces the overall veracity of these results, as a smaller sample size decreases the statistical power of an analysis, increases the margin of error, and provides less conclusive results. The above findings should, therefore, be taken with that limitation in mind.

As of 2023, using Lightcast data (including union and non-union workers), the "Surveyors" occupation has the highest employment of women (17.0%) in the Greater LA Area (among the 34 selected occupations) and requires a bachelor's degree, no previous work experience but includes an internship or residency, and provides median hourly earnings of $47.56, which is the third highest of the 34 target occupations. "Drilling and Boring Machine Tool Setters, Operators, and Tenders, Metal and Plastic" has the second highest female employment (16.7%) and requires a high school diploma or equivalent, requires no previous work experience, has moderate-term on-the-job training requirements, and provides median hourly earnings of $22.62. Though no overall significant relationship was found, the five occupations with the highest employment of females (above 12.0%) require at least a high school diploma or equivalent or bachelor's degree. Additionally, all occupations, except one ("Construction and Building Inspectors"), do not require work experience.

[37] United States Department of Labor, Apprenticeship USA. (2024, June 4). *Apprenticeships by state: Interactive apprenticeship data*. https://www.apprenticeship.gov/data-and-statistics/apprentices-by-state-dashboard

Exhibit 6: 2023 Greater LA Occupational Landscape and Female Unionized and Non-unionized Employment

SOC	Occupation	Median Hourly Earnings	Typical Entry Level Education[38]	Work Experience Required	Typical on-the-job Training Offered	Females % of Occupation (2023)
17-1022	Surveyors	$47.56	Bachelor's degree	None	Internship/ residency	17.0%
51-4032	Drilling and Boring Machine Tool Setters, Operators, and Tenders, Metal and Plastic	$22.62	HSD or equivalent	None	Moderate-term OJT	16.7%
51-9023	Mixing and Blending Machine Setters, Operators, and Tenders	$21.57	HSD or equivalent	None	Moderate-term OJT	15.9%
47-4041	Hazardous Materials Removal Workers	$22.71	HSD or equivalent	None	Moderate-term OJT	14.7%
47-4011	Construction and Building Inspectors	$43.91	HSD or equivalent	5 years or more	Moderate-term OJT	12.6%
47-2131	Insulation Workers, Floor, Ceiling, and Wall	$26.73	No formal	None	Short-term OJT	11.3%
47-2141	Painters, Construction and Maintenance	$24.16	No formal	None	Moderate-term OJT	10.6%
37-3011	Landscaping and Groundskeeping Workers	$18.31	No formal	None	Short-term OJT	10.5%
47-2081	Drywall and Ceiling Tile Installers	$28.98	No formal	None	Moderate-term OJT	9.1%
47-2082	Tapers	$25.53	No formal	None	Moderate-term OJT	8.8%
53-3032	Heavy and Tractor-Trailer Truck Drivers	$27.57	Postsecondary nondegree award	None	Short-term OJT	7.2%
47-2132	Insulation Workers, Mechanical	$44.30	HSD or equivalent	None	Apprenticeship	6.0%
47-2161	Plasterers and Stucco Masons	$27.92	No formal	None	Long-term OJT	5.4%
47-2061	Construction Laborers	$23.00	No formal	None	Short-term OJT	4.8%
47-2211	Sheet Metal Workers	$32.29	HSD or equivalent	None	Apprenticeship	4.8%
47-2042	Floor Layers, Except Carpet, Wood, and Hard Tiles	$25.09	No formal	None	Moderate-term OJT	4.6%
47-2221	Structural Iron and Steel Workers	$33.45	HSD or equivalent	None	Apprenticeship	4.0%
47-2121	Glaziers	$28.22	HSD or equivalent	None	Apprenticeship	3.7%
47-2181	Roofers	$29.99	No formal	None	Moderate-term OJT	3.3%
47-2072	Pile Driver Operators *	$47.00	HSD or equivalent	None	Moderate-term OJT	3.3%
47-2073	Operating Engineers and Other Construction Equipment Operators	$39.96	HSD or equivalent	None	Moderate-term OJT	3.2%

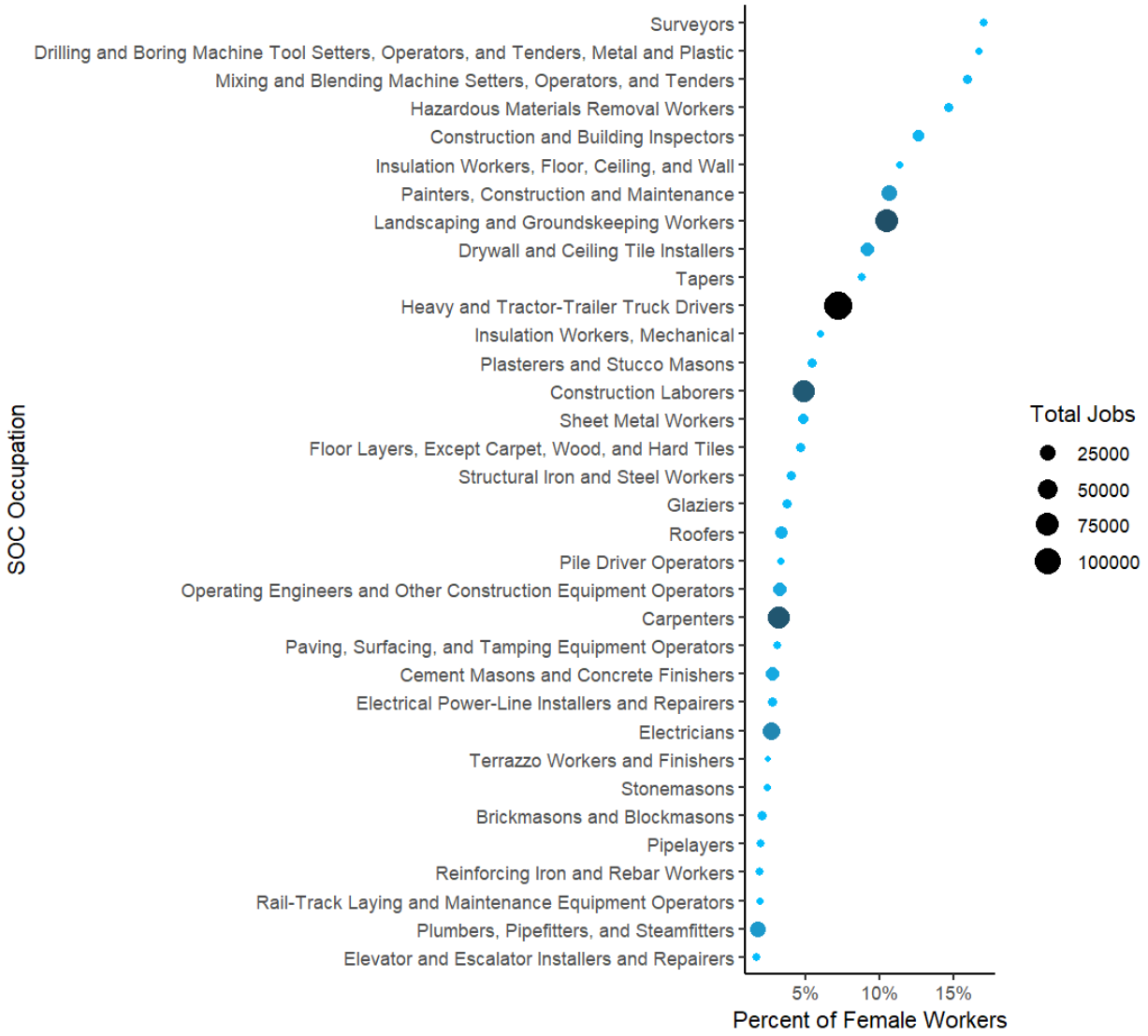
[38] "HSD" indicates a high school diploma or equivalent is required, "No formal" indicates no formal education credential required, "Postsecondary" indicates postsecondary nondegree award is required, "Short-term" indicates short-term on-the-job training offered, "Moderate-term" indicates moderate-term on-the-job-training offered, and "Long-term" indicates long-term on-the-job-training offered.

SOC	Occupation	Median Hourly Earnings	Typical Entry Level Education[38]	Work Experience Required	Typical on-the-job Training Offered	Females % of Occupation (2023)
47-2031	Carpenters	$28.11	HSD or equivalent	None	Apprenticeship	3.1%
47-2071	Paving, Surfacing, and Tamping Equipment Operators	$35.54	HSD or equivalent	None	Moderate-term OJT	3.1%
47-2051	Cement Masons and Concrete Finishers	$29.32	No formal	None	Moderate-term OJT	2.7%
49-9051	Electrical Power-Line Installers and Repairers	$58.19	HSD or equivalent	None	Long-term OJT	2.7%
47-2111	Electricians	$34.24	HSD or equivalent	None	Apprenticeship	2.7%
47-2053	Terrazzo Workers and Finishers *	$17.61	HSD or equivalent	None	Apprenticeship	2.4%
47-2022	Stonemasons	$29.17	HSD or equivalent	None	Apprenticeship	2.3%
47-2021	Brickmasons and Blockmasons	$28.55	HSD or equivalent	None	Apprenticeship	2.0%
47-2151	Pipelayers	$37.95	No formal	None	Short-term OJT	2.0%
47-2171	Reinforcing Iron and Rebar Workers	$27.87	HSD or equivalent	None	Apprenticeship	1.9%
47-4061	Rail-Track Laying and Maintenance Equipment Operators *	$39.09	HSD or equivalent	None	Moderate-term OJT	1.9%
47-2152	Plumbers, Pipefitters, and Steamfitters	$28.91	HSD or equivalent	None	Apprenticeship	1.7%
47-4021	Elevator and Escalator Installers and Repairers	$64.42	HSD or equivalent	None	Apprenticeship	1.7%

Source: Lightcast and ICF
Note: * Indicates that the number of female workers for the occupation was reported by Lightcast to be "<10" in 2023. To identify the number of female workers for analysis, ICF subtracted the number of male workers from the total number of workers per occupation in 2023.

Exhibit 7 depicts the 34 targeted SOC occupations and their corresponding employment of unionized and non-unionized workers in 2023 and the percent of female workers in the occupation, sorted by the highest to lowest percent. There is not a clear pattern between the size of the occupation in the Greater LA Area and the percent of female workers employed. Of note, the six occupations with the highest female percent of occupation currently employ less than 6,500 workers each in the Greater LA Area. Over two-thirds of the occupations listed have female percent of occupation metrics equal to or lower than 6% but they vary in terms of actual numbers employed. For example, the "Construction Laborers" and "Sheet Metal Workers" occupations both have female employment of 4.8% but their employed population are 63,086 (3,028 female) and 4,654 (224 female), respectively, as of 2023. Overall, the occupations (including both unionized and non-unionized workers) with the highest numbers employed (of both genders) in the Greater LA include "Construction Laborers," "Carpenters," "Electricians," and "Plumbers, Pipefitters, and Steamfitters."

Exhibit 7: 2023 Employed Population (Unionized and Non-unionized) and Female Percent of Occupation in Greater LA Area



Source: Lightcast and ICF

2. Future Workforce Demand

To examine growth and decline in workforce demand for the selected 34 occupations across the Greater LA Area, the ICF Team looked at 3-year (2026) and 10-year (2033) employment projections using Lightcast data.

2.1 Projected Employment Demand in 2026 and 2033

Exhibit 8 shows the projected employment of unionized and non-unionized workers by occupation in the Greater LA Area in 2026 (3-year projection) and 2033 (10-year projection). Cumulatively, 17,954 new union and non-union jobs are projected in the 34 selected occupations over the next three years while 38,823 new union and non-union jobs are projected over the next

ten years, representing 3.5% and 7.7% growth from 2023, respectively. This represents an annualized growth of between .8% and 1.2%.

Over three-fourths of the 34 target occupations are projected to experience growth from both 2023-2026 and 2023-2033. Specifically, the "Insulation Workers, Mechanical" occupation is expected to experience relatively high job growth, with the projected number of jobs increasing from 381 to 407 by 2026 (7% increase from 2023) and to 435 by 2033 (14% increase from 2023). The "Electricians" occupation is also projected to continue to grow at a significant rate: an increase of roughly 2,030 jobs by 2026 (6% increase from 2023) and an increase of 4,743 jobs by 2033 (14% increase from 2023) in the Greater LA Area.

Five SOC occupations are projected to decline in both time periods. The "Stonemasons" occupation is estimated to experience a 2.3% decline from 2023 to 2026, and a 6.5% decline from 2023 to 2033. Additionally, the "Drilling and Boring Machine Tool Setters, Operators, and Tenders, Metal and Plastic" occupation is estimated to experience a 4.2% decline from 2023 to 2026, and a 12.8% decline from 2023 to 2033. Other occupations set to decline in both periods include "Brickmasons and Blockmasons," "Tapers," and "Terrazzo Workers and Finishers."

There are six occupations that are not projected to change by a substantive percentage (less than 2%) in the next three or ten years. Most notably, the employment count for the "Drywall and Ceiling Tile Installers" occupation is set to decrease by only 0.4% by 2026 and is estimated to grow by 0.7% by 2033. Similarly, employment in the "Plasterers and Stucco Masons" occupation is projected to lose only six workers by 2026 (a decline of only 0.2%) before making up some ground to grow by 1.5% by 2033.

Notably, in 2023, skilled occupations including masons, ironworkers, and machine operators were identified by LA-area construction contractors as the most difficult positions to fill due to a labor shortage in these occupations.[39] This may be reflected in the projected downwards trends for "Brickmasons and Blockmasons", "Stonemasons", and "Drilling and Boring Machine Tool Setters, Operators, and Tenders, Metal and Plastic", as well as the lower growth for the "Plasterers and Stucco Masons" and "Reinforcing Iron and Rebar Workers" occupations. However, other skilled labor occupations such as "Electricians" and "Operating Engineers" still project strong growth.

Exhibit 8: Projected Regional Employment Demand in 2026 and 2033

SOC	Occupation	Jobs (2023) Actual	Jobs (2026) Projected	Jobs (2033) Projected	% Change (2023 – 2026)	% Change (2023 – 2033)
17-1022	Surveyors	1,792	1,884	1,998	5.15%	11.55%
37-3011	Landscaping and Groundskeeping Workers	70,376	71,558	72,880	1.68%	3.56%
47-2021	Brickmasons and Blockmasons	2,595	2,574	2,548	-0.84%	-1.82%
47-2022	Stonemasons	854	835	799	-2.26%	-6.48%
47-2031	Carpenters	65,452	66,271	66,631	1.25%	1.80%
47-2042	Floor Layers, Except Carpet, Wood, and Hard Tiles	3,490	3,592	3,781	2.95%	8.35%
47-2051	Cement Masons and Concrete Finishers	13,277	13,372	13,177	0.71%	-0.75%

[39] Los Angeles County Metropolitan Transit Authority. (2024, March). 2023 Construction market analysis: Supplemental contractor interview responses on labor availability. https://metro.legistar1.com/metro/attachments/1f8e3b2c-a459-4b37-89f1-f176a74c322f.pdf

SOC	Occupation	Jobs (2023) Actual	Jobs (2026) Projected	Jobs (2033) Projected	% Change (2023 – 2026)	% Change (2023 – 2033)
47-2053	Terrazzo Workers and Finishers	29	28	27	-3.13%	-9.01%
47-2061	Construction Laborers	63,086	65,210	67,791	3.37%	7.46%
47-2071	Paving, Surfacing, and Tamping Equipment Operators	1,002	1,052	1,114	4.97%	11.08%
47-2072	Pile Driver Operators	295	301	304	2.01%	3.27%
47-2073	Operating Engineers and Other Construction Equipment Operators	13,954	14,681	15,579	5.21%	11.65%
47-2081	Drywall and Ceiling Tile Installers	14,939	14,879	15,037	-0.40%	0.66%
47-2082	Tapers	2,037	2,006	1,960	-1.52%	-3.80%
47-2111	Electricians	33,968	35,998	38,711	5.98%	13.96%
47-2121	Glaziers	3,464	3,572	3,702	3.11%	6.86%
47-2131	Insulation Workers, Floor, Ceiling, and Wall	676	707	752	4.61%	11.33%
47-2132	Insulation Workers, Mechanical	381	407	435	6.61%	14.16%
47-2141	Painters, Construction and Maintenance	24,764	25,206	25,826	1.78%	4.29%
47-2151	Pipelayers	1,084	1,121	1,160	3.50%	7.10%
47-2152	Plumbers, Pipefitters, and Steamfitters	22,706	23,725	24,810	4.49%	9.27%
47-2161	Plasterers and Stucco Masons	3,612	3,606	3,668	-0.16%	1.55%
47-2171	Reinforcing Iron and Rebar Workers	1,862	1,886	1,895	1.31%	1.82%
47-2181	Roofers	9,277	9,735	10,173	4.94%	9.67%
47-2211	Sheet Metal Workers	4,654	4,834	4,995	3.87%	7.31%
47-2221	Structural Iron and Steel Workers	3,816	3,938	4,071	3.22%	6.70%
47-4011	Construction and Building Inspectors	6,386	6,587	6,848	3.15%	7.24%
47-4021	Elevator and Escalator Installers and Repairers	1,092	1,141	1,190	4.53%	8.97%
47-4041	Hazardous Materials Removal Workers	3,382	3,547	3,678	4.89%	8.74%
47-4061	Rail-Track Laying and Maintenance Equipment Operators	424	443	486	4.39%	14.66%
49-9051	Electrical Power-Line Installers and Repairers	3,900	4,073	4,191	4.41%	7.44%
51-4032	Drilling and Boring Machine Tool Setters, Operators, and Tenders, Metal and Plastic	467	447	407	-4.19%	-12.77%
51-9023	Mixing and Blending Machine Setters, Operators, and Tenders	3,909	3,993	4,076	2.14%	4.26%
53-3032	Heavy and Tractor-Trailer Truck Drivers	124,236	131,982	141,361	6.23%	13.78%
	Total	**507,238**	**525,192**	**546,061**	**3.54%**	**7.65%**

Source: Lightcast and ICF.

The ICF Team also aggregated this data by construction trade, shown in Exhibit 9. At the more aggregate level, the "Bricklayer and Tile Setter" and the "Plasterer and Cement Mason" trades show decreasing employment over the next ten years.

