

City Of Philadelphia Economic Opportunity Plan Employment Composition Analysis

Fiscal Year 2021

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Submitted to City of Philadelphia, Office of Economic Opportunity



Table of Contents

1.	Introduction	4
1.1.	Purpose of Report	4
1.2.	Legislative Context	4
1.3.	Scope of Analysis and Methodology	4
1.4.	Overview of Report Content	5
2.	Utilization	6
2.1.	Data Sources and Methodological Approach	6
2.2.	Utilization by Race/Ethnicity/Gender and by Job Type	6
2.3.	Utilization by Employee Type	9
2.4.	Utilization by Department	10
2.5.	Utilization by EOP Size	12
2.6.	Difference from Baseline Goal	14
2.7.	Difference from Goal (by EOP Size)	16
3.	Availability	20
3.1.	Overview	20
3.2.	Availability at the City Level	20
3.3.	Availability at the Region Level	21
4.	Disparity	22
4.1.	Overview	22
4.2.	Disparity at the City Level	22
4.3.	Disparity at the Region Level	23
5.	Recommended Goals	24
	Appendix A: List of Trades Considered “Skilled”	26
	Appendix B: Utilization and Disparity for All EOP Projects	28
	Appendix C: Count and Distribution of Hours by Skilled Trade	30
	Appendix D: Count and Distribution of Hours by Employee Type	35
	Appendix E: Count and Distribution of Hours by Department	36
	Appendix F: Performance vs. Goal Level	37

Appendix G: Itemization of All FY21 EOPs, Sorted by Number of Employment Hours 38
Appendix H: About Econsult Solutions, Inc. & Milligan Consulting 49

1. Introduction

1.1. Purpose of Report

Econsult Solutions, Inc. and Milligan Consulting, LLC (collectively “the ESI team”) are pleased to submit the Annual Disparity Study for Fiscal Year 2021 (FY21) to the City of Philadelphia. The Annual Disparity Study consists of three parts:

- A Core Disparity Study analysis of the City’s utilization of Minority-Owned Business Enterprises (MBEs), Woman-Owned Business Enterprises (WBEs), and Disabled-Owned Business Enterprises (DSBEs) (collectively “MWDSBEs”) in City contracts, relative to the availability of such firms to compete for City business.
- An analysis of the Difference in City’s Economic Opportunity Plans (EOPs) between commitments to use MBEs and WBEs versus actual usage.
- An analysis of the distribution of labor hours in EOPs to minorities and women, relative to their availability in the relevant labor force.

This report is the third of those parts. The other two parts are contained in separate stand-alone reports.

1.2. Legislative Context

This annual EOP employment analysis requirement is based on several pieces of local legislation:

1. **Executive Order 14-08**, signed on October 1, 2008, established the Office of Economic Opportunity (OEO) and an Economic Opportunity Cabinet (EOC) to oversee the inclusion of MWDSBE firms in City contracts, set citywide goals, and monitor achievement towards MWDSBE goals.
2. **Section 17-1603 (2) of the Philadelphia Code** requires an EOP for developments or contracts with the City exceeding \$100,000.
3. **Bill #150614** requires the establishment and analysis of EOP employment participation goals based on race/ethnicity and sex.

Current EOP employment participation goals are therefore based on past annual EOP employment analyses. This annual EOP employment analysis should thus inform future EOP employment participation goals.

1.3. Scope of Analysis and Methodology

This report focuses on the employment composition of the 227 EOPs that were started during FY21, which is July 1, 2020, to June 30, 2021. This data set is inclusive of construction labor hours across all trades as reported in the City’s LCP Tracker system, which the City uses to monitor labor reporting and

compliance.¹ Based on this data, utilization of minorities and women in construction projects can be calculated and compared against the availability of minorities and women for construction projects. The resulting ratio, of utilization divided by availability, is how to determine if there is a disparity in the utilization of minorities and women in construction. Specifically, if utilization is less than availability, that would indicate a disparity.

To estimate the availability of minorities and women for construction projects, US Census Bureau American Community Survey (ACS) Equal Employment Opportunity (EEO) Tabulation Data from 2014 to 2018 was analyzed. Data were pulled for both the city of Philadelphia and the Philadelphia MSA.² Both the utilization and availability data assign labor hours to one of two categories:

- “Skilled” represents 38 trade categories listed in the LCP Tracker data, common categories include power equipment operators, electricians, and carpenters.³
- “Laborer” consists of workers in the construction and extraction industry designated as Laborer by the ACS and therefore designated as that in the LCP Tracker data.