Exhibit 9: **Projected Regional Employment Demand (Union and Non-Unionized Labor) in 2026 and 2033 in Greater LA by Trade**

Construction Trade	Jobs (2023) Actual	Jobs (2026) Projected	Jobs (2033) Projected	Change 2023-2026	Change 2023-2033
BRICKLAYER AND TILE SETTER	3,479	3,437	3,374	-1.21%	-3.02%
CARPENTER	80,686	81,451	81,972	0.95%	1.59%
ELECTRICIAN	37,868	40,071	42,901	5.82%	13.29%
ELEVATOR CONSTRUCTOR	1,092	1,141	1,190	4.53%	8.97%
INSPECTOR	6,386	6,587	6,848	3.15%	7.24%
IRON WORKER	5,677	5,824	5,967	2.59%	5.10%
LABORER	142,277	145,869	150,019	2.52%	5.44%
OPERATING ENGINEER	15,380	16,176	17,179	5.17%	11.69%
PAINTER	33,755	34,376	35,268	1.84%	4.48%
PLASTERER AND CEMENT MASON	16,889	16,977	16,845	0.52%	-0.26%
PLUMBER AND PIPEFITTER	23,789	24,847	25,970	4.45%	9.17%
ROOFER	9,277	9,735	10,173	4.94%	9.67%
SHEET METAL	4,654	4,834	4,995	3.87%	7.31%
SURVEYOR	1,792	1,884	1,998	5.15%	11.55%
TEAMSTER/DRIVER	124,236	131,982	141,361	6.23%	13.78%
Total	**507,238**	**525,192**	**546,061**	**3.54%**	**7.65%**

Source: Lightcast and ICF.

2.2 Projected Demand on Metro Projects in Annual Hours by Craft and Trade, 2026 and 2033

To project hours of employment on Metro projects per craft and trade through 2033 (Exhibits 10 and 11), the ICF Team estimated the current (2023 base year) Metro construction costs by applying budgeted construction costs[40] to projects identified in Metro's project schedule (as of January 2024)[41] as in an active construction phase in 2023. Total Metro construction costs for 2023 were estimated at $2.13B. The proportion of labor costs is estimated based on industry averages

[40] Metro Adopted Budget FY2024, Appendix V: Transportation Infrastructure Development Project List. Retrieved August 5, 2024 from Finance and Budget - LA Metro.

[41] Metro Program Management Master Schedule, January 2024. Metro provided internal document.

at 35%[42] of construction costs and therefore base year Metro labor construction costs were estimated at $747,000,555. The construction cost estimated in 2023 was applied to the total hours worked for Metro, unionized workers in 2023 from LCPtracker data to determine the construction cost per hour, which was $177.23. The ICF Team used upper and lower bound scenarios to project future labor construction costs. In the Flat (0%) Demand Growth scenario, the ICF team assume Metro labor construction costs and demand will remain flat through 2033 with no increase in labor hours. In the second 2% Demand Growth scenario, the ICF Team estimate Metro construction costs and demand will increase at 2% year over year, based on the Metro's average growth over the last five years sourced from Metro annual budgets.[43] This methodology produced annual labor construction cost estimates for Metro. Subsequently, the percentage of total labor hours for each Metro craft in 2023 was applied to each future year to calculate the required labor hours by Metro craft for each year through 2033. For this analysis, the assumption is that the proportion of labor hours in 2023 for each Metro craft will remain constant relative to the total in each succeeding year. In the flat demand scenario, the hours stay constant at 2023 levels. In the 2% annual growth scenario, the hours needed per craft for Metro projects escalates based on the growing labor costs translated into total annual hours and proportioned based on the 2023 craft mix. Comparing the number of labor hours in 2023 to the number of labor hours estimated for each future year to calculate the number of additional hours required, represents the total demand gap in labor hours.

For example, in the Flat Demand Growth scenario the total projected hours for Metro in 2033 are 4,214,979 (equivalent to 2023 hours) and in the 2% Demand Growth scenario (Exhibit 10), in 2033 the total projected hours for all Metro crafts are 5,138,035. As further example, for the Metro craft "Building / Construction Inspector and Field Soils and Material Tester" specifically, 2033 hours are 216,518. By comparing the number of labor hours in 2023 to the number of labor hours estimated for each future year, the number of additional hours required are calculated, which represents the total demand gap in labor hours. For example, for the Metro craft of "Building / Construction Inspector and Field Soils and Material Tester" the demand gap hours (additional hours needed for 2033) comparing 2023 and 2033 is 38,898 and the total demand gap in 2033 is 923,056 hours.

Exhibit 10: Projected Metro Hours in 2026 and 2033 under 2% Demand Growth Scenario by Craft

Metro Craft	2023 Hours for Unionized Workers on Metro Projects	Projected 2026 Hours for Unionized Workers on Metro Projects	Additional Labor Hours Required for 2026	Projected 2033 Hours for Unionized Workers on Metro Projects	Additional Labor Hours Required for 2033
Apprentice Landscape Irrigation Fitter (2nd Shift)	48	51	3	59	11
Asbestos and Lead Abatement (Laborer)	2,549	2,705	156	3,107	558
Asbestos Worker, Heat and Frost Insulator	1,196	1,269	73	1,458	262
Brick Tender	11,042	11,718	676	13,460	2,418
Bricklayer	865	918	53	1,054	189
Bricklayer, Stonemason	37,838	40,154	2,316	46,124	8,286

[42] Labor costs in construction projects typically range from 20-40% with specialized projects and major urban markets skewing higher in the range. See for example, Labor vs material cost in construction: Overview - Bridgit.
[43] Metro Adopted Budgets FY2020-FY2025, https://budget.metro.net/budget-documents.html. Note that this outpaces EDD Construction Market growth projections in Greater LA (1.6% growth) and the annualized employment growth for the 34 SOC occupations estimated using Lightcast data (.8-1.2% growth).

Metro Craft	2023 Hours for Unionized Workers on Metro Projects	Projected 2026 Hours for Unionized Workers on Metro Projects	Additional Labor Hours Required for 2026	Projected 2033 Hours for Unionized Workers on Metro Projects	Additional Labor Hours Required for 2033
Building / Construction Inspector and Field Soils and Material Tester	177,620	188,492	10,872	216,518	38,898
Carpenter and Related Trades	513,518	544,950	31,431	625,976	112,458
Carpet, Linoleum	272	289	17	332	60
Carpet, Linoleum, Resilient	12	13	1	15	3
Cement Mason	134,682	142,925	8,244	164,176	29,495
Cranes, Pile Driver, and Hoisting Equipment (Operating Engineer)	33,781	35,848	2,068	41,178	7,398
Driver (On/Off-Hauling To/From Construction Site)	74,351	78,902	4,551	90,634	16,282
Drywall Finisher	1,788	1,897	109	2,180	392
Drywall Installer / Lather (Carpenter)	35,125	37,275	2,150	42,817	7,692
Electrical Utility Lineman	6,177	6,555	378	7,530	1,353
Electrician	475,231	504,318	29,088	579,303	104,073
Elevator Constructor	82,236	87,269	5,033	100,245	18,009
Fence Builder (Carpenter)	2	2	0	2	0
Field Surveyor	38,458	40,812	2,354	46,880	8,422
Fire Safety and Miscellaneous Sealing	184	195	11	224	40
Glazier	27,316	28,988	1,672	33,298	5,982
Gunite Worker (Laborer)	9,841	10,443	602	11,996	2,155
Horizontal Directional Drilling	7,135	7,572	437	8,698	1,563
Iron Worker	300,399	318,785	18,387	366,184	65,786
Laborer (Construction, Fence Erector, Gunite, Housemover, Tunnel)	235	249	14	286	51
Laborer and Related Classifications	954,083	1,012,480	58,397	1,163,021	208,939
Landscape Irrigation Fitter	203	216	12	248	44
Landscape Maintenance Laborer	58,772	62,369	3,597	71,643	12,871
Landscape Operating Engineer	175	186	11	213	38
Landscape / Irrigation Laborer / Tender	7,084	7,517	434	8,635	1,551
Marble Finisher	1,506	1,598	92	1,836	330
Modular Furniture Installer (Carpenter)	517	548	32	630	113
Operating Engineer	441,485	468,508	27,022	538,168	96,683
Operating Engineer (Landscape Construction)	134	142	8	163	29
Painter	55,080	58,452	3,371	67,143	12,062
Painter - Industrial	2,602	2,762	159	3,172	570
Parking and Highway Improvement (Striper-Laborer)	3,807	4,040	233	4,640	834
Parking and Highway Improvement (Striping, Slurry and Seal Coat Operations-Laborer)	642	681	39	782	140

Metro Craft	2023 Hours for Unionized Workers on Metro Projects	Projected 2026 Hours for Unionized Workers on Metro Projects	Additional Labor Hours Required for 2026	Projected 2033 Hours for Unionized Workers on Metro Projects	Additional Labor Hours Required for 2033
Pile Driver (Carpenter)	5,237	5,558	321	6,384	1,147
Plaster Tender	9,967	10,577	610	12,149	2,183
Plasterer	13,257	14,068	811	16,160	2,903
Plumber	83,861	88,993	5,133	102,225	18,365
Residential Electrician	8	8	0	10	2
Residential Sheet Metal Worker	341	362	21	416	75
Roofer	41,736	44,291	2,555	50,876	9,140
Sheet Metal Worker	26,026	27,619	1,593	31,726	5,700
Sheet Metal Worker (HVAC)	49,184	52,194	3,010	59,955	10,771
Teamster	36,572	38,811	2,239	44,581	8,009
Telecommunications Technician	341	362	21	416	75
Terrazzo Finisher	187	198	11	228	41
Terrazzo Worker	336	356	21	409	73
Tile Finisher	3,806	4,039	233	4,639	833
Tile Layer	2,466	2,617	151	3,006	540
Tile Setter	176	187	11	215	39
Tree Maintenance (Laborer)	4,255	4,515	260	5,187	932
Tunnel (Operating Engineer)	42,997	45,629	2,632	52,413	9,416
Tunnel Worker (Laborer)	396,239	420,492	24,253	483,013	86,774
Total Construction Labor Hours	**4,214,979**	**4,472,969**	**257,990**	**5,138,035**	**923,056**
Estimated Labor Construction Cost	**747,000,555**	**792,722,965**		**910,589,508**	

Source: LCPtracker and ICF.

To calculate the female labor demand gap, the ICF Team analyzed the LCPtracker data to calculate the sum of female hours incurred per Metro craft in 2023 and the percent of total hours completed by female workers in 2023 for each craft. This craft-specific proportion was applied to each respective Metro craft for each future year being analyzed to determine the projected number of female hours per year. The number of female labor hours required to meet the utilization goal of 6.9% per year was calculated and compared to the estimated female labor hours in each year to determine the additional hours required by female labor needed to satisfy Metro's current and future demand. This metric represents the demand gap in female labor hours which is shown by craft for 2026 and 2033 in Exhibit 11 below. For example, the Metro craft "Building / Construction Inspector and Field Soils and Material Tester" incurred 11,959 female worker hours in 2023 and is projected to use 14,578 hours in 2033 based on future demand growth projections. To reach the 6.9% utilization goal, this craft needs to incur 14,940 total female hours in conjunction with accretions in hours for other crafts listed in the Exhibit 11. Thus, the additional hours required to meet this utilization goal, or the female labor hours demand gap, for the "Building / Construction Inspector and Field Soils and Material Tester" craft in 2033 is 362 female hours. In Appendix D, the variables reflected in Exhibits 10 and 11 are shown for each year from 2024 to 2033. Specifically, these tables enumerate the estimated total labor hours and female

labor hours for each craft and year based on Metro's future project pipeline and show the additional female hours needed for each craft and year to achieve the 6.9% annual utilization target.

Exhibit 11: Projected Female Metro Hours in 2026 and 2033 under 2% Demand Growth Scenario by Craft

Metro Craft	2023 Hours for Female Workers on Metro Projects	Projected 2026 Hours for Female Workers on Metro Projects	Number of 2026 Female Hours Required to Meet Utilization Target	Additional 2026 Female Hours Required to Meet Utilization Target	Projected 2033 Hours for Female Workers on Metro Projects	Number of 2033 Female Hours Required to Meet Utilization Target	Additional 2033 Female Hours Required to Meet Utilization Target
Apprentice Landscape Irrigation Fitter (2nd Shift)	-	-	4	4	-	4	4
Asbestos and Lead Abatement (Laborer)	-	-	187	187	-	214	214
Asbestos Worker, Heat and Frost Insulator	40	42	88	45	49	101	52
Brick Tender	-	-	809	809	-	929	929
Bricklayer	-	-	63	63	-	73	73
Bricklayer, Stonemason	-	-	2,771	2,771	-	3,183	3,183
Building / Construction Inspector and Field Soils and Material Tester	11,959	12,691	13,006	315	14,578	14,940	362
Carpenter and Related Trades	12,370	13,127	37,602	24,475	15,079	43,192	28,114
Carpet, Linoleum	-	-	20	20	-	23	23
Carpet, Linoleum, Resilient	-	-	1	1	-	1	1
Cement Mason	298	316	9,862	9,546	363	11,328	10,965
Cranes, Pile Driver, and Hoisting Equipment (Operating Engineer)	779	826	2,474	1,647	949	2,841	1,892
Driver (On/Off-Hauling To/From Construction Site)	836	887	5,444	4,557	1,019	6,254	5,235
Drywall Finisher	-	-	131	131	-	150	150
Drywall Installer / Lather (Carpenter)	218	231	2,572	2,341	266	2,954	2,689
Electrical Utility Lineman	-	-	452	452	-	520	520
Electrician	24,984	26,513	34,798	8,285	30,455	39,972	9,517
Elevator Constructor	7,152	7,590	6,022	(1,568)	8,718	6,917	(1,801)
Fence Builder (Carpenter)	-	-	0	0	-	0	0
Field Surveyor	486	516	2,816	2,300	592	3,235	2,642

Metro Craft	2023 Hours for Female Workers on Metro Projects	Projected 2026 Hours for Female Workers on Metro Projects	Number of 2026 Female Hours Required to Meet Utilization Target	Additional 2026 Female Hours Required to Meet Utilization Target	Projected 2033 Hours for Female Workers on Metro Projects	Number of 2033 Female Hours Required to Meet Utilization Target	Additional 2033 Female Hours Required to Meet Utilization Target
Fire Safety and Miscellaneous Sealing	-	-	13	13	-	15	15
Glazier	293	311	2,000	1,689	357	2,298	1,940
Gunite Worker (Laborer)	-	-	721	721	-	828	828
Horizontal Directional Drilling	-	-	522	522	-	600	600
Iron Worker	9,341	9,913	21,996	12,083	11,387	25,267	13,880
Laborer (Construction, Fence Erector, Gunite, Housemover, Tunnel)	-	-	17	17	-	20	20
Laborer and Related Classifications	54,689	58,037	69,861	11,824	66,666	80,248	13,583
Landscape Irrigation Fitter	-	-	15	15	-	17	17
Landscape Maintenance Laborer	508	539	4,303	3,765	619	4,943	4,325
Landscape Operating Engineer	-	-	13	13	-	15	15
Landscape / Irrigation Laborer / Tender	-	-	519	519	-	596	596
Marble Finisher	-	-	110	110	-	127	127
Modular Furniture Installer (Carpenter)	-	-	38	38	-	43	43
Operating Engineer	4,204	4,461	32,327	27,866	5,124	37,134	32,009
Operating Engineer (Landscape Construction)	-	-	10	10	-	11	11
Painter	2,089	2,217	4,033	1,816	2,546	4,633	2,086
Painter - Industrial	1,216	1,291	191	(1,100)	1,483	219	(1,264)
Parking and Highway Improvement (Striper-Laborer)	47	50	279	229	57	320	263
Parking and Highway Improvement (Striping, Slurry and Seal Coat Operations-Laborer)	-	-	47	47	-	54	54
Pile Driver (Carpenter)	-	-	383	383	-	440	440
Plaster Tender	-	-	730	730	-	838	838
Plasterer	504	535	971	436	614	1,115	501

Metro Craft	2023 Hours for Female Workers on Metro Projects	Projected 2026 Hours for Female Workers on Metro Projects	Number of 2026 Female Hours Required to Meet Utilization Target	Additional 2026 Female Hours Required to Meet Utilization Target	Projected 2033 Hours for Female Workers on Metro Projects	Number of 2033 Female Hours Required to Meet Utilization Target	Additional 2033 Female Hours Required to Meet Utilization Target
Plumber	3,088	3,276	6,141	2,864	3,764	7,054	3,290
Residential Electrician	-	-	1	1	-	1	1
Residential Sheet Metal Worker	-	-	25	25	-	29	29
Roofer	2,072	2,199	3,056	857	2,526	3,510	985
Sheet Metal Worker	1,080	1,146	1,906	760	1,317	2,189	873
Sheet Metal Worker (HVAC)	-	-	3,601	3,601	-	4,137	4,137
Teamster	3,532	3,748	2,678	(1,070)	4,305	3,076	(1,229)
Telecommunications Technician	-	-	25	25	-	29	29
Terrazzo Finisher	-	-	14	14	-	16	16
Terrazzo Worker	-	-	25	25	-	28	28
Tile Finisher	-	-	279	279	-	320	320
Tile Layer	-	-	181	181	-	207	207
Tile Setter	-	-	13	13	-	15	15
Tree Maintenance (Laborer)	-	-	312	312	-	358	358
Tunnel (Operating Engineer)	-	-	3,148	3,148	-	3,617	3,617
Tunnel Worker (Laborer)	15,772	16,737	29,014	12,277	19,225	33,328	14,103
Total Female Labor Hours	**157,554**	**167,198**	**308,635**	**141,437**	**192,058**	**354,524**	**162,467**

Source: LCPtracker and ICF.

Additionally, to illustrate the female current and future demand by construction trade, the ICF Team mapped each craft to its respective construction trade to show current and future demand gaps (Exhibits 12 and 13). For example, in Exhibit 13 the Teamster/Drive trade will need an additional 4,005 hours in 2033 to meet projected demand. Appendix E illustrates the female labor hours for each trade and year based on Metro's future project pipeline and shows the additional female hours needed for each trade and year to achieve the 6.9% utilization target on an annual basis.

Exhibit 12: Current Female Workforce Gap on Metro Projects in 2023 by Trade

Construction Trade	2023 Hours (Actual)	Female Hours Required for 6.9%	2023 Female Hours (Actual)	Current Female Workforce Gap
BRICKLAYER AND TILE SETTER	47,180	3,255	-	3,255
CARPENTER	554,399	38,254	12,588	25,666
ELECTRICIAN	481,757	33,241	24,984	8,258
ELEVATOR CONSTRUCTOR	82,236	5,674	7,152	(1,478)
INSPECTOR	177,620	12,256	11,959	297
IRON WORKER	300,399	20,728	9,341	11,387
LABORER	1,467,077	101,228	71,055	30,173
OPERATING ENGINEER	518,571	35,781	4,204	31,578
PAINTER	87,071	6,008	3,598	2,410
PLASTERER AND CEMENT MASON	147,939	10,208	802	9,406
PLUMBER AND PIPEFITTER	84,064	5,800	3,088	2,713
ROOFER	41,736	2,880	2,072	808
SHEET METAL	75,551	5,213	1,080	4,133
SURVEYOR	38,458	2,654	486	2,168
TEAMSTER/DRIVER	110,923	7,654	5,146	2,507
Total	**4,214,979**	**290,834**	**157,554**	**133,279**

Source: LCPtracker and ICF.

Exhibit 13: Projected Female Metro Hours in 2026 and 2033 under 2% Demand Growth Scenario by Trade

Construction Trade	Actual 2023 Hours for Female Workers on Metro Projects	Projected 2026 Hours for Female Workers on Metro Projects	Number of 2026 Female Hours Required to Meet Utilization Target	Additional 2026 Female Hours Required to Meet Utilization Target	Projected 2033 Hours for Female Workers on Metro Projects	Number of 2033 Female Hours Required to Meet Utilization Target	Additional 2033 Female Hours Required to Meet Utilization Target
BRICKLAYER AND TILE SETTER	0	0	3,455	3,455	0	3,968	3,968
CARPENTER	12,588	13,358	40,595	27,237	15,344	46,631	31,286
ELECTRICIAN	24,984	26,513	35,276	8,763	30,455	40,521	10,066
ELEVATOR CONSTRUCTOR	7,152	7,590	6,022	(1,568)	8,718	6,917	(1,801)
INSPECTOR	11,959	12,691	13,006	315	14,578	14,940	362
IRON WORKER	9,341	9,913	21,996	12,083	11,387	25,267	13,880
LABORER	71,055	75,404	107,424	32,020	86,616	123,397	36,781

Construction Trade	Actual 2023 Hours for Female Workers on Metro Projects	Projected 2026 Hours for Female Workers on Metro Projects	Number of 2026 Female Hours Required to Meet Utilization Target	Additional 2026 Female Hours Required to Meet Utilization Target	Projected 2033 Hours for Female Workers on Metro Projects	Number of 2033 Female Hours Required to Meet Utilization Target	Additional 2033 Female Hours Required to Meet Utilization Target
OPERATING ENGINEER	4,982	5,287	37,972	32,684	6,073	43,617	37,544
PAINTER	3,598	3,819	6,376	2,557	4,386	7,324	2,937
PLASTERER AND CEMENT MASON	802	851	10,833	9,981	978	12,443	11,466
PLUMBER AND PIPEFITTER	3,088	3,276	6,155	2,879	3,764	7,071	3,307
ROOFER	2,072	2,199	3,056	857	2,526	3,510	985
SHEET METAL	1,080	1,146	5,532	4,386	1,317	6,355	5,038
SURVEYOR	486	516	2,816	2,300	592	3,235	2,642
TEAMSTER/DRIVER	4,368	4,635	8,122	3,487	5,325	9,330	4,005
Total Female Labor Hours	**157,554**	**167,198**	**308,635**	**141,437**	**192,058**	**354,524**	**162,467**

Source: LCPtracker and ICF.

C& D Current and Future Workforce Gap Analyses

3. Current and Future Workforce Gap Analyses

The ICF team compared measures of construction labor supply and demand to project the workforce gap both regionally and specifically for Metro projects. These projections consider different growth scenarios for the labor supply and demand from 2024 to 2033.

3.1 Projected Female Metro Workforce Gap

EA developed supply side labor projections using historical Greater LA data from LCPtracker. To capture the volatility in many of the trades over the past five years, EA developed Rapid Growth, Moderate Growth, No Growth, and Decline scenarios for each trade. To incorporate supply-side projections into the gap analysis, the ICF Team developed scenarios assuming Moderate and Rapid growth supply. The projected supply for each scenario includes the number of projected female hours in Greater LA Area by trade and by year from through 2033. Because the supply scenarios represent projections for Greater LA region, not all of which would be available to Metro based on competition for these resources, supply side availability of female labor for Metro contractors was estimated based on the historical average of the percent of the Greater LA female supply Metro captured from 2019-2023 by trade. For example, on average historically over the last five years Metro has captured 78% of the “Elevator Constructor” trade and 6.5% of the “Surveyor” trade. The female supply projections for Greater LA were

multiplied by the historical percent of female supply that Metro has captured to create hour supply estimates by year and trade. See Appendix F.

Using the two demand and two supply scenarios, the ICF team compared demand and supply estimates under the four resulting scenarios (Flat Demand/Moderate Supply Growth, 2% Demand/Moderate Supply Growth, Flat Demand/Rapid Supply Growth, and 2% Demand Growth/Rapid Supply Growth) to project the annual gap in female labor hours and projected female utilization rate by year. For the Flat (0%) Demand Growth/Moderate Supply Growth scenario, Exhibit 14 shows the current or base year (2023) gap between 2023 female hours and the female hours that would be needed to meet an annual 6.9% female participation rate of 133,280 hours. That gap decreases as demand remains flat and supply moderately increases and by 2033 is 48,942 hours. The projected annual female utilization rate is 4.56% in 2026 and 5.74% by 2033, under this scenario.

Exhibit 14. Metro Female Annual Gap & Utilization: Flat (0%) Demand Growth and Moderate Supply Growth, Current, 3-Year, and 10-Year Projections

Scenario: Flat (0%) Demand Growth and Moderate Supply Growth	Female Labor Hours 2023 (Current)	Female Labor Hours 2026 (Projected)	Female Labor Hours 2033 (Projected)
Projected Total Hours (all genders)	4,214,979	4,214,979	4,214,979
Projected Female Hours at 2023 Participation Rate	157,554	157,554	157,554
Female hours required to meet target utilization	290,834	290,834	290,834
Additional female hours needed to meet target utilization	133,279	133,279	133,279
Projected female hours available to Metro (supply)	157,554	192,384	241,891
Difference between available female hours and projected demand at 2023 participation rate	--	34,829	84,337
Difference between available female hours and hours needed to meet target utilization rate	**(133,280)**	**(98,450)**	**(48,942)**
Metro Percent Female Hours	3.74%	3.74%	3.74%
Percent Female Hours required to meet target utilization	6.90%	6.90%	6.90%
Metro Female Hours as % of total hours (Female Participation)	**3.74%**	**4.56%**	**5.74%**

Sources: LCPtracker, ICF, and Estolano Advisors. Note: Base year female utilization is calculated from LCPtracker data and may vary slightly from other point in time estimates of Metro female utilization.

Exhibit 15 shows the three- and ten-year projections, assuming demand is increasing at 2% a year and moderate supply growth. As expected, the female workforce gap is larger than under the previous scenario and by 2033 the female utilization rate is at 4.71%.

Exhibit 15. Metro Female Annual Gap & Utilization: 2% Annual Demand Growth and Moderate Supply Growth, Three-Year and Ten-Year Projections

Scenario: 2% Demand Growth and Moderate Supply Growth	Female Labor Hours 2026 (Projected)	Female Labor Hours 2033 (Projected)
Projected Total Hours (all genders)	4,472,969	5,138,035

Projected Female Hours at 2023 Participation Rate	167,198	192,058
Female hours required to meet target utilization	308,635	354,524
Additional female hours needed to meet target utilization	141,437	162,467
Projected female hours available to Metro (supply)	192,384	241,891
Difference between available female hours and projected demand at 2023 participation rate	25,186	49,833
Difference between available female hours and hours needed to meet target utilization rate	**(116,251)**	**(112,633)**
Metro Female Hours as % of total hours (Female Participation)	**4.30%**	**4.71%**

Sources: LCPtracker, ICF, and Estolano Advisors.

In the most optimistic scenario modeled, Flat (0%) Demand Growth and Rapid Supply Growth, Metro contractors could surpass the 6.9% goal for female utilization by 2032, on an annual basis, reaching 7.08% in 2032 and 7.42% in 2033. See Exhibit 16. In the final scenario, Exhibit 17, 2% Demand Growth per year and Rapid Supply Growth, female utilization surpasses 6% by 2033 but not does reach 6.9% within the ten-year period.

Exhibit 16. Metro Female Annual Gap & Utilization: Flat Demand Growth and Rapid Supply Growth, Three-Year and Years 8-10 Projections

Scenario: Flat (0%) Demand Growth and Rapid Supply Growth	Female Labor Hours 2026 (Projected)	Female Labor Hours 2031 (Projected)	Female Labor Hours 2032 (Projected)	Female Labor Hours 2033 (Projected)
Projected Total Hours (all genders)	4,214,979	4,214,979	4,214,979	4,214,979
Projected Female Hours at 2023 Participation Rate	157,554	157,554	157,554	157,554
Female hours required to meet target utilization	290,834	290,834	290,834	290,834
Additional female hours needed to meet target utilization	133,279	133,279	133,279	133,279
Projected female hours available to Metro (supply)	213,601	284,326	298,471	312,616
Difference between available female hours and projected demand at 2023 participation rate	56,047	126,772	140,917	155,062
Difference between available female hours and hours needed to meet target utilization rate	**(77,232)**	**(6,507)**	**7,638**	**21,783**
Metro Female Hours as % of total hours (Female Participation)	**5.07%**	**6.75%**	**7.08%**	**7.42%**

Sources: LCPtracker, ICF, and Estolano Advisors.

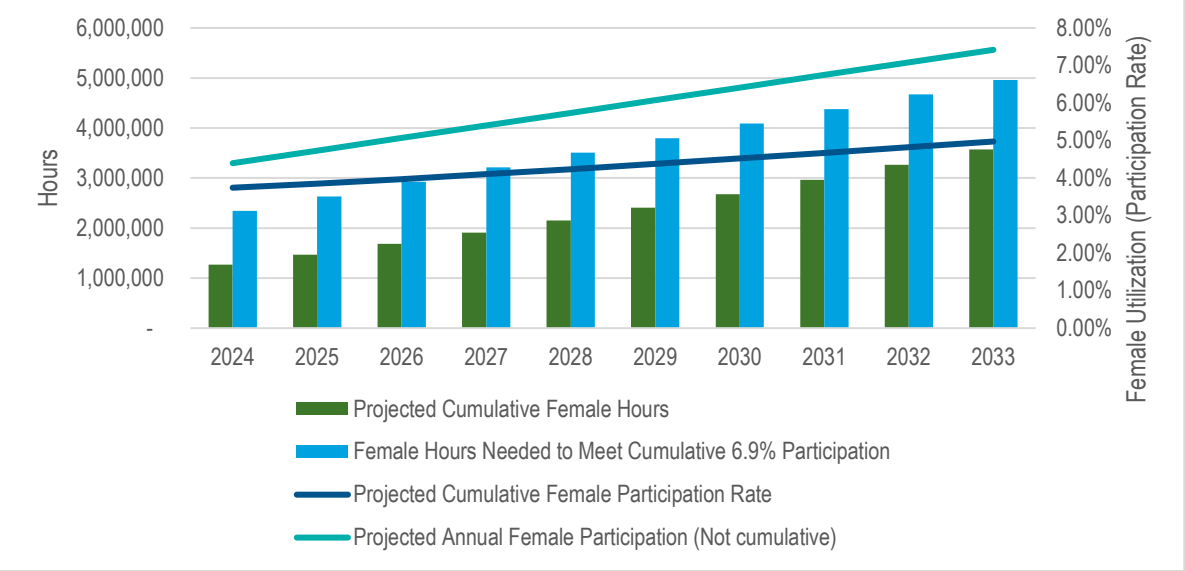
Exhibit 17. Metro Female Annual Gap & Utilization: 2% Annual Demand Growth and Rapid Supply Growth, Three-Year and Ten-Year Projections

Scenario: 2% Demand Growth and Rapid Supply Growth	Female Labor Hours 2026 (Projected)	Female Labor Hours 2033 (Projected)
Projected Total Hours (all genders)	4,472,969	5,138,035

Projected Female Hours at 2023 Participation Rate	167,198	192,058
Female hours required to meet target utilization	308,635	354,524
Additional female hours needed to meet target utilization	141,437	162,467
Projected female hours available to Metro (supply)	213,601	312,616
Difference between available female hours and projected demand at 2023 participation rate	46,403	120,559
Difference between available female hours and hours needed to meet target utilization rate	**(95,034)**	**(41,908)**
Metro Female Hours as % of total hours (Female Participation)	**4.78%**	**6.08%**

As noted above, under the most favorable scenario modeled: Flat Demand Growth and Rapid Supply Growth, Metro contractors could achieve a 7.08% female utilization in 2032 and 7.42% in 2033, on an annual basis. However, due to historical hours (29.7M as of November 2023)[44] included in the PLA utilization calculations and Metro contractors' historical female utilization rates below 2023 levels dating back to 2012, the cumulative female utilization would still be less than 5% by 2033. Under the most optimistic scenario, the graph in Exhibit 18, shows the difference between the Female Utilization rate annually each year and the lower cumulative rate when accounting for historical hours. Cumulative female utilization increases at a lower rate than annual utilization because it is weighted by lower historical female utilization rates. Exhibit 19 below shows for each of the four scenarios, the projected cumulative female utilization rate for 2026 and 2033 accounting for historical PLA hours and female utilization rates. The cumulative Female Utilization rate in 2033 under the four scenarios ranges from 4.15% (with a shortfall in hours of 2.11M) under a 2% annual demand growth, moderate supply growth scenario to 4.97% (with a shortfall in hours of 1.39M) assuming flat demand growth and rapid supply growth. If demand were to increase more than the 2% annual projected growth, under both the moderate and rapid supply growth scenarios Female Utilization rates would be lower than those shown here, all other assumptions equal.

Exhibit 18. Metro Annual and Cumulative Female Utilization: Flat Demand Growth and Rapid Supply Growth, 2024-2033



[44] Sourced from Metro provided PLA documents.

Exhibit 19. Metro Cumulative Female Workforce Gap & Utilization: All Scenarios, Three-Year and 10-Year Projections

Scenario: Flat (0%) Demand Growth and Moderate Supply Growth	2026	2033
Projected Cumulative Hours	42,379,823	71,884,672
Projected Cumulative Female Hours	1,641,318	3,186,034
Projected Cumulative Female Utilization Rate	**3.87%**	**4.43%**
Cumulative Female Hours Needed to Reach 6.9% Utilization	2,924,208	4,960,042
Scenario: 2% Demand Growth and Moderate Supply Growth		
Projected Cumulative Hours	42,892,398	76,810,783
Projected Cumulative Female Hours	1,641,318	3,186,034
Projected Cumulative Female Utilization Rate	**3.83%**	**4.15%**
Cumulative Female Hours Needed to Reach 6.9% Utilization	2,959,575	5,299,944
Scenario: Flat (0%) Demand Growth and Rapid Supply Growth		
Projected Cumulative Hours	42,379,823	71,884,672
Projected Cumulative Female Hours	1,683,753	3,575,022
Projected Cumulative Female Utilization Rate	**3.97%**	**4.97%**
Cumulative Female Hours Needed to Reach 6.9% Utilization	2,924,208	4,960,042
Scenario: 2% Demand Growth and Rapid Supply Growth		
Projected Cumulative Hours	42,892,398	76,810,783
Projected Cumulative Female Hours	1,683,753	3,575,022
Projected Cumulative Female Utilization Rate	**3.93%**	**4.65%**
Cumulative Female Hours Needed to Reach 6.9% Utilization	2,959,575	5,299,944

Source: LCPtracker, ICF, and Estolano Advisors.

3.2 Projected Female Metro Workforce Gap by Trade

The ICF Team also calculated the annual female utilization and gap for each trade through 2033. As shown in Exhibit 20, historically over the last five years, the top five trades with the most hours annually on Metro projects are: Laborers, Electricians, Operating Engineers, Carpenters, and Iron Workers. Trades with the highest number of female hours over the 2019-2023 period are: Laborers, Electricians, Carpenters, Iron Workers, and Inspectors. The trades with highest average female utilization from 2019-2023 are Inspector, Elevator Constructor, Plumber and Pipefitter, Laborer, and Electrician, though none meet the target utilization goal when looking at the average over five years.

Exhibit 20. Hours and Female Utilization on Metro Construction Projects, 2019-2023

Construction Trade	All Hours (2019-2023)	Female Hours (2019-2023)	Average Female Utilization
BRICKLAYER AND TILE SETTER	51,455	-	0.00%
CARPENTER	2,313,989	71,455	3.09%
ELECTRICIAN	3,036,702	124,789	4.11%
ELEVATOR CONSTRUCTOR	442,879	22,798	5.15%
INSPECTOR	776,406	41,435	5.34%

IRON WORKER	1,199,382	42,009	3.50%
LABORER	8,049,139	376,251	4.67%
OPERATING ENGINEER	2,619,518	29,522	1.13%
PAINTER	367,025	12,331	3.36%
PLASTERER AND CEMENT MASON	645,272	3,197	0.50%
PLUMBER AND PIPEFITTER	336,765	16,408	4.87%
ROOFER	81,677	2,579	3.16%
SHEET METAL	283,736	6,651	2.34%
SURVEYOR	240,671	2,388	0.99%
TEAMSTER/DRIVER	1,081,961	18,456	1.71%
Total	**21,526,576**	**770,268**	**3.58%**

Source: LCPtracker, ICF and Estolano Advisors.

To project the female workforce gap and the projected female utilization for each trade, the ICF Team used the Moderate and Rapid Supply Growth scenarios developed by EA and scaled the projected Greater LA supply estimates to account for competition for the regional labor supply. Supply estimates for each trade were scaled based on the average percent of the female labor supply that Metro has captured out of the Greater LA female labor supply over the last five years. See Appendix F.

For the most and least optimistic scenarios, (Exhibits 21 and 22), annual projections for 2033 female utilization by trade for the top five Metro trades range from: Laborer: (5.72%-8.48%); Electrician: (5.35%-7.63%); Iron Workers: (3.80%-6.48%); Carpenters: (2.66%-4.21%) and Operating Engineer: (1.50%-2.49%).