The use of “Laborer” in this analysis is not meant to conflate the category with the Laborers' District Council of Metropolitan Philadelphia & Vicinity or the Laborers' International Union of North America Local Union #332. In fact, this report does not distinguish between union and non-union workers, although it is known that a preponderance of the employment hours performed for City projects are completed by union members, and the vast majority of workers available for such projects are also union members. Throughout this report, unless otherwise indicated, “Security Guard” is excluded from this analysis, as it represents a fundamentally different type of labor opportunity than the rest. Hence, the analysis contained in this report concerns itself exclusively with construction-related employment hours.

1.4. Overview of Report Content

This EOP employment analysis contains four content sections:

- Section 2 covers EOP employment utilization
- Section 3 covers EOP employment availability
- Section 4 explores whether any disparities exist in the utilization of minorities and women in construction, relative to their availability
- Section 5 offers a set of recommended goals based on this analysis
- A full itemization of the distribution of employment hours for all 221 EOPs is provided in Appendix G.

¹ Non-construction employment hours, such as for security guard, were excluded from this data set and therefore from this analysis.

² Throughout the report, “city of Philadelphia” refers to the geography, whereas “City of Philadelphia” refers to the government. “Philadelphia MSA” refers to the 11-county Philadelphia-Camden-Wilmington, PA-NJ-DE-MD Metropolitan Statistical Area, which serves as the definition of the Philadelphia region.

³ See Appendix A for a full list of the trades that are considered “Skilled.”

2. Utilization

2.1. Data Sources and Methodological Approach

Worker participation on EOP projects, also known as utilization, was calculated using the City's LCP Tracker employment data. The data provided tracks the labor force characteristics of EOP projects started during the period from July 1, 2020 to June 30, 2021, and groups labor hours in multiple ways, including designations for journey person or apprentice. In FY21, there were 221 EOPs which represented an aggregate 1.6 million employment hours. This section expresses the proportion of those hours that were worked by minorities and women, based on calculations using EOP employment data provided through the City's LCP tracker.

The LCP Tracker allows contractors to label worker hours as White, Black, Hispanic, Asian, Native American, Other, Not Specified, or Women. To calculate utilization, labor hours categorized as "non-specified" and "other" were removed and the remaining hours were grouped as either Laborer or Skilled. A total of 981,454 total specified hours were analyzed to determine utilization, a 26 percent increase from the 778,441 hours analyzed in 2016. As noted earlier, LCP Tracker software does not allow individuals to be designated as two-race, as a result, two-race individuals may be included in any of the other race and ethnicity groups. In addition, LCP Tracker data counts minority women in both the woman and specific minority category.

2.2. Utilization by Race/Ethnicity/Gender and by Job Type

The total utilization of minority workers in the City of Philadelphia EOP contracts total 37.4 percent for FY 2021, which is higher than the 32 percent goal figure that has historically been used. Utilization of minority Laborers in the construction trades decreased slightly between FY 2016 and FY 2021 from 58.6 to 56.9 percent. Notably, the utilization of minority workers for Skilled hours increased 45 percent since FY 2016. Over the past five years, the utilization of minority Skilled workers increased from 18.9 percent points in 2016 to 27.3 percent in 2021.

The utilization of women Laborers by the City of Philadelphia decreased, but that decrease was more than offset by the increase hours of Skilled women workers. The utilization for all women workers increased from 0.8 percent in FY 2016 to 1.5 percent in FY 2021. Three of the five minority categories (Hispanic, Asian, and Native American) had lower all worker utilization rates in FY 2021 than in FY 2016. One of the most prominent increases in utilization was in the utilization of Skilled Black workers, which increased from 10.9 percent in 2016 to 16.6 percentage points in 2021, an increase of 53 percent.

Figure 2.1: Trade/Contractor Utilization by the City of Philadelphia by Race/Ethnicity/Gender and Job Type Excluding Security Jobs, FY 2021⁴

Utilization Percentage	Women	Black	Hispanic	Asian	Native American	All Minority
Laborer	0.3%	20.1%	36.4%	0.2%	0.2%	56.9%
Skilled	2.2%	16.6%	9.7%	0.8%	0.2%	27.3%
All	1.5%	17.8%	18.8%	0.6%	0.2%	37.4%

Source: Econsult Solutions, Inc. (2022)