Exhibit 21. Projected Female Workforce Gap and Utilization by Trade: Flat (0%) Demand Growth; Rapid Supply Growth, 2033 (Most Optimistic Scenario for achieving 6.9% female utilization)

Trade	Projected Hours 2033	Female Hours Required to Meet 6.9% 2033	Projected Female Hours (Supply) Available to Metro 2033	Female Workforce Gap - Hours 2033	Projected Female Utilization 2033
BRICKLAYER AND TILE SETTER	47,180	3,255	0	(3,255)	0.00%
CARPENTER	554,398.90	38,253.52	23,351	(14,902.28)	4.21%
ELECTRICIAN	481,756.50	33,241.20	36,762	3,521.04	7.63%
ELEVATOR CONSTRUCTOR	82,235.64	5,674.26	18,371	12,697.15	22.34%
INSPECTOR	177,620.27	12,255.80	32,472	20,216.24	18.28%
IRON WORKER	300,398.59	20,727.50	19,463	(1,264.69)	6.48%
LABORER	1,467,076.69	101,228.29	124,357	23,128.34	8.48%
OPERATING ENGINEER	518,571.36	35,781.42	12,923	(22,858.37)	2.49%
PAINTER	87,070.58	6,007.87	6,304	296.07	7.24%
PLASTERER AND CEMENT MASON	147,938.75	10,207.77	2,430	(7,777.60)	1.64%
PLUMBER AND PIPEFITTER	84,063.60	5,800.39	14,845	9,044.15	17.66%

ROOFER	41,736.00	2,879.78	1,575	(1,305.03)	3.77%
SHEET METAL	75,551.00	5,213.02	3,359	(1,854.18)	4.45%
SURVEYOR	38,457.75	2,653.58	1,366	(1,287.11)	3.55%
TEAMSTER/DRIVER	110,923.39	7,653.71	15,038	7,384.58	13.56%
Total	**4,214,979**	**290,834**	**312,616**	**21,783**	**7.42%**

Source: LCPtracker, ICF and Estolano Advisors.

Exhibit 22. Projected Female Workforce Gap and Utilization by Trade: 2% Demand Growth; Moderate Supply Growth, 2033 (Least Optimistic Scenario for achieving 6.9% female utilization)

Trade	Projected Hours 2033	Female Hours Required to Meet 6.9% 2033	Projected Female Hours (Supply) Available to Metro 2033	Female Workforce Gap - Hours 2033	Projected Female Utilization 2033
BRICKLAYER AND TILE SETTER	57,512	3,968	0	(3,968)	0.00%
CARPENTER	675,809.17	46,630.83	18,004.39	(28,626.44)	2.66%
ELECTRICIAN	587,258.49	40,520.84	31,398.64	(9,122.20)	5.35%
ELEVATOR CONSTRUCTOR	100,244.79	6,916.89	12,805.27	5,888.38	12.77%
INSPECTOR	216,518.12	14,939.75	22,243.73	7,303.98	10.27%
IRON WORKER	366,184.20	25,266.71	13,930.22	(11,336.49)	3.80%
LABORER	1,788,358.30	123,396.72	102,251.05	(21,145.67)	5.72%
OPERATING ENGINEER	632,135.59	43,617.36	9,492.50	(34,124.86)	1.50%
PAINTER	106,138.55	7,323.56	4,750.11	(2,573.45)	4.48%
PLASTERER AND CEMENT MASON	180,336.51	12,443.22	1,707.02	(10,736.20)	0.95%
PLUMBER AND PIPEFITTER	102,473.06	7,070.64	10,512.28	3,441.64	10.26%
ROOFER	50,875.95	3,510.44	1,155.45	(2,354.99)	2.27%
SHEET METAL	92,096.25	6,354.64	2,449.67	(3,904.97)	2.66%
SURVEYOR	46,879.78	3,234.71	905.89	(2,328.81)	1.93%
TEAMSTER/DRIVER	135,214.99	9,329.83	10,284.99	955.16	7.61%
Total	**5,138,035**	**354,524**	**241,891**	**(112,633)**	**4.71%**

Source: LCPtracker, ICF and Estolano Advisors.

Exhibits 23 and 24 show the projected progression of female utilization rates for each Trade under the most optimistic and least optimistic scenarios. Under the most optimistic scenario, 7 of the 15 trades would exceed 6.9% female utilization by 2033, some by significant margins. Under the least optimistic scenario, four trades are projected to exceed 6.9% by 2033 (Elevator Constructor, Inspector, Plumber and Pipefitter, and Teamster/Driver).

Exhibit 23. Projected Annual Female Utilization by Trade, 3-, 5-, and 10- year projections: Flat (0%) Demand Growth; Rapid Supply Growth (Most Optimistic Scenario for achieving 6.9% female utilization)

Trade	Current Female Utilization (2023)	Projected Female Utilization (2026)	Projected Female Utilization (2029)	Projected Female Utilization (2033)

BRICKLAYER AND TILE SETTER	0.00%	0.00%	0.00%	0.00%
CARPENTER	2.27%	2.86%	3.44%	4.21%
ELECTRICIAN	5.19%	6.07%	6.74%	7.63%
ELEVATOR CONSTRUCTOR	8.70%	12.86%	16.93%	22.34%
INSPECTOR	6.73%	10.22%	13.67%	18.28%
IRON WORKER	3.11%	3.90%	5.01%	6.48%
LABORER	4.84%	6.37%	7.27%	8.48%
OPERATING ENGINEER	0.96%	1.57%	1.96%	2.49%
PAINTER	4.13%	4.74%	5.81%	7.24%
PLASTERER AND CEMENT MASON	0.54%	0.96%	1.25%	1.64%
PLUMBER AND PIPEFITTER	3.67%	10.44%	13.54%	17.66%
ROOFER	4.96%	2.37%	2.97%	3.77%
SHEET METAL	1.43%	2.76%	3.48%	4.45%
SURVEYOR	1.26%	1.88%	2.60%	3.55%
TEAMSTER/DRIVER	3.94%	7.56%	10.13%	13.56%
Total	**3.74%**	**5.07%**	**6.07%**	**7.42%**

Source: LCPtracker, ICF and Estolano Advisors.

Exhibit 24. Projected Annual Utilization by Trade, 3-, 5- and 10- year projections: 2% Demand Growth; Moderate Supply Growth, 2033 (Least Optimistic Scenario for achieving 6.9% female utilization)

Trade	Current Female Utilization (2023)	Projected Female Utilization (2026)	Projected Female Utilization (2029)	Projected Female Utilization (2033)
BRICKLAYER AND TILE SETTER	0.00%	0.00%	0.00%	0.00%
CARPENTER	2.27%	2.42%	2.54%	2.66%
ELECTRICIAN	5.19%	5.41%	5.39%	5.35%
ELEVATOR CONSTRUCTOR	8.70%	10.21%	11.42%	12.77%
INSPECTOR	6.73%	8.00%	9.07%	10.27%
IRON WORKER	3.11%	3.15%	3.46%	3.80%
LABORER	4.84%	5.57%	5.65%	5.72%
OPERATING ENGINEER	0.96%	1.29%	1.39%	1.50%
PAINTER	4.13%	3.96%	4.21%	4.48%
PLASTERER AND CEMENT MASON	0.54%	0.76%	0.85%	0.95%
PLUMBER AND PIPEFITTER	3.67%	8.38%	9.27%	10.26%
ROOFER	4.96%	1.95%	2.10%	2.27%
SHEET METAL	1.43%	2.26%	2.45%	2.66%
SURVEYOR	1.26%	1.43%	1.67%	1.93%
TEAMSTER/DRIVER	3.94%	5.91%	6.71%	7.61%
Total	**3.74%**	**4.30%**	**4.50%**	**4.71%**

Source: LCPtracker, ICF and Estolano Advisors.

3.3 Projections for Achieving 6.9% Female Utilization

Only the most optimistic scenario, Flat (0%) Demand Growth / Rapid Supply Growth is projected to achieve an average 6.9% annual female utilization by 2033. Looking at a longer 20-year timeline, the two middle scenarios (Flat (0%) Demand Growth / Moderate Supply Growth and 2% Demand Growth / Rapid Supply Growth would also achieve a 6.9% annual female utilization rate. The most optimistic scenario would also near cumulative 6.9% female utilization (accounting for historical PLA hours) by 2045. The least optimistic scenario would not achieve an average 6.9% female utilization by 2025. The Exhibit below shows the projected time to achieve 6.9% female utilization through 2045. Appendix G shows the projected female utilization rates by trade for the most optimistic scenario and Flat (0%) Demand Growth / Moderate Supply Growth.

Exhibit 25: Projected Year to Achieve 6.9% Female Utilization, through 2045

Scenario	Year to Achieve 6.9% Annually	Year to Achieve 6.9% Cumulatively
Flat (0%) Demand Growth and Moderate Supply Growth	2040	n/a
Flat (2%) Demand Growth and Moderate Supply Growth (least optimistic)	n/a	n/a
Flat (0%) Demand Growth and Rapid Supply Growth (most optimistic)	2032	2045
Flat (2%) Demand Growth and Rapid Supply Growth	2040	n/a

Appendices

Appendix A: Occupation Mapping

Metro Craft	SOC Occupation Equivalent(s)	SOC Code Equivalent(s)
Apprentice Landscape Irrigation Fitter (2nd Shift)	Construction Laborers	47-2061
Asbestos and Lead Abatement (Laborer)	Hazardous Materials Removal Workers	47-4041
Asbestos Worker, Heat and Frost Insulator	Construction Laborers	47-2061
Brick Tender	Construction Laborers	47-2061
Bricklayer	Brickmasons and Blockmasons	47-2021
Bricklayer, Stonemason	Stonemasons	47-2024
Building / Construction Inspector and Field Soils and Material Tester	Construction and Building Inspectors	47-4011
Carpenter and Related Trades	Carpenters	47-2031
Carpet, Linoleum	Floor Layers, Except Carpet, Wood, and Hard Tiles	47-2042
Carpet, Linoleum, Resilient	Floor Layers, Except Carpet, Wood, and Hard Tiles	47-2042
Cement Mason	Cement Masons and Concrete Finishers	47-2051
Cranes, Pile Driver and Hoisting Equipment (Operating Engineer)	Operating Engineers and Other Construction Equipment Operators	47-2073
Driver (On/Off-Hauling To/From Construction Site)	Heavy and Tractor-Trailer Truck Drivers	53-3032
Drywall Finisher	Tapers	47-2082
Drywall Installer / Lather (Carpenter)	Drywall and Ceiling Tile Installers	47-2081
Electrical Utility Lineman	Electrical Power-Line Installers and Repairers	49-9051
Electrician	Electricians	47-2111
Elevator Constructor	Elevator and Escalator Installers and Repairers	47-4021
Fence Builder (Carpenter)	Carpenters	47-2031
Field Surveyor	Surveyors	17-1022
Fire Safety and Miscellaneous Sealing	Insulation Workers, Floor, Ceiling, and Wall; Insulation Workers, Mechanical	47-2131; 47-2132
Glazier	Glaziers	47-2121
Gunite Worker (Laborer)	Mixing and Blending Machine Setters, Operators and Tenders	51-9023
Horizontal Directional Drilling	Drilling and Boring Machine Tool Setters, Operators, and Tenders, Metal and Plastic	51-4032
Iron Worker	Structural Iron and Steel Workers; Reinforcing Iron and Rebar Workers	47-2221; 47-2171
Laborer (Construction, Fence Erector, Gunite, HouseMover, Tunnel)	Construction Laborers	47-2061
Laborer and Related Classifications	Construction Laborers	47-2061
Landscape Irrigation Fitter	Pipelayers	47-2151
Landscape Maintenance Laborer	Landscaping and Groundskeeping Workers	37-3011

Metro Craft	SOC Occupation Equivalent(s)	SOC Code Equivalent(s)
Landscape Operating Engineer	Operating Engineers and Other Construction Equipment Operators	47-2073
Landscape/Irrigation Laborer/Tender	Landscaping and Groundskeeping Workers	37-3011
Marble Finisher	Terrazzo Workers and Finishers	47-2053
Modular Furniture Installer (Carpenter)	Carpenters	47-2031
Operating Engineer	Operating Engineers and Other Construction Equipment Operators; Rail-Track Laying and Maintenance Equipment Operators; Paving, Surfacing, and Tamping Equipment Operators	47-2073; 47-4061; 47-2071
Operating Engineer (Landscape Construction)	Operating Engineers and Other Construction Equipment Operators	47-2073
Painter	Painters, Construction and Maintenance	47-2141
Painter - Industrial	Painters, Construction and Maintenance	47-2141
Parking and Highway Improvement (Striper-Laborer)	Construction Laborers	47-2061
Parking and Highway Improvement (Striping, Slurry and Seal Coat Operations-Laborer)	Construction Laborers	47-2061
Pile Driver (Carpenter)	Pile-Driver Operators	47-2072
Plaster Tender	Plasterers and Stucco Masons	47-2161
Plasterer	Plasterers and Stucco Masons	47-2161
Plumber	Plumbers, Pipefitters, and Steamfitters	47-2152
Residential Electrician	Electricians	47-2111
Residential Laborer	Construction Laborers	47-2061
Residential Sheet Metal Worker	Sheet Metal Workers	47-2211
Roofer	Roofers	47-2181
Sheet Metal Worker	Sheet Metal Workers	47-2211
Sheet Metal Worker (HVAC)	Sheet Metal Workers	47-2211
Teamster	Heavy and Tractor-Trailer Truck Drivers	53-3032
Telecommunications Technician	Electricians	47-2111
Terrazzo Finisher	Terrazzo Workers and Finishers	47-2053
Terrazzo Worker	Terrazzo Workers and Finishers	47-2053
Tile Finisher	Terrazzo Workers and Finishers	47-2053
Tile Layer	Terrazzo Workers and Finishers	47-2053
Tile Setter	Terrazzo Workers and Finishers	47-2053
Tree Maintenance (Laborer)	Construction Laborers	47-2061
Tunnel (Operating Engineer)	Operating Engineers and Other Construction Equipment Operators	47-2073
Tunnel Worker (Laborer)	Construction Laborers	47-2061

Appendix B: Historical and Current Monthly Average Hires by Occupation in Greater LA Area

SOC	Occupation	2022	2023	Change	% Change
49-9051	Electrical Power-Line Installers and Repairers	99	135	35	35.6%
47-2181	Roofers	370	484	114	30.9%
47-2061	Construction Laborers	2035	2633	599	29.4%
47-2111	Electricians	1299	1610	311	24.0%
47-2031	Carpenters	2254	2751	497	22.0%
37-3011	Landscaping and Groundskeeping Workers	2501	2857	356	14.2%
47-2221	Structural Iron and Steel Workers	222	247	25	11.3%
47-2073	Operating Engineers and Other Construction Equipment Operators	622	675	53	8.5%
47-2141	Painters, Construction and Maintenance	739	800	62	8.4%
47-2211	Sheet Metal Workers	225	232	8	3.4%
47-2071	Paving, Surfacing, and Tamping Equipment Operators	51	51	0	0.6%
47-4021	Elevator and Escalator Installers and Repairers	48	48	0	0.2%
47-2161	Plasterers and Stucco Masons	211	201	-10	-4.8%
47-2152	Plumbers, Pipefitters, and Steamfitters	993	920	-73	-7.4%
47-2171	Reinforcing Iron and Rebar Workers	112	103	-9	-7.8%
47-4011	Construction and Building Inspectors	253	233	-20	-7.9%
53-3032	Heavy and Tractor-Trailer Truck Drivers	6420	5828	-592	-9.2%
47-2121	Glaziers	281	255	-26	-9.3%
47-2081	Drywall and Ceiling Tile Installers	881	768	-113	-12.8%
47-2131	Insulation Workers, Floor, Ceiling, and Wall	54	46	-8	-14.1%
47-2132	Insulation Workers, Mechanical	24	20	-5	-19.2%
51-9023	Mixing and Blending Machine Setters, Operators, and Tenders	197	158	-39	-19.8%
47-2051	Cement Masons and Concrete Finishers	1009	795	-214	-21.2%
47-4061	Rail-Track Laying and Maintenance Equipment Operators	26	20	-6	-22.8%
47-2021	Brickmasons and Blockmasons	131	98	-34	-25.7%
17-1022	Surveyors	67	50	-17	-25.9%
47-4041	Hazardous Materials Removal Workers	294	212	-82	-27.9%
51-4032	Drilling and Boring Machine Tool Setters, Operators, and Tenders, Metal and Plastic	29	20	-9	-29.8%
47-2022	Stonemasons	58	38	-19	-33.5%
47-2151	Pipelayers	71	47	-24	-34.4%
47-2072	Pile Driver Operators	30	16	-14	-45.8%
47-2082	Tapers	195	102	-94	-48.0%
47-2053	Terrazzo Workers and Finishers	3	1	-2	-51.9%

SOC	Occupation	2022	2023	Change	% Change
47-2042	Floor Layers, Except Carpet, Wood, and Hard Tiles	347	159	-188	-54.3%
	Total	**22153**	**22615**	**462**	2.1%

Source: Lightcast and ICF.

Appendix C: STATA Correlation Table

(N = 34)

Variables	Median Hourly Earnings	Typical Entry Level Education	Work Experience Required	Typical On-the-Job Training Offered	Occupation Percentage Female in 2023
Median Hourly Earnings	-				
Typical Entry Level Education	0.3680*	-			
Work Experience Required	0.1921	0.0636	-		
Typical On-the-Job Training Offered	0.1921	0.4159*	-0.1147	-	
Occupation Percentage Female in 2023	-0.2392	0.1405	0.2367	-0.3734*	-

Notes: * indicates statistical significance at the p<0.05 level.

Source: Lightcast and ICF

Appendix D: Projected Labor Demand and Female Labor Demand Gap from 2024 – 2033

Flat (0%) Demand Growth, annually from 2024-2033

Metro Craft	Projected Hours for Unionized Workers on Metro Projects	Projected Hours for Female, Unionized Workers on Metro Projects	Number of Female Hours Required to Meet Utilization Target	Additional Female Hours Required to Meet Utilization Target
Apprentice Landscape Irrigation Fitter (2nd Shift)	48	0	3	3
Asbestos and Lead Abatement (Laborer)	2,549	0	176	176
Asbestos Worker, Heat and Frost Insulator	1,196	40	83	43
Brick Tender	11,042	0	762	762
Bricklayer	865	0	60	60
Bricklayer, Stonemason	37,838	0	2,611	2,611
Building / Construction Inspector and Field Soils and Material Tester	177,620	11,959	12,256	297
Carpenter and Related Trades	513,518	12,370	35,433	23,063
Carpet, Linoleum	272	0	19	19
Carpet, Linoleum, Resilient	12	0	1	1
Cement Mason	134,682	298	9,293	8,995
Cranes, Pile Driver and Hoisting Equipment (Operating Engineer)	33,781	779	2,331	1,552
Driver (On/Off-Hauling To/From Construction Site)	74,351	836	5,130	4,294
Drywall Finisher	1,788	0	123	123
Drywall Installer / Lather (Carpenter)	35,125	218	2,424	2,206
Electrical Utility Lineman	6,177	0	426	426
Electrician	475,231	24,984	32,791	7,807
Elevator Constructor	82,236	7,152	5,674	-1,478
Fence Builder (Carpenter)	2	0	0	0
Field Surveyor	38,458	486	2,654	2,168
Fire Safety and Miscellaneous Sealing	184	0	13	13
Glazier	27,316	293	1,885	1,592
Gunite Worker (Laborer)	9,841	0	679	679
Horizontal Directional Drilling	7,135	0	492	492
Housemover (Laborer)	0	0	0	0
Iron Worker	300,399	9,341	20,728	11,387
Laborer (Construction, Fence Erector, Gunite, Housemover, Tunnel)	235	0	16	16
Laborer and Related Classifications	954,083	54,689	65,832	11,142

Metro Craft	Projected Hours for Unionized Workers on Metro Projects	Projected Hours for Female, Unionized Workers on Metro Projects	Number of Female Hours Required to Meet Utilization Target	Additional Female Hours Required to Meet Utilization Target
Landscape Irrigation Fitter	203	0	14	14
Landscape Maintenance Laborer	58,772	508	4,055	3,548
Landscape Operating Engineer	175	0	12	12
Landscape/Irrigation Laborer/Tender	7,084	0	489	489
Marble Finisher	1,506	0	104	104
Modular Furniture Installer (Carpenter)	517	0	36	36
Operating Engineer	441,485	4,204	30,462	26,259
Operating Engineer (Landscape Construction)	134	0	9	9
Painter	55,080	2,089	3,801	1,712
Painter - Industrial	2,602	1,216	180	-1,037
Parking and Highway Improvement (Striper-Laborer)	3,807	47	263	216
Parking and Highway Improvement (Striping, Slurry and Seal Coat Operations-Laborer)	642	0	44	44
Pile Driver (Carpenter)	5,237	0	361	361
Plaster Tender	9,967	0	688	688
Plasterer	13,257	504	915	411
Plumber	83,861	3,088	5,786	2,699
Residential Electrician	8	0	1	1
Residential Laborer	0	0	0	0
Residential Sheet Metal Worker	341	0	24	24
Roofer	41,736	2,072	2,880	808
Sheet Metal Worker	26,026	1,080	1,796	716
Sheet Metal Worker (HVAC)	49,184	0	3,394	3,394
Teamster	36,572	3,532	2,523	-1,009
Telecommunications Technician	341	0	24	24
Terrazzo Finisher	187	0	13	13
Terrazzo Worker	336	0	23	23
Tile Finisher	3,806	0	263	263
Tile Layer	2,466	0	170	170
Tile Setter	176	0	12	12
Tree Maintenance (Laborer)	4,255	0	294	294
Tunnel (Operating Engineer)	42,997	0	2,967	2,967
Tunnel Worker (Laborer)	396,239	15,772	27,340	11,569
Total Construction Labor Hours	**4,214,979**	**157,554**	**290,834**	**133,279**
Female Percent of Total Hours		**3.74%**	**6.90%**	

Metro Craft	Projected Hours for Unionized Workers on Metro Projects	Projected Hours for Female, Unionized Workers on Metro Projects	Number of Female Hours Required to Meet Utilization Target	Additional Female Hours Required to Meet Utilization Target
Estimated Construction Cost	**$747,000,555**			

2% Demand Growth

2024 Projections

Metro Craft	Projected Hours for Unionized Workers on Metro Projects	Projected Hours for Female, Unionized Workers on Metro Projects	Number of Female Hours Required to Meet Utilization Target	Additional Female Hours Required to Meet Utilization Target
Apprentice Landscape Irrigation Fitter (2nd Shift)	49	0	3	3
Asbestos and Lead Abatement (Laborer)	2,600	0	179	179
Asbestos Worker, Heat and Frost Insulator	1,220	41	84	43
Brick Tender	11,263	0	777	777
Bricklayer	882	0	61	61
Bricklayer, Stonemason	38,595	0	2,663	2,663
Building / Construction Inspector and Field Soils and Material Tester	181,173	12,198	12,501	303
Carpenter and Related Trades	523,789	12,617	36,141	23,524
Carpet, Linoleum	277	0	19	19
Carpet, Linoleum, Resilient	12	0	1	1
Cement Mason	137,375	304	9,479	9,175
Cranes, Pile Driver and Hoisting Equipment (Operating Engineer)	34,456	794	2,377	1,583
Driver (On/Off-Hauling To/From Construction Site)	75,838	853	5,233	4,380
Drywall Finisher	1,824	0	126	126
Drywall Installer / Lather (Carpenter)	35,828	222	2,472	2,250
Electrical Utility Lineman	6,301	0	435	435
Electrician	484,735	25,483	33,447	7,963
Elevator Constructor	83,880	7,295	5,788	-1,507
Fence Builder (Carpenter)	2	0	0	0
Field Surveyor	39,227	496	2,707	2,211
Fire Safety and Miscellaneous Sealing	188	0	13	13
Glazier	27,862	299	1,922	1,624

Metro Craft	Projected Hours for Unionized Workers on Metro Projects	Projected Hours for Female, Unionized Workers on Metro Projects	Number of Female Hours Required to Meet Utilization Target	Additional Female Hours Required to Meet Utilization Target
Gunite Worker (Laborer)	10,037	0	693	693
Horizontal Directional Drilling	7,278	0	502	502
Housemover (Laborer)	0	0	0	0
Iron Worker	306,407	9,528	21,142	11,614
Laborer (Construction, Fence Erector, Gunite, Housemover, Tunnel)	240	0	17	17
Laborer and Related Classifications	973,164	55,783	67,148	11,365
Landscape Irrigation Fitter	207	0	14	14
Landscape Maintenance Laborer	59,948	518	4,136	3,619
Landscape Operating Engineer	179	0	12	12
Landscape/Irrigation Laborer/Tender	7,225	0	499	499
Marble Finisher	1,536	0	106	106
Modular Furniture Installer (Carpenter)	527	0	36	36
Operating Engineer	450,315	4,288	31,072	26,784
Operating Engineer (Landscape Construction)	136	0	9	9
Painter	56,182	2,131	3,877	1,746
Painter - Industrial	2,654	1,241	183	-1,057
Parking and Highway Improvement (Striper-Laborer)	3,883	48	268	220
Parking and Highway Improvement (Striping, Slurry and Seal Coat Operations-Laborer)	654	0	45	45
Pile Driver (Carpenter)	5,342	0	369	369
Plaster Tender	10,166	0	701	701
Plasterer	13,522	514	933	419
Plumber	85,538	3,149	5,902	2,753
Residential Electrician	8	0	1	1
Residential Laborer	0	0	0	0
Residential Sheet Metal Worker	348	0	24	24
Roofer	42,571	2,113	2,937	824
Sheet Metal Worker	26,547	1,102	1,832	730
Sheet Metal Worker (HVAC)	50,168	0	3,462	3,462
Teamster	37,304	3,603	2,574	-1,029
Telecommunications Technician	348	0	24	24
Terrazzo Finisher	191	0	13	13
Terrazzo Worker	342	0	24	24
Tile Finisher	3,882	0	268	268

Metro Craft	Projected Hours for Unionized Workers on Metro Projects	Projected Hours for Female, Unionized Workers on Metro Projects	Number of Female Hours Required to Meet Utilization Target	Additional Female Hours Required to Meet Utilization Target
Tile Layer	2,515	0	174	174
Tile Setter	180	0	12	12
Tree Maintenance (Laborer)	4,340	0	299	299
Tunnel (Operating Engineer)	43,857	0	3,026	3,026
Tunnel Worker (Laborer)	404,164	16,087	27,887	11,800
Total Construction Labor Hours	**4,299,278**	**160,705**	**296,650**	**135,945**
Female Percent of Total Hours		**3.74%**	**6.90%**	
Estimated Construction Cost	**$761,940,566**			

2025 Projections

Metro Craft	Projected Hours for Unionized Workers on Metro Projects	Projected Hours for Female, Unionized Workers on Metro Projects	Number of Female Hours Required to Meet Utilization Target	Additional Female Hours Required to Meet Utilization Target
Apprentice Landscape Irrigation Fitter (2nd Shift)	50	0	3	3
Asbestos and Lead Abatement (Laborer)	2,652	0	183	183
Asbestos Worker, Heat and Frost Insulator	1,245	42	86	44
Brick Tender	11,488	0	793	793
Bricklayer	900	0	62	62
Bricklayer, Stonemason	39,367	0	2,716	2,716
Building / Construction Inspector and Field Soils and Material Tester	184,796	12,442	12,751	309
Carpenter and Related Trades	534,264	12,869	36,864	23,995
Carpet, Linoleum	283	0	20	20
Carpet, Linoleum, Resilient	12	0	1	1
Cement Mason	140,123	310	9,668	9,358
Cranes, Pile Driver and Hoisting Equipment (Operating Engineer)	35,145	810	2,425	1,615
Driver (On/Off-Hauling To/From Construction Site)	77,355	870	5,337	4,468
Drywall Finisher	1,860	0	128	128
Drywall Installer / Lather (Carpenter)	36,544	227	2,522	2,295
Electrical Utility Lineman	6,427	0	443	443
Electrician	494,430	25,993	34,116	8,123
Elevator Constructor	85,558	7,441	5,903	-1,537

Metro Craft	Projected Hours for Unionized Workers on Metro Projects	Projected Hours for Female, Unionized Workers on Metro Projects	Number of Female Hours Required to Meet Utilization Target	Additional Female Hours Required to Meet Utilization Target
Fence Builder (Carpenter)	2	0	0	0
Field Surveyor	40,011	506	2,761	2,255
Fire Safety and Miscellaneous Sealing	191	0	13	13
Glazier	28,419	305	1,961	1,656
Gunite Worker (Laborer)	10,238	0	706	706
Horizontal Directional Drilling	7,424	0	512	512
Housemover (Laborer)	0	0	0	0
Iron Worker	312,535	9,718	21,565	11,847
Laborer (Construction, Fence Erector, Gunite, Housemover, Tunnel)	244	0	17	17
Laborer and Related Classifications	992,628	56,899	68,491	11,593
Landscape Irrigation Fitter	211	0	15	15
Landscape Maintenance Laborer	61,147	528	4,219	3,691
Landscape Operating Engineer	182	0	13	13
Landscape/Irrigation Laborer/Tender	7,370	0	509	509
Marble Finisher	1,567	0	108	108
Modular Furniture Installer (Carpenter)	537	0	37	37
Operating Engineer	459,321	4,374	31,693	27,320
Operating Engineer (Landscape Construction)	139	0	10	10
Painter	57,306	2,173	3,954	1,781
Painter - Industrial	2,707	1,265	187	-1,079
Parking and Highway Improvement (Striper-Laborer)	3,961	49	273	224
Parking and Highway Improvement (Striping, Slurry and Seal Coat Operations-Laborer)	667	0	46	46
Pile Driver (Carpenter)	5,449	0	376	376
Plaster Tender	10,369	0	715	715
Plasterer	13,793	524	952	427
Plumber	87,248	3,212	6,020	2,808
Residential Electrician	8	0	1	1
Residential Laborer	0	0	0	0
Residential Sheet Metal Worker	355	0	24	24
Roofer	43,422	2,156	2,996	840
Sheet Metal Worker	27,077	1,124	1,868	745
Sheet Metal Worker (HVAC)	51,171	0	3,531	3,531

Metro Craft	Projected Hours for Unionized Workers on Metro Projects	Projected Hours for Female, Unionized Workers on Metro Projects	Number of Female Hours Required to Meet Utilization Target	Additional Female Hours Required to Meet Utilization Target
Teamster	38,050	3,675	2,625	-1,049
Telecommunications Technician	355	0	24	24
Terrazzo Finisher	195	0	13	13
Terrazzo Worker	349	0	24	24
Tile Finisher	3,960	0	273	273
Tile Layer	2,566	0	177	177
Tile Setter	183	0	13	13
Tree Maintenance (Laborer)	4,427	0	305	305
Tunnel (Operating Engineer)	44,734	0	3,087	3,087
Tunnel Worker (Laborer)	412,247	16,409	28,445	12,036
Total Construction Labor Hours	**4,385,264**	**163,920**	**302,583**	**138,664**
Female Percent of Total Hours		**3.74%**	**6.90%**	
Estimated Construction Cost	**$777,179,377**			

2026 Projections

Metro Craft	Projected Hours for Unionized Workers on Metro Projects	Projected Hours for Female, Unionized Workers on Metro Projects	Number of Female Hours Required to Meet Utilization Target	Additional Female Hours Required to Meet Utilization Target
Apprentice Landscape Irrigation Fitter (2nd Shift)	51	0	4	4
Asbestos and Lead Abatement (Laborer)	2,705	0	187	187
Asbestos Worker, Heat and Frost Insulator	1,269	42	88	45
Brick Tender	11,718	0	809	809
Bricklayer	918	0	63	63
Bricklayer, Stonemason	40,154	0	2,771	2,771
Building / Construction Inspector and Field Soils and Material Tester	188,492	12,691	13,006	315
Carpenter and Related Trades	544,950	13,127	37,602	24,475
Carpet, Linoleum	289	0	20	20
Carpet, Linoleum, Resilient	13	0	1	1
Cement Mason	142,925	316	9,862	9,546
Cranes, Pile Driver and Hoisting Equipment (Operating Engineer)	35,848	826	2,474	1,647

Metro Craft	Projected Hours for Unionized Workers on Metro Projects	Projected Hours for Female, Unionized Workers on Metro Projects	Number of Female Hours Required to Meet Utilization Target	Additional Female Hours Required to Meet Utilization Target
Driver (On/Off-Hauling To/From Construction Site)	78,902	887	5,444	4,557
Drywall Finisher	1,897	0	131	131
Drywall Installer / Lather (Carpenter)	37,275	231	2,572	2,341
Electrical Utility Lineman	6,555	0	452	452
Electrician	504,318	26,513	34,798	8,285
Elevator Constructor	87,269	7,590	6,022	-1,568
Fence Builder (Carpenter)	2	0	0	0
Field Surveyor	40,812	516	2,816	2,300
Fire Safety and Miscellaneous Sealing	195	0	13	13
Glazier	28,988	311	2,000	1,689
Gunite Worker (Laborer)	10,443	0	721	721
Horizontal Directional Drilling	7,572	0	522	522
Housemover (Laborer)	0	0	0	0
Iron Worker	318,785	9,913	21,996	12,083
Laborer (Construction, Fence Erector, Gunite, Housemover, Tunnel)	249	0	17	17
Laborer and Related Classifications	1,012,480	58,037	69,861	11,824
Landscape Irrigation Fitter	216	0	15	15
Landscape Maintenance Laborer	62,369	539	4,303	3,765
Landscape Operating Engineer	186	0	13	13
Landscape/Irrigation Laborer/Tender	7,517	0	519	519
Marble Finisher	1,598	0	110	110
Modular Furniture Installer (Carpenter)	548	0	38	38
Operating Engineer	468,508	4,461	32,327	27,866
Operating Engineer (Landscape Construction)	142	0	10	10
Painter	58,452	2,217	4,033	1,816
Painter - Industrial	2,762	1,291	191	-1,100
Parking and Highway Improvement (Striper-Laborer)	4,040	50	279	229
Parking and Highway Improvement (Striping, Slurry and Seal Coat Operations-Laborer)	681	0	47	47
Pile Driver (Carpenter)	5,558	0	383	383
Plaster Tender	10,577	0	730	730
Plasterer	14,068	535	971	436

Metro Craft	Projected Hours for Unionized Workers on Metro Projects	Projected Hours for Female, Unionized Workers on Metro Projects	Number of Female Hours Required to Meet Utilization Target	Additional Female Hours Required to Meet Utilization Target
Plumber	88,993	3,276	6,141	2,864
Residential Electrician	8	0	1	1
Residential Laborer	0	0	0	0
Residential Sheet Metal Worker	362	0	25	25
Roofer	44,291	2,199	3,056	857
Sheet Metal Worker	27,619	1,146	1,906	760
Sheet Metal Worker (HVAC)	52,194	0	3,601	3,601
Teamster	38,811	3,748	2,678	-1,070
Telecommunications Technician	362	0	25	25
Terrazzo Finisher	198	0	14	14
Terrazzo Worker	356	0	25	25
Tile Finisher	4,039	0	279	279
Tile Layer	2,617	0	181	181
Tile Setter	187	0	13	13
Tree Maintenance (Laborer)	4,515	0	312	312
Tunnel (Operating Engineer)	45,629	0	3,148	3,148
Tunnel Worker (Laborer)	420,492	16,737	29,014	12,277
Total Construction Labor Hours	**4,472,969**	**167,198**	**308,635**	**141,437**
Female Percent of Total Hours		**3.74%**	**6.90%**	
Estimated Construction Cost	**$792,722,965**			

2027 Projections

Metro Craft	Projected Hours for Unionized Workers on Metro Projects	Projected Hours for Female, Unionized Workers on Metro Projects	Number of Female Hours Required to Meet Utilization Target	Additional Female Hours Required to Meet Utilization Target
Apprentice Landscape Irrigation Fitter (2nd Shift)	52	0	4	4
Asbestos and Lead Abatement (Laborer)	2,759	0	190	190
Asbestos Worker, Heat and Frost Insulator	1,295	43	89	46
Brick Tender	11,952	0	825	825
Bricklayer	936	0	65	65
Bricklayer, Stonemason	40,957	0	2,826	2,826
Building / Construction Inspector and Field Soils and Material Tester	192,262	12,945	13,266	322

Metro Craft	Projected Hours for Unionized Workers on Metro Projects	Projected Hours for Female, Unionized Workers on Metro Projects	Number of Female Hours Required to Meet Utilization Target	Additional Female Hours Required to Meet Utilization Target
Carpenter and Related Trades	555,849	13,389	38,354	24,964
Carpet, Linoleum	294	0	20	20
Carpet, Linoleum, Resilient	13	0	1	1
Cement Mason	145,784	323	10,059	9,737
Cranes, Pile Driver and Hoisting Equipment (Operating Engineer)	36,565	843	2,523	1,680
Driver (On/Off-Hauling To/From Construction Site)	80,480	905	5,553	4,648
Drywall Finisher	1,935	0	134	134
Drywall Installer / Lather (Carpenter)	38,021	236	2,623	2,387
Electrical Utility Lineman	6,686	0	461	461
Electrician	514,405	27,043	35,494	8,451
Elevator Constructor	89,015	7,742	6,142	-1,600
Fence Builder (Carpenter)	2	0	0	0
Field Surveyor	41,628	526	2,872	2,346
Fire Safety and Miscellaneous Sealing	199	0	14	14
Glazier	29,568	317	2,040	1,723
Gunite Worker (Laborer)	10,652	0	735	735
Horizontal Directional Drilling	7,723	0	533	533
Housemover (Laborer)	0	0	0	0
Iron Worker	325,161	10,111	22,436	12,325
Laborer (Construction, Fence Erector, Gunite, Housemover, Tunnel)	254	0	18	18
Laborer and Related Classifications	1,032,730	59,197	71,258	12,061
Landscape Irrigation Fitter	220	0	15	15
Landscape Maintenance Laborer	63,617	549	4,390	3,840
Landscape Operating Engineer	189	0	13	13
Landscape/Irrigation Laborer/Tender	7,668	0	529	529
Marble Finisher	1,630	0	112	112
Modular Furniture Installer (Carpenter)	559	0	39	39
Operating Engineer	477,878	4,550	32,974	28,423
Operating Engineer (Landscape Construction)	145	0	10	10
Painter	59,621	2,261	4,114	1,853
Painter - Industrial	2,817	1,317	194	-1,122
Parking and Highway Improvement (Striper-Laborer)	4,121	51	284	233