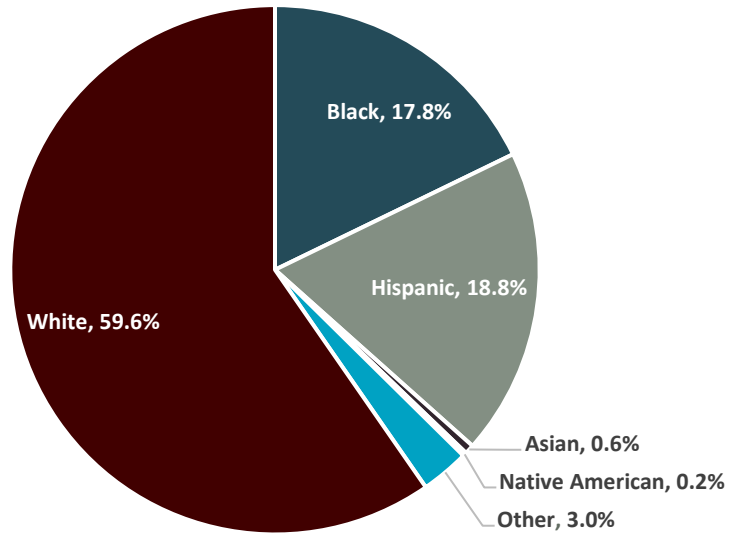
Figure 2.2: Trade/Contractor Utilization by the City of Philadelphia by Race/Ethnicity/Gender and Job Type Excluding Security Jobs, FY 2016

Utilization Percentage	Women	Black	Hispanic	Asian	Native American	All Minority
Laborer	1.0%	19.7%	35.9%	1.9%	1.1%	58.6%
Skilled	0.7%	10.9%	7.7%	0.1%	0.3%	18.9%
All	0.8%	15.0%	20.7%	0.9%	0.6%	37.3%

Source: Econsult Solutions, Inc. (2022)

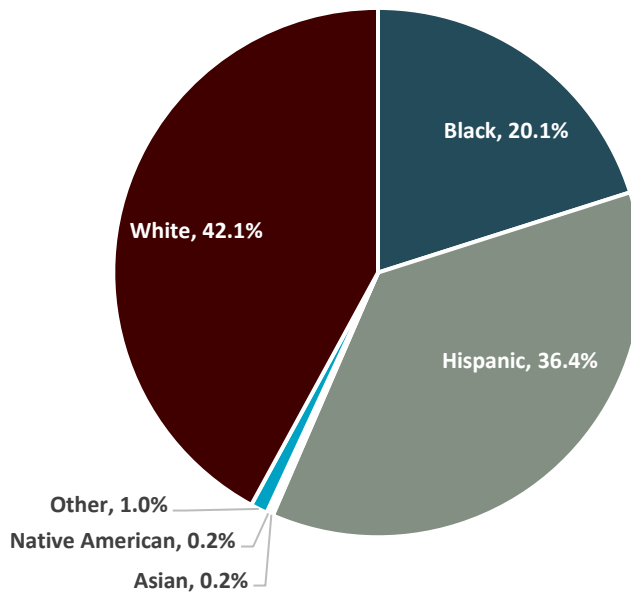
⁴ A version of this figure that is inclusive of security guards can be found in Appendix B. Minority participation in this labor category is very high, resulting in even higher overall utilization rates.

Figure 2.3: All Trade/Contractor Utilization by the City of Philadelphia by Race/Ethnicity/Gender, FY 2021



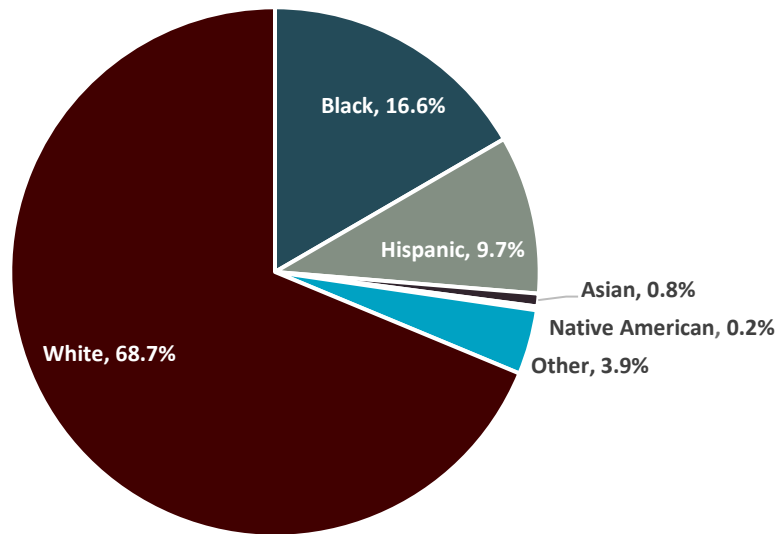
Source: Econsult Solutions, Inc. (2022)

Figure 2.4: Laborer Trade/Contractor Utilization by the City of Philadelphia by Race/Ethnicity/Gender, FY 2021



Source: Econsult Solutions, Inc. (2022)

Figure 2.5: Skilled Trade/Contractor Utilization by the City of Philadelphia by Race/Ethnicity/Gender, FY 2021



Source: Econsult Solutions, Inc. (2022)

Within the breakdown of categories by gender