Metro Craft	Projected Hours for Unionized Workers on Metro Projects	Projected Hours for Female, Unionized Workers on Metro Projects	Number of Female Hours Required to Meet Utilization Target	Additional Female Hours Required to Meet Utilization Target
Parking and Highway Improvement (Striping, Slurry and Seal Coat Operations-Laborer)	694	0	48	48
Pile Driver (Carpenter)	5,669	0	391	391
Plaster Tender	10,788	0	744	744
Plasterer	14,350	546	990	445
Plumber	90,773	3,342	6,263	2,921
Residential Electrician	9	0	1	1
Residential Laborer	0	0	0	0
Residential Sheet Metal Worker	369	0	25	25
Roofer	45,176	2,243	3,117	874
Sheet Metal Worker	28,171	1,169	1,944	775
Sheet Metal Worker (HVAC)	53,238	0	3,673	3,673
Teamster	39,587	3,823	2,732	-1,092
Telecommunications Technician	369	0	25	25
Terrazzo Finisher	202	0	14	14
Terrazzo Worker	363	0	25	25
Tile Finisher	4,120	0	284	284
Tile Layer	2,669	0	184	184
Tile Setter	191	0	13	13
Tree Maintenance (Laborer)	4,606	0	318	318
Tunnel (Operating Engineer)	46,541	0	3,211	3,211
Tunnel Worker (Laborer)	428,902	17,072	29,594	12,523
Total Construction Labor Hours	**4,562,428**	**170,542**	**314,808**	**144,266**
Female Percent of Total Hours		**3.74%**	**6.90%**	
Estimated Construction Cost	**$808,577,424**			

2028 Projections

Metro Craft	Projected Hours for Unionized Workers on Metro Projects	Projected Hours for Female, Unionized Workers on Metro Projects	Number of Female Hours Required to Meet Utilization Target	Additional Female Hours Required to Meet Utilization Target
Apprentice Landscape Irrigation Fitter (2nd Shift)	53	0	4	4
Asbestos and Lead Abatement (Laborer)	2,814	0	194	194

Metro Craft	Projected Hours for Unionized Workers on Metro Projects	Projected Hours for Female, Unionized Workers on Metro Projects	Number of Female Hours Required to Meet Utilization Target	Additional Female Hours Required to Meet Utilization Target
Asbestos Worker, Heat and Frost Insulator	1,321	44	91	47
Brick Tender	12,191	0	841	841
Bricklayer	955	0	66	66
Bricklayer, Stonemason	41,776	0	2,883	2,883
Building / Construction Inspector and Field Soils and Material Tester	196,107	13,203	13,531	328
Carpenter and Related Trades	566,966	13,657	39,121	25,463
Carpet, Linoleum	300	0	21	21
Carpet, Linoleum, Resilient	13	0	1	1
Cement Mason	148,700	329	10,260	9,931
Cranes, Pile Driver and Hoisting Equipment (Operating Engineer)	37,296	860	2,573	1,714
Driver (On/Off-Hauling To/From Construction Site)	82,090	923	5,664	4,741
Drywall Finisher	1,974	0	136	136
Drywall Installer / Lather (Carpenter)	38,781	241	2,676	2,435
Electrical Utility Lineman	6,820	0	471	471
Electrician	524,693	27,584	36,204	8,620
Elevator Constructor	90,795	7,896	6,265	-1,632
Fence Builder (Carpenter)	2	0	0	0
Field Surveyor	42,460	537	2,930	2,393
Fire Safety and Miscellaneous Sealing	203	0	14	14
Glazier	30,159	323	2,081	1,757
Gunite Worker (Laborer)	10,865	0	750	750
Horizontal Directional Drilling	7,878	0	544	544
Housemover (Laborer)	0	0	0	0
Iron Worker	331,664	10,313	22,885	12,572
Laborer (Construction, Fence Erector, Gunite, Housemover, Tunnel)	259	0	18	18
Laborer and Related Classifications	1,053,384	60,381	72,684	12,302
Landscape Irrigation Fitter	224	0	15	15
Landscape Maintenance Laborer	64,889	560	4,477	3,917
Landscape Operating Engineer	193	0	13	13
Landscape/Irrigation Laborer/Tender	7,821	0	540	540
Marble Finisher	1,663	0	115	115
Modular Furniture Installer (Carpenter)	570	0	39	39

Metro Craft	Projected Hours for Unionized Workers on Metro Projects	Projected Hours for Female, Unionized Workers on Metro Projects	Number of Female Hours Required to Meet Utilization Target	Additional Female Hours Required to Meet Utilization Target
Operating Engineer	487,436	4,641	33,633	28,992
Operating Engineer (Landscape Construction)	147	0	10	10
Painter	60,813	2,306	4,196	1,890
Painter - Industrial	2,873	1,343	198	-1,145
Parking and Highway Improvement (Striper-Laborer)	4,203	52	290	238
Parking and Highway Improvement (Striping, Slurry and Seal Coat Operations-Laborer)	708	0	49	49
Pile Driver (Carpenter)	5,782	0	399	399
Plaster Tender	11,004	0	759	759
Plasterer	14,637	556	1,010	453
Plumber	92,589	3,409	6,389	2,980
Residential Electrician	9	0	1	1
Residential Laborer	0	0	0	0
Residential Sheet Metal Worker	376	0	26	26
Roofer	46,080	2,288	3,180	892
Sheet Metal Worker	28,735	1,192	1,983	790
Sheet Metal Worker (HVAC)	54,303	0	3,747	3,747
Teamster	40,379	3,900	2,786	-1,113
Telecommunications Technician	376	0	26	26
Terrazzo Finisher	206	0	14	14
Terrazzo Worker	370	0	26	26
Tile Finisher	4,202	0	290	290
Tile Layer	2,723	0	188	188
Tile Setter	194	0	13	13
Tree Maintenance (Laborer)	4,698	0	324	324
Tunnel (Operating Engineer)	47,472	0	3,276	3,276
Tunnel Worker (Laborer)	437,480	17,413	30,186	12,773
Total Construction Labor Hours	**4,653,677**	**173,953**	**321,104**	**147,151**
Female Percent of Total Hours		**3.74%**	**6.90%**	
Estimated Construction Cost	**$824,748,973**			

2029 Projections

Metro Craft	Projected Hours for Unionized Workers on Metro Projects	Projected Hours for Female, Unionized Workers on Metro Projects	Number of Female Hours Required to Meet Utilization Target	Additional Female Hours Required to Meet Utilization Target
Apprentice Landscape Irrigation Fitter (2nd Shift)	54	0	4	4
Asbestos and Lead Abatement (Laborer)	2,871	0	198	198
Asbestos Worker, Heat and Frost Insulator	1,347	45	93	48
Brick Tender	12,435	0	858	858
Bricklayer	974	0	67	67
Bricklayer, Stonemason	42,612	0	2,940	2,940
Building / Construction Inspector and Field Soils and Material Tester	200,029	13,467	13,802	335
Carpenter and Related Trades	578,305	13,930	39,903	25,973
Carpet, Linoleum	306	0	21	21
Carpet, Linoleum, Resilient	14	0	1	1
Cement Mason	151,674	336	10,465	10,130
Cranes, Pile Driver and Hoisting Equipment (Operating Engineer)	38,042	877	2,625	1,748
Driver (On/Off-Hauling To/From Construction Site)	83,731	941	5,777	4,836
Drywall Finisher	2,014	0	139	139
Drywall Installer / Lather (Carpenter)	39,557	246	2,729	2,484
Electrical Utility Lineman	6,956	0	480	480
Electrician	535,187	28,136	36,928	8,792
Elevator Constructor	92,611	8,054	6,390	-1,664
Fence Builder (Carpenter)	2	0	0	0
Field Surveyor	43,310	547	2,988	2,441
Fire Safety and Miscellaneous Sealing	207	0	14	14
Glazier	30,762	330	2,123	1,793
Gunite Worker (Laborer)	11,082	0	765	765
Horizontal Directional Drilling	8,035	0	554	554
Housemover (Laborer)	0	0	0	0
Iron Worker	338,298	10,519	23,343	12,823
Laborer (Construction, Fence Erector, Gunite, Housemover, Tunnel)	265	0	18	18
Laborer and Related Classifications	1,074,452	61,589	74,137	12,548
Landscape Irrigation Fitter	229	0	16	16
Landscape Maintenance Laborer	66,187	572	4,567	3,995

Metro Craft	Projected Hours for Unionized Workers on Metro Projects	Projected Hours for Female, Unionized Workers on Metro Projects	Number of Female Hours Required to Meet Utilization Target	Additional Female Hours Required to Meet Utilization Target
Landscape Operating Engineer	197	0	14	14
Landscape/Irrigation Laborer/Tender	7,977	0	550	550
Marble Finisher	1,696	0	117	117
Modular Furniture Installer (Carpenter)	582	0	40	40
Operating Engineer	497,184	4,734	34,306	29,572
Operating Engineer (Landscape Construction)	150	0	10	10
Painter	62,030	2,353	4,280	1,927
Painter - Industrial	2,931	1,370	202	-1,168
Parking and Highway Improvement (Striper-Laborer)	4,287	53	296	243
Parking and Highway Improvement (Striping, Slurry and Seal Coat Operations-Laborer)	722	0	50	50
Pile Driver (Carpenter)	5,898	0	407	407
Plaster Tender	11,224	0	774	774
Plasterer	14,930	568	1,030	463
Plumber	94,441	3,477	6,516	3,039
Residential Electrician	9	0	1	1
Residential Laborer	0	0	0	0
Residential Sheet Metal Worker	384	0	26	26
Roofer	47,002	2,333	3,243	910
Sheet Metal Worker	29,310	1,216	2,022	806
Sheet Metal Worker (HVAC)	55,389	0	3,822	3,822
Teamster	41,186	3,978	2,842	-1,136
Telecommunications Technician	384	0	26	26
Terrazzo Finisher	211	0	15	15
Terrazzo Worker	378	0	26	26
Tile Finisher	4,286	0	296	296
Tile Layer	2,777	0	192	192
Tile Setter	198	0	14	14
Tree Maintenance (Laborer)	4,792	0	331	331
Tunnel (Operating Engineer)	48,422	0	3,341	3,341
Tunnel Worker (Laborer)	446,229	17,761	30,790	13,029
Total Construction Labor Hours	**4,746,750**	**177,432**	**327,526**	**150,094**
Female Percent of Total Hours		**3.74%**	**6.90%**	
Estimated Construction Cost	**$841,243,952**			

2030Projections

Metro Craft	Projected Hours for Unionized Workers on Metro Projects	Projected Hours for Female, Unionized Workers on Metro Projects	Number of Female Hours Required to Meet Utilization Target	Additional Female Hours Required to Meet Utilization Target
Apprentice Landscape Irrigation Fitter (2nd Shift)	55	0	4	4
Asbestos and Lead Abatement (Laborer)	2,928	0	202	202
Asbestos Worker, Heat and Frost Insulator	1,374	46	95	49
Brick Tender	12,683	0	875	875
Bricklayer	994	0	69	69
Bricklayer, Stonemason	43,464	0	2,999	2,999
Building / Construction Inspector and Field Soils and Material Tester	204,030	13,737	14,078	341
Carpenter and Related Trades	589,871	14,209	40,701	26,492
Carpet, Linoleum	312	0	22	22
Carpet, Linoleum, Resilient	14	0	1	1
Cement Mason	154,707	342	10,675	10,332
Cranes, Pile Driver and Hoisting Equipment (Operating Engineer)	38,803	894	2,677	1,783
Driver (On/Off-Hauling To/From Construction Site)	85,406	960	5,893	4,933
Drywall Finisher	2,054	0	142	142
Drywall Installer / Lather (Carpenter)	40,348	250	2,784	2,534
Electrical Utility Lineman	7,095	0	490	490
Electrician	545,890	28,698	37,666	8,968
Elevator Constructor	94,463	8,215	6,518	-1,697
Fence Builder (Carpenter)	2	0	0	0
Field Surveyor	44,176	558	3,048	2,490
Fire Safety and Miscellaneous Sealing	211	0	15	15
Glazier	31,377	337	2,165	1,828
Gunite Worker (Laborer)	11,304	0	780	780
Horizontal Directional Drilling	8,196	0	566	566
Housemover (Laborer)	0	0	0	0
Iron Worker	345,064	10,730	23,809	13,080
Laborer (Construction, Fence Erector, Gunite, Housemover, Tunnel)	270	0	19	19
Laborer and Related Classifications	1,095,941	62,821	75,620	12,799
Landscape Irrigation Fitter	233	0	16	16
Landscape Maintenance Laborer	67,511	583	4,658	4,075

Metro Craft	Projected Hours for Unionized Workers on Metro Projects	Projected Hours for Female, Unionized Workers on Metro Projects	Number of Female Hours Required to Meet Utilization Target	Additional Female Hours Required to Meet Utilization Target
Landscape Operating Engineer	201	0	14	14
Landscape/Irrigation Laborer/Tender	8,137	0	561	561
Marble Finisher	1,730	0	119	119
Modular Furniture Installer (Carpenter)	593	0	41	41
Operating Engineer	507,128	4,829	34,992	30,163
Operating Engineer (Landscape Construction)	153	0	11	11
Painter	63,270	2,400	4,366	1,966
Painter - Industrial	2,989	1,397	206	-1,191
Parking and Highway Improvement (Striper-Laborer)	4,373	54	302	248
Parking and Highway Improvement (Striping, Slurry and Seal Coat Operations-Laborer)	737	0	51	51
Pile Driver (Carpenter)	6,016	0	415	415
Plaster Tender	11,448	0	790	790
Plasterer	15,228	579	1,051	472
Plumber	96,329	3,547	6,647	3,100
Residential Electrician	9	0	1	1
Residential Laborer	0	0	0	0
Residential Sheet Metal Worker	392	0	27	27
Roofer	47,942	2,380	3,308	928
Sheet Metal Worker	29,896	1,241	2,063	822
Sheet Metal Worker (HVAC)	56,497	0	3,898	3,898
Teamster	42,010	4,057	2,899	-1,158
Telecommunications Technician	392	0	27	27
Terrazzo Finisher	215	0	15	15
Terrazzo Worker	385	0	27	27
Tile Finisher	4,372	0	302	302
Tile Layer	2,833	0	195	195
Tile Setter	202	0	14	14
Tree Maintenance (Laborer)	4,888	0	337	337
Tunnel (Operating Engineer)	49,390	0	3,408	3,408
Tunnel Worker (Laborer)	455,154	18,116	31,406	13,289
Total Construction Labor Hours	**4,841,685**	**180,980**	**334,076**	**153,096**
Female Percent of Total Hours		**3.74%**	**6.90%**	
Estimated Construction Cost	**$858,068,831**			

2031 Projections

Metro Craft	Projected Hours for Unionized Workers on Metro Projects	Projected Hours for Female, Unionized Workers on Metro Projects	Number of Female Hours Required to Meet Utilization Target	Additional Female Hours Required to Meet Utilization Target
Apprentice Landscape Irrigation Fitter (2nd Shift)	56	0	4	4
Asbestos and Lead Abatement (Laborer)	2,987	0	206	206
Asbestos Worker, Heat and Frost Insulator	1,402	47	97	50
Brick Tender	12,937	0	893	893
Bricklayer	1,013	0	70	70
Bricklayer, Stonemason	44,333	0	3,059	3,059
Building / Construction Inspector and Field Soils and Material Tester	208,110	14,012	14,360	348
Carpenter and Related Trades	601,668	14,493	41,515	27,022
Carpet, Linoleum	319	0	22	22
Carpet, Linoleum, Resilient	14	0	1	1
Cement Mason	157,801	349	10,888	10,539
Cranes, Pile Driver and Hoisting Equipment (Operating Engineer)	39,579	912	2,731	1,819
Driver (On/Off-Hauling To/From Construction Site)	87,114	979	6,011	5,031
Drywall Finisher	2,095	0	145	145
Drywall Installer / Lather (Carpenter)	41,155	255	2,840	2,584
Electrical Utility Lineman	7,237	0	499	499
Electrician	556,808	29,272	38,420	9,148
Elevator Constructor	96,352	8,380	6,648	-1,731
Fence Builder (Carpenter)	2	0	0	0
Field Surveyor	45,059	569	3,109	2,540
Fire Safety and Miscellaneous Sealing	216	0	15	15
Glazier	32,005	343	2,208	1,865
Gunite Worker (Laborer)	11,530	0	796	796
Horizontal Directional Drilling	8,360	0	577	577
Housemover (Laborer)	0	0	0	0
Iron Worker	351,965	10,944	24,286	13,341
Laborer (Construction, Fence Erector, Gunite, Housemover, Tunnel)	275	0	19	19
Laborer and Related Classifications	1,117,860	64,077	77,132	13,055
Landscape Irrigation Fitter	238	0	16	16
Landscape Maintenance Laborer	68,861	595	4,751	4,157

Metro Craft	Projected Hours for Unionized Workers on Metro Projects	Projected Hours for Female, Unionized Workers on Metro Projects	Number of Female Hours Required to Meet Utilization Target	Additional Female Hours Required to Meet Utilization Target
Landscape Operating Engineer	205	0	14	14
Landscape/Irrigation Laborer/Tender	8,300	0	573	573
Marble Finisher	1,765	0	122	122
Modular Furniture Installer (Carpenter)	605	0	42	42
Operating Engineer	517,270	4,925	35,692	30,766
Operating Engineer (Landscape Construction)	156	0	11	11
Painter	64,536	2,448	4,453	2,005
Painter - Industrial	3,049	1,425	210	-1,215
Parking and Highway Improvement (Striper-Laborer)	4,460	55	308	253
Parking and Highway Improvement (Striping, Slurry and Seal Coat Operations-Laborer)	752	0	52	52
Pile Driver (Carpenter)	6,136	0	423	423
Plaster Tender	11,677	0	806	806
Plasterer	15,533	591	1,072	481
Plumber	98,256	3,617	6,780	3,162
Residential Electrician	9	0	1	1
Residential Laborer	0	0	0	0
Residential Sheet Metal Worker	400	0	28	28
Roofer	48,900	2,428	3,374	946
Sheet Metal Worker	30,494	1,265	2,104	839
Sheet Metal Worker (HVAC)	57,627	0	3,976	3,976
Teamster	42,850	4,138	2,957	-1,182
Telecommunications Technician	400	0	28	28
Terrazzo Finisher	219	0	15	15
Terrazzo Worker	393	0	27	27
Tile Finisher	4,459	0	308	308
Tile Layer	2,889	0	199	199
Tile Setter	206	0	14	14
Tree Maintenance (Laborer)	4,985	0	344	344
Tunnel (Operating Engineer)	50,378	0	3,476	3,476
Tunnel Worker (Laborer)	464,257	18,479	32,034	13,555
Total Construction Labor Hours	**4,938,519**	**184,600**	**340,758**	**156,158**
Female Percent of Total Hours		**3.74%**	**6.90%**	
Estimated Construction Cost	**$875,230,208**			

2032 Projections

Metro Craft	Projected Hours for Unionized Workers on Metro Projects	Projected Hours for Female, Unionized Workers on Metro Projects	Number of Female Hours Required to Meet Utilization Target	Additional Female Hours Required to Meet Utilization Target
Apprentice Landscape Irrigation Fitter (2nd Shift)	57	0	4	4
Asbestos and Lead Abatement (Laborer)	3,046	0	210	210
Asbestos Worker, Heat and Frost Insulator	1,430	48	99	51
Brick Tender	13,196	0	911	911
Bricklayer	1,034	0	71	71
Bricklayer, Stonemason	45,220	0	3,120	3,120
Building / Construction Inspector and Field Soils and Material Tester	212,273	14,292	14,647	355
Carpenter and Related Trades	613,702	14,783	42,345	27,562
Carpet, Linoleum	325	0	22	22
Carpet, Linoleum, Resilient	14	0	1	1
Cement Mason	160,957	356	11,106	10,750
Cranes, Pile Driver and Hoisting Equipment (Operating Engineer)	40,371	930	2,786	1,855
Driver (On/Off-Hauling To/From Construction Site)	88,856	999	6,131	5,132
Drywall Finisher	2,137	0	147	147
Drywall Installer / Lather (Carpenter)	41,978	261	2,896	2,636
Electrical Utility Lineman	7,382	0	509	509
Electrician	567,944	29,858	39,188	9,330
Elevator Constructor	98,279	8,547	6,781	-1,766
Fence Builder (Carpenter)	2	0	0	0
Field Surveyor	45,961	581	3,171	2,590
Fire Safety and Miscellaneous Sealing	220	0	15	15
Glazier	32,645	350	2,253	1,902
Gunite Worker (Laborer)	11,760	0	811	811
Horizontal Directional Drilling	8,527	0	588	588
Housemover (Laborer)	0	0	0	0
Iron Worker	359,004	11,163	24,771	13,608
Laborer (Construction, Fence Erector, Gunite, Housemover, Tunnel)	281	0	19	19
Laborer and Related Classifications	1,140,217	65,359	78,675	13,316
Landscape Irrigation Fitter	243	0	17	17
Landscape Maintenance Laborer	70,238	607	4,846	4,240

Metro Craft	Projected Hours for Unionized Workers on Metro Projects	Projected Hours for Female, Unionized Workers on Metro Projects	Number of Female Hours Required to Meet Utilization Target	Additional Female Hours Required to Meet Utilization Target
Landscape Operating Engineer	209	0	14	14
Landscape/Irrigation Laborer/Tender	8,466	0	584	584
Marble Finisher	1,800	0	124	124
Modular Furniture Installer (Carpenter)	617	0	43	43
Operating Engineer	527,616	5,024	36,405	31,382
Operating Engineer (Landscape Construction)	160	0	11	11
Painter	65,826	2,497	4,542	2,045
Painter - Industrial	3,110	1,454	215	-1,239
Parking and Highway Improvement (Striper-Laborer)	4,549	56	314	258
Parking and Highway Improvement (Striping, Slurry and Seal Coat Operations-Laborer)	767	0	53	53
Pile Driver (Carpenter)	6,259	0	432	432
Plaster Tender	11,911	0	822	822
Plasterer	15,843	602	1,093	491
Plumber	100,221	3,690	6,915	3,225
Residential Electrician	10	0	1	1
Residential Laborer	0	0	0	0
Residential Sheet Metal Worker	408	0	28	28
Roofer	49,878	2,476	3,442	965
Sheet Metal Worker	31,103	1,291	2,146	855
Sheet Metal Worker (HVAC)	58,779	0	4,056	4,056
Teamster	43,707	4,221	3,016	-1,205
Telecommunications Technician	408	0	28	28
Terrazzo Finisher	223	0	15	15
Terrazzo Worker	401	0	28	28
Tile Finisher	4,549	0	314	314
Tile Layer	2,947	0	203	203
Tile Setter	210	0	15	15
Tree Maintenance (Laborer)	5,085	0	351	351
Tunnel (Operating Engineer)	51,385	0	3,546	3,546
Tunnel Worker (Laborer)	473,542	18,848	32,674	13,826
Total Construction Labor Hours	**5,037,290**	**188,292**	**347,573**	**159,281**
Female Percent of Total Hours		**3.74%**	**6.90%**	
Estimated Construction Cost	**$892,734,812**			

2033 Projections

Metro Craft	Projected Hours for Unionized Workers on Metro Projects	Projected Hours for Female, Unionized Workers on Metro Projects	Number of Female Hours Required to Meet Utilization Target	Additional Female Hours Required to Meet Utilization Target
Apprentice Landscape Irrigation Fitter (2nd Shift)	59	0	4	4
Asbestos and Lead Abatement (Laborer)	3,107	0	214	214
Asbestos Worker, Heat and Frost Insulator	1,458	49	101	52
Brick Tender	13,460	0	929	929
Bricklayer	1,054	0	73	73
Bricklayer, Stonemason	46,124	0	3,183	3,183
Building / Construction Inspector and Field Soils and Material Tester	216,518	14,578	14,940	362
Carpenter and Related Trades	625,976	15,079	43,192	28,114
Carpet, Linoleum	332	0	23	23
Carpet, Linoleum, Resilient	15	0	1	1
Cement Mason	164,176	363	11,328	10,965
Cranes, Pile Driver and Hoisting Equipment (Operating Engineer)	41,178	949	2,841	1,892
Driver (On/Off-Hauling To/From Construction Site)	90,634	1,019	6,254	5,235
Drywall Finisher	2,180	0	150	150
Drywall Installer / Lather (Carpenter)	42,817	266	2,954	2,689
Electrical Utility Lineman	7,530	0	520	520
Electrician	579,303	30,455	39,972	9,517
Elevator Constructor	100,245	8,718	6,917	-1,801
Fence Builder (Carpenter)	2	0	0	0
Field Surveyor	46,880	592	3,235	2,642
Fire Safety and Miscellaneous Sealing	224	0	15	15
Glazier	33,298	357	2,298	1,940
Gunite Worker (Laborer)	11,996	0	828	828
Horizontal Directional Drilling	8,698	0	600	600
Housemover (Laborer)	0	0	0	0
Iron Worker	366,184	11,387	25,267	13,880
Laborer (Construction, Fence Erector, Gunite, Housemover, Tunnel)	286	0	20	20
Laborer and Related Classifications	1,163,021	66,666	80,248	13,583
Landscape Irrigation Fitter	248	0	17	17
Landscape Maintenance Laborer	71,643	619	4,943	4,325

Metro Craft	Projected Hours for Unionized Workers on Metro Projects	Projected Hours for Female, Unionized Workers on Metro Projects	Number of Female Hours Required to Meet Utilization Target	Additional Female Hours Required to Meet Utilization Target
Landscape Operating Engineer	213	0	15	15
Landscape/Irrigation Laborer/Tender	8,635	0	596	596
Marble Finisher	1,836	0	127	127
Modular Furniture Installer (Carpenter)	630	0	43	43
Operating Engineer	538,168	5,124	37,134	32,009
Operating Engineer (Landscape Construction)	163	0	11	11
Painter	67,143	2,546	4,633	2,086
Painter - Industrial	3,172	1,483	219	-1,264
Parking and Highway Improvement (Striper-Laborer)	4,640	57	320	263
Parking and Highway Improvement (Striping, Slurry and Seal Coat Operations-Laborer)	782	0	54	54
Pile Driver (Carpenter)	6,384	0	440	440
Plaster Tender	12,149	0	838	838
Plasterer	16,160	614	1,115	501
Plumber	102,225	3,764	7,054	3,290
Residential Electrician	10	0	1	1
Residential Laborer	0	0	0	0
Residential Sheet Metal Worker	416	0	29	29
Roofer	50,876	2,526	3,510	985
Sheet Metal Worker	31,726	1,317	2,189	873
Sheet Metal Worker (HVAC)	59,955	0	4,137	4,137
Teamster	44,581	4,305	3,076	-1,229
Telecommunications Technician	416	0	29	29
Terrazzo Finisher	228	0	16	16
Terrazzo Worker	409	0	28	28
Tile Finisher	4,639	0	320	320
Tile Layer	3,006	0	207	207
Tile Setter	215	0	15	15
Tree Maintenance (Laborer)	5,187	0	358	358
Tunnel (Operating Engineer)	52,413	0	3,617	3,617
Tunnel Worker (Laborer)	483,013	19,225	33,328	14,103
Total Construction Labor Hours	**5,138,035**	**192,058**	**354,524**	**162,467**
Female Percent of Total Hours		**3.74%**	**6.90%**	
Estimated Construction Cost	**$910,589,508**			

Source: LCPtracker and ICF.

Appendix E: Projected Female Labor Demand Gap from 2024 – 2033, by Trade

Flat (0%) Demand Growth, annually from 2024-2033

Construction Trade	Projected Hours for Unionized Workers on Metro Projects	Projected Hours for Female, Unionized Workers on Metro Projects	Number of Female Hours Required to Meet Utilization Target	Additional Female Hours Required to Meet Utilization Target
BRICKLAYER AND TILE SETTER	47,180	0	3,255	3,255
CARPENTER	554,399	12,588	38,254	25,666
ELECTRICIAN	481,757	24,984	33,241	8,258
ELEVATOR CONSTRUCTOR	82,236	7,152	5,674	(1,478)
INSPECTOR	177,620	11,959	12,256	297
IRON WORKER	300,399	9,341	20,728	11,387
LABORER	1,467,077	71,055	101,228	30,173
OPERATING ENGINEER	518,571	4,982	35,781	30,799
PAINTER	87,071	3,598	6,008	2,410
PLASTERER AND CEMENT MASON	147,939	802	10,208	9,406
PLUMBER AND PIPEFITTER	84,064	3,088	5,800	2,713
ROOFER	41,736	2,072	2,880	808
SHEET METAL	75,551	1,080	5,213	4,133
SURVEYOR	38,458	486	2,654	2,168
TEAMSTER/DRIVER	110,923	4,368	7,654	3,286
Total Construction Labor Hours	**4,214,979**	**157,554**	**290,834**	**133,279**

2% Demand Growth

2024 Projections

Construction Trade	Projected Hours for Unionized Workers on Metro Projects	Projected Hours for Female, Unionized Workers on Metro Projects	Number of Female Hours Required to Meet Utilization Target	Additional Female Hours Required to Meet Utilization Target
BRICKLAYER AND TILE SETTER	48,123	0	3,320	3,320
CARPENTER	565,487	12,840	39,019	26,179
ELECTRICIAN	491,392	25,483	33,906	8,423
ELEVATOR CONSTRUCTOR	83,880	7,295	5,788	(1,507)
INSPECTOR	181,173	12,198	12,501	303
IRON WORKER	306,407	9,528	21,142	11,614
LABORER	1,496,418	72,476	103,253	30,777
OPERATING ENGINEER	528,943	5,082	36,497	31,415

Construction Trade	Projected Hours for Unionized Workers on Metro Projects	Projected Hours for Female, Unionized Workers on Metro Projects	Number of Female Hours Required to Meet Utilization Target	Additional Female Hours Required to Meet Utilization Target
PAINTER	88,812	3,670	6,128	2,458
PLASTERER AND CEMENT MASON	150,898	818	10,412	9,594
PLUMBER AND PIPEFITTER	85,745	3,149	5,916	2,767
ROOFER	42,571	2,113	2,937	824
SHEET METAL	77,062	1,102	5,317	4,216
SURVEYOR	39,227	496	2,707	2,211
TEAMSTER/DRIVER	113,142	4,455	7,807	3,351
Total Construction Labor Hours	**4,299,278**	**160,705**	**296,650**	**135,945**

2025 Projections

Construction Trade	Projected Hours for Unionized Workers on Metro Projects	Projected Hours for Female, Unionized Workers on Metro Projects	Number of Female Hours Required to Meet Utilization Target	Additional Female Hours Required to Meet Utilization Target
BRICKLAYER AND TILE SETTER	49,086	0	3,387	3,387
CARPENTER	576,797	13,096	39,799	26,703
ELECTRICIAN	501,219	25,993	34,584	8,591
ELEVATOR CONSTRUCTOR	85,558	7,441	5,903	(1,537)
INSPECTOR	184,796	12,442	12,751	309
IRON WORKER	312,535	9,718	21,565	11,847
LABORER	1,526,347	73,926	105,318	31,392
OPERATING ENGINEER	539,522	5,184	37,227	32,043
PAINTER	90,588	3,744	6,251	2,507
PLASTERER AND CEMENT MASON	153,915	834	10,620	9,786
PLUMBER AND PIPEFITTER	87,460	3,212	6,035	2,822
ROOFER	43,422	2,156	2,996	840
SHEET METAL	78,603	1,124	5,424	4,300
SURVEYOR	40,011	506	2,761	2,255
TEAMSTER/DRIVER	115,405	4,544	7,963	3,419
Total Construction Labor Hours	**4,385,264**	**163,920**	**302,583**	**138,664**

2026 Projections

Construction Trade	Projected Hours for Unionized Workers on Metro Projects	Projected Hours for Female, Unionized Workers on Metro Projects	Number of Female Hours Required to Meet Utilization Target	Additional Female Hours Required to Meet Utilization Target
BRICKLAYER AND TILE SETTER	50,067	0	3,455	3,455
CARPENTER	588,333	13,358	40,595	27,237
ELECTRICIAN	511,244	26,513	35,276	8,763
ELEVATOR CONSTRUCTOR	87,269	7,590	6,022	(1,568)
INSPECTOR	188,492	12,691	13,006	315
IRON WORKER	318,785	9,913	21,996	12,083
LABORER	1,556,874	75,404	107,424	32,020
OPERATING ENGINEER	550,312	5,287	37,972	32,684
PAINTER	92,400	3,819	6,376	2,557
PLASTERER AND CEMENT MASON	156,994	851	10,833	9,981
PLUMBER AND PIPEFITTER	89,209	3,276	6,155	2,879
ROOFER	44,291	2,199	3,056	857
SHEET METAL	80,175	1,146	5,532	4,386
SURVEYOR	40,812	516	2,816	2,300
TEAMSTER/DRIVER	117,713	4,635	8,122	3,487
Total Construction Labor Hours	**4,472,969**	**167,198**	**308,635**	**141,437**

2027 Projections

Construction Trade	Projected Hours for Unionized Workers on Metro Projects	Projected Hours for Female, Unionized Workers on Metro Projects	Number of Female Hours Required to Meet Utilization Target	Additional Female Hours Required to Meet Utilization Target
BRICKLAYER AND TILE SETTER	51,069	0	3,524	3,524
CARPENTER	600,099	13,625	41,407	27,781
ELECTRICIAN	521,469	27,043	35,981	8,938
ELEVATOR CONSTRUCTOR	89,015	7,742	6,142	(1,600)
INSPECTOR	192,262	12,945	13,266	322
IRON WORKER	325,161	10,111	22,436	12,325
LABORER	1,588,011	76,912	109,573	32,660
OPERATING ENGINEER	561,318	5,393	38,731	33,338
PAINTER	94,248	3,895	6,503	2,608
PLASTERER AND CEMENT MASON	160,134	868	11,049	10,181
PLUMBER AND PIPEFITTER	90,993	3,342	6,279	2,937

Construction Trade	Projected Hours for Unionized Workers on Metro Projects	Projected Hours for Female, Unionized Workers on Metro Projects	Number of Female Hours Required to Meet Utilization Target	Additional Female Hours Required to Meet Utilization Target
ROOFER	45,176	2,243	3,117	874
SHEET METAL	81,779	1,169	5,643	4,474
SURVEYOR	41,628	526	2,872	2,346
TEAMSTER/DRIVER	120,067	4,728	8,285	3,557
Total Construction Labor Hours	**4,562,428**	**170,542**	**314,808**	**144,266**

2028 Projections

Construction Trade	Projected Hours for Unionized Workers on Metro Projects	Projected Hours for Female, Unionized Workers on Metro Projects	Number of Female Hours Required to Meet Utilization Target	Additional Female Hours Required to Meet Utilization Target
BRICKLAYER AND TILE SETTER	52,090	0	3,594	3,594
CARPENTER	612,101	13,898	42,235	28,337
ELECTRICIAN	531,898	27,584	36,701	9,117
ELEVATOR CONSTRUCTOR	90,795	7,896	6,265	(1,632)
INSPECTOR	196,107	13,203	13,531	328
IRON WORKER	331,664	10,313	22,885	12,572
LABORER	1,619,771	78,451	111,764	33,313
OPERATING ENGINEER	572,545	5,501	39,506	34,005
PAINTER	96,133	3,973	6,633	2,660
PLASTERER AND CEMENT MASON	163,336	885	11,270	10,385
PLUMBER AND PIPEFITTER	92,813	3,409	6,404	2,995
ROOFER	46,080	2,288	3,180	892
SHEET METAL	83,414	1,192	5,756	4,563
SURVEYOR	42,460	537	2,930	2,393
TEAMSTER/DRIVER	122,468	4,823	8,450	3,628
Total Construction Labor Hours	**4,653,677**	**173,953**	**321,104**	**147,151**

2029 Projections

Construction Trade	Projected Hours for Unionized Workers on Metro Projects	Projected Hours for Female, Unionized Workers on Metro Projects	Number of Female Hours Required to Meet Utilization Target	Additional Female Hours Required to Meet Utilization Target
BRICKLAYER AND TILE SETTER	53,132	0	3,666	3,666
CARPENTER	624,343	14,176	43,080	28,904
ELECTRICIAN	542,536	28,136	37,435	9,299
ELEVATOR CONSTRUCTOR	92,611	8,054	6,390	(1,664)
INSPECTOR	200,029	13,467	13,802	335
IRON WORKER	338,298	10,519	23,343	12,823
LABORER	1,652,167	80,020	113,999	33,980
OPERATING ENGINEER	583,996	5,611	40,296	34,685
PAINTER	98,056	4,052	6,766	2,714
PLASTERER AND CEMENT MASON	166,603	903	11,496	10,592
PLUMBER AND PIPEFITTER	94,669	3,477	6,532	3,055
ROOFER	47,002	2,333	3,243	910
SHEET METAL	85,083	1,216	5,871	4,654
SURVEYOR	43,310	547	2,988	2,441
TEAMSTER/DRIVER	124,918	4,919	8,619	3,700
Total Construction Labor Hours	**4,746,750**	**177,432**	**327,526**	**150,094**

2030 Projections

Construction Trade	Projected Hours for Unionized Workers on Metro Projects	Projected Hours for Female, Unionized Workers on Metro Projects	Number of Female Hours Required to Meet Utilization Target	Additional Female Hours Required to Meet Utilization Target
BRICKLAYER AND TILE SETTER	54,194	0	3,739	3,739
CARPENTER	636,830	14,459	43,941	29,482
ELECTRICIAN	553,387	28,698	38,184	9,485
ELEVATOR CONSTRUCTOR	94,463	8,215	6,518	(1,697)
INSPECTOR	204,030	13,737	14,078	341
IRON WORKER	345,064	10,730	23,809	13,080
LABORER	1,685,210	81,620	116,279	34,659
OPERATING ENGINEER	595,675	5,723	41,102	35,379
PAINTER	100,017	4,133	6,901	2,768
PLASTERER AND CEMENT MASON	169,935	921	11,726	10,804
PLUMBER AND PIPEFITTER	96,563	3,547	6,663	3,116

Construction Trade	Projected Hours for Unionized Workers on Metro Projects	Projected Hours for Female, Unionized Workers on Metro Projects	Number of Female Hours Required to Meet Utilization Target	Additional Female Hours Required to Meet Utilization Target
ROOFER	47,942	2,380	3,308	928
SHEET METAL	86,784	1,241	5,988	4,748
SURVEYOR	44,176	558	3,048	2,490
TEAMSTER/DRIVER	127,416	5,017	8,792	3,774
Total Construction Labor Hours	**4,841,685**	**180,980**	**334,076**	**153,096**

2031 Projections

Construction Trade	Projected Hours for Unionized Workers on Metro Projects	Projected Hours for Female, Unionized Workers on Metro Projects	Number of Female Hours Required to Meet Utilization Target	Additional Female Hours Required to Meet Utilization Target
BRICKLAYER AND TILE SETTER	55,278	0	3,814	3,814
CARPENTER	649,567	14,749	44,820	30,072
ELECTRICIAN	564,455	29,272	38,947	9,675
ELEVATOR CONSTRUCTOR	96,352	8,380	6,648	(1,731)
INSPECTOR	208,110	14,012	14,360	348
IRON WORKER	351,965	10,944	24,286	13,341
LABORER	1,718,914	83,253	118,605	35,353
OPERATING ENGINEER	607,589	5,837	41,924	36,086
PAINTER	102,017	4,216	7,039	2,823
PLASTERER AND CEMENT MASON	173,334	940	11,960	11,020
PLUMBER AND PIPEFITTER	98,494	3,617	6,796	3,179
ROOFER	48,900	2,428	3,374	946
SHEET METAL	88,520	1,265	6,108	4,842
SURVEYOR	45,059	569	3,109	2,540
TEAMSTER/DRIVER	129,964	5,118	8,968	3,850
Total Construction Labor Hours	**4,938,519**	**184,600**	**340,758**	**156,158**

2032 Projections

Construction Trade	Projected Hours for Unionized Workers on Metro Projects	Projected Hours for Female, Unionized Workers on Metro Projects	Number of Female Hours Required to Meet Utilization Target	Additional Female Hours Required to Meet Utilization Target
BRICKLAYER AND TILE SETTER	56,384	0	3,890	3,890
CARPENTER	662,558	15,044	45,717	30,673
ELECTRICIAN	575,744	29,858	39,726	9,869
ELEVATOR CONSTRUCTOR	98,279	8,547	6,781	(1,766)
INSPECTOR	212,273	14,292	14,647	355
IRON WORKER	359,004	11,163	24,771	13,608
LABORER	1,753,292	84,918	120,977	36,060
OPERATING ENGINEER	619,741	5,954	42,762	36,808
PAINTER	104,057	4,300	7,180	2,880
PLASTERER AND CEMENT MASON	176,801	958	12,199	11,241
PLUMBER AND PIPEFITTER	100,464	3,690	6,932	3,242
ROOFER	49,878	2,476	3,442	965
SHEET METAL	90,290	1,291	6,230	4,939
SURVEYOR	45,961	581	3,171	2,590
TEAMSTER/DRIVER	132,564	5,220	9,147	3,927
Total Construction Labor Hours	**5,037,290**	**188,292**	**347,573**	**159,281**

2033 Projections

Construction Trade	Projected Hours for Unionized Workers on Metro Projects	Projected Hours for Female, Unionized Workers on Metro Projects	Number of Female Hours Required to Meet Utilization Target	Additional Female Hours Required to Meet Utilization Target
BRICKLAYER AND TILE SETTER	57,512	0	3,968	3,968
CARPENTER	675,809	15,344	46,631	31,286
ELECTRICIAN	587,258	30,455	40,521	10,066
ELEVATOR CONSTRUCTOR	100,245	8,718	6,917	(1,801)
INSPECTOR	216,518	14,578	14,940	362
IRON WORKER	366,184	11,387	25,267	13,880
LABORER	1,788,358	86,616	123,397	36,781
OPERATING ENGINEER	632,136	6,073	43,617	37,544
PAINTER	106,139	4,386	7,324	2,937
PLASTERER AND CEMENT MASON	180,337	978	12,443	11,466
PLUMBER AND PIPEFITTER	102,473	3,764	7,071	3,307

Construction Trade	Projected Hours for Unionized Workers on Metro Projects	Projected Hours for Female, Unionized Workers on Metro Projects	Number of Female Hours Required to Meet Utilization Target	Additional Female Hours Required to Meet Utilization Target
ROOFER	50,876	2,526	3,510	985
SHEET METAL	92,096	1,317	6,355	5,038
SURVEYOR	46,880	592	3,235	2,642
TEAMSTER/DRIVER	135,215	5,325	9,330	4,005
Total Construction Labor Hours	**5,138,035**	**192,058**	**354,524**	**162,467**

Source: LCPtracker, ICF and Estolano Advisors.

Appendix F: Percent Female Labor Supply Available for Metro Projects (Average 2019-2023)

Construction Trade	% of Female Supply Available to Metro Projects
BRICKLAYER AND TILE SETTER	0.0%
CARPENTER	14.4%
ELECTRICIAN	19.8%
ELEVATOR CONSTRUCTOR	77.5%
INSPECTOR	15.3%
IRON WORKER	26.4%
LABORER	28.5%
OPERATING ENGINEER	8.3%
PAINTER	7.6%
PLASTERER AND CEMENT MASON	9.5%
PLUMBER AND PIPEFITTER	8.6%
ROOFER	14.5%
SHEET METAL	10.3%
SURVEYOR	6.5%
TEAMSTER/DRIVER	10.5%

Source: LCPtracker and ICF.

Appendix G: Calculated Annual Female Utilization Rates by Trade, 2024-2045

Scenario: 0% Demand Growth; Moderate Supply Growth

Construction Trade	2024	2025	2026	2027	2028	2029	2030	2031
BRICKLAYER AND TILE SETTER	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CARPENTER	2.38%	2.48%	2.57%	2.67%	2.77%	2.86%	2.96%	3.05%
ELECTRICIAN	5.52%	5.63%	5.74%	5.85%	5.96%	6.07%	6.18%	6.29%
ELEVATOR CONSTRUCTOR	9.48%	10.16%	10.83%	11.51%	12.19%	12.86%	13.54%	14.22%
INSPECTOR	7.34%	7.92%	8.49%	9.07%	9.64%	10.22%	10.80%	11.37%
IRON WORKER	2.98%	3.16%	3.35%	3.53%	3.72%	3.90%	4.08%	4.27%
LABORER	5.61%	5.76%	5.91%	6.07%	6.22%	6.37%	6.52%	6.67%
OPERATING ENGINEER	1.24%	1.30%	1.37%	1.43%	1.50%	1.57%	1.63%	1.70%
PAINTER	3.85%	4.03%	4.21%	4.38%	4.56%	4.74%	4.92%	5.10%
PLASTERER AND CEMENT MASON	0.71%	0.76%	0.81%	0.86%	0.91%	0.96%	1.01%	1.06%
PLUMBER AND PIPEFITTER	7.87%	8.38%	8.90%	9.41%	9.93%	10.44%	10.96%	11.47%
ROOFER	1.86%	1.96%	2.07%	2.17%	2.27%	2.37%	2.47%	2.57%
SHEET METAL	2.16%	2.28%	2.40%	2.52%	2.64%	2.76%	2.88%	3.00%
SURVEYOR	1.28%	1.40%	1.52%	1.64%	1.76%	1.88%	2.00%	2.12%
TEAMSTER/DRIVER	5.42%	5.84%	6.27%	6.70%	7.13%	7.56%	7.99%	8.42%
Average	**4.23%**	**4.40%**	**4.56%**	**4.73%**	**4.90%**	**5.07%**	**5.24%**	**5.40%**

Construction Trade	2032	2033	2034	2035	2036	2037	2038	2039
BRICKLAYER AND TILE SETTER	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CARPENTER	3.15%	3.25%	3.34%	3.44%	3.54%	3.63%	3.73%	3.83%
ELECTRICIAN	6.41%	6.52%	6.63%	6.74%	6.85%	6.96%	7.07%	7.19%
ELEVATOR CONSTRUCTOR	14.89%	15.57%	16.25%	16.93%	17.60%	18.28%	18.96%	19.63%
INSPECTOR	11.95%	12.52%	13.10%	13.67%	14.25%	14.83%	15.40%	15.98%
IRON WORKER	4.45%	4.64%	4.82%	5.01%	5.19%	5.37%	5.56%	5.74%
LABORER	6.82%	6.97%	7.12%	7.27%	7.42%	7.57%	7.72%	7.87%
OPERATING ENGINEER	1.76%	1.83%	1.90%	1.96%	2.03%	2.10%	2.16%	2.23%
PAINTER	5.28%	5.46%	5.63%	5.81%	5.99%	6.17%	6.35%	6.53%
PLASTERER AND CEMENT MASON	1.10%	1.15%	1.20%	1.25%	1.30%	1.35%	1.40%	1.45%
PLUMBER AND PIPEFITTER	11.99%	12.51%	13.02%	13.54%	14.05%	14.57%	15.08%	15.60%
ROOFER	2.67%	2.77%	2.87%	2.97%	3.07%	3.17%	3.27%	3.37%
SHEET METAL	3.12%	3.24%	3.36%	3.48%	3.60%	3.72%	3.84%	3.96%

Construction Trade	2032	2033	2034	2035	2036	2037	2038	2039
SURVEYOR	2.24%	2.36%	2.48%	2.60%	2.71%	2.83%	2.95%	3.07%
TEAMSTER/DRIVER	8.84%	9.27%	9.70%	10.13%	10.56%	10.99%	11.41%	11.84%
Average	**5.57%**	**5.74%**	**5.91%**	**6.07%**	**6.24%**	**6.41%**	**6.58%**	**6.75%**

Construction Trade	2040	2041	2042	2043	2044	2045
BRICKLAYER AND TILE SETTER	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CARPENTER	3.92%	4.02%	4.12%	4.21%	4.31%	4.40%
ELECTRICIAN	7.30%	7.41%	7.52%	7.63%	7.74%	7.85%
ELEVATOR CONSTRUCTOR	20.31%	20.99%	21.66%	22.34%	23.02%	23.69%
INSPECTOR	16.55%	17.13%	17.71%	18.28%	18.86%	19.43%
IRON WORKER	5.93%	6.11%	6.29%	6.48%	6.66%	6.85%
LABORER	8.02%	8.18%	8.33%	8.48%	8.63%	8.78%
OPERATING ENGINEER	2.29%	2.36%	2.43%	2.49%	2.56%	2.62%
PAINTER	6.70%	6.88%	7.06%	7.24%	7.42%	7.60%
PLASTERER AND CEMENT MASON	1.50%	1.54%	1.59%	1.64%	1.69%	1.74%
PLUMBER AND PIPEFITTER	16.11%	16.63%	17.14%	17.66%	18.17%	18.69%
ROOFER	3.47%	3.57%	3.67%	3.77%	3.87%	3.97%
SHEET METAL	4.08%	4.21%	4.33%	4.45%	4.57%	4.69%
SURVEYOR	3.19%	3.31%	3.43%	3.55%	3.67%	3.79%
TEAMSTER/DRIVER	12.27%	12.70%	13.13%	13.56%	13.99%	14.41%
Average	**6.91%**	**7.08%**	**7.25%**	**7.42%**	**7.58%**	**7.75%**

Source: LCPtracker, ICF and Estolano Advisors.

Scenario: 0% Demand Growth; Rapid Supply Growth (Most Optimistic)

Construction Trade	2024	2025	2026	2027	2028	2029	2030	2031
BRICKLAYER AND TILE SETTER	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CARPENTER	2.48%	2.67%	2.86%	3.05%	3.25%	3.44%	3.63%	3.83%
ELECTRICIAN	5.63%	5.85%	6.07%	6.29%	6.52%	6.74%	6.96%	7.19%
ELEVATOR CONSTRUCTOR	10.16%	11.51%	12.86%	14.22%	15.57%	16.93%	18.28%	19.63%
INSPECTOR	7.92%	9.07%	10.22%	11.37%	12.52%	13.67%	14.83%	15.98%
IRON WORKER	3.16%	3.53%	3.90%	4.27%	4.64%	5.01%	5.37%	5.74%
LABORER	5.76%	6.07%	6.37%	6.67%	6.97%	7.27%	7.57%	7.87%
OPERATING ENGINEER	1.30%	1.43%	1.57%	1.70%	1.83%	1.96%	2.10%	2.23%

Construction Trade	2024	2025	2026	2027	2028	2029	2030	2031
PAINTER	4.03%	4.38%	4.74%	5.10%	5.46%	5.81%	6.17%	6.53%
PLASTERER AND CEMENT MASON	0.76%	0.86%	0.96%	1.06%	1.15%	1.25%	1.35%	1.45%
PLUMBER AND PIPEFITTER	8.38%	9.41%	10.44%	11.47%	12.51%	13.54%	14.57%	15.60%
ROOFER	1.96%	2.17%	2.37%	2.57%	2.77%	2.97%	3.17%	3.37%
SHEET METAL	2.28%	2.52%	2.76%	3.00%	3.24%	3.48%	3.72%	3.96%
SURVEYOR	1.40%	1.64%	1.88%	2.12%	2.36%	2.60%	2.83%	3.07%
TEAMSTER/DRIVER	5.84%	6.70%	7.56%	8.42%	9.27%	10.13%	10.99%	11.84%
Average	**4.40%**	**4.73%**	**5.07%**	**5.40%**	**5.74%**	**6.07%**	**6.41%**	**6.75%**

Construction Trade	2032	2033	2034	2035	2036	2037	2038	2039
BRICKLAYER AND TILE SETTER	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CARPENTER	4.02%	4.21%	4.40%	4.60%	4.79%	4.98%	5.18%	5.37%
ELECTRICIAN	7.41%	7.63%	7.85%	8.08%	8.30%	8.52%	8.74%	8.97%
ELEVATOR CONSTRUCTOR	20.99%	22.34%	23.69%	25.05%	26.40%	27.75%	29.11%	30.46%
INSPECTOR	17.13%	18.28%	19.43%	20.59%	21.74%	22.89%	24.04%	25.19%
IRON WORKER	6.11%	6.48%	6.85%	7.22%	7.58%	7.95%	8.32%	8.69%
LABORER	8.18%	8.48%	8.78%	9.08%	9.38%	9.68%	9.98%	10.28%
OPERATING ENGINEER	2.36%	2.49%	2.62%	2.76%	2.89%	3.02%	3.15%	3.29%
PAINTER	6.88%	7.24%	7.60%	7.95%	8.31%	8.67%	9.02%	9.38%
PLASTERER AND CEMENT MASON	1.54%	1.64%	1.74%	1.84%	1.94%	2.03%	2.13%	2.23%
PLUMBER AND PIPEFITTER	16.63%	17.66%	18.69%	19.72%	20.75%	21.78%	22.81%	23.84%
ROOFER	3.57%	3.77%	3.97%	4.17%	4.38%	4.58%	4.78%	4.98%
SHEET METAL	4.21%	4.45%	4.69%	4.93%	5.17%	5.41%	5.65%	5.89%
SURVEYOR	3.31%	3.55%	3.79%	4.03%	4.27%	4.51%	4.75%	4.99%
TEAMSTER/DRIVER	12.70%	13.56%	14.41%	15.27%	16.13%	16.99%	17.84%	18.70%
Average	**7.08%**	**7.42%**	**7.75%**	**8.09%**	**8.42%**	**8.76%**	**9.09%**	**9.43%**

Construction Trade	2040	2041	2042	2043	2044	2045
BRICKLAYER AND TILE SETTER	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CARPENTER	5.56%	5.76%	5.95%	6.14%	6.33%	6.53%
ELECTRICIAN	9.19%	9.41%	9.63%	9.86%	10.08%	10.30%
ELEVATOR CONSTRUCTOR	31.82%	33.17%	34.52%	35.88%	37.23%	38.58%
INSPECTOR	26.34%	27.50%	28.65%	29.80%	30.95%	32.10%

Construction Trade	2040	2041	2042	2043	2044	2045
IRON WORKER	9.06%	9.43%	9.79%	10.16%	10.53%	10.90%
LABORER	10.59%	10.89%	11.19%	11.49%	11.79%	12.09%
OPERATING ENGINEER	3.42%	3.55%	3.68%	3.82%	3.95%	4.08%
PAINTER	9.74%	10.10%	10.45%	10.81%	11.17%	11.52%
PLASTERER AND CEMENT MASON	2.33%	2.42%	2.52%	2.62%	2.72%	2.82%
PLUMBER AND PIPEFITTER	24.87%	25.90%	26.94%	27.97%	29.00%	30.03%
ROOFER	5.18%	5.38%	5.58%	5.78%	5.98%	6.18%
SHEET METAL	6.13%	6.37%	6.61%	6.85%	7.09%	7.33%
SURVEYOR	5.23%	5.47%	5.71%	5.95%	6.19%	6.43%
TEAMSTER/DRIVER	19.56%	20.41%	21.27%	22.13%	22.98%	23.84%
Average	**9.77%**	**10.10%**	**10.44%**	**10.77%**	**11.11%**	**11.44%**

Source: LCPtracker, ICF and Estolano Advisors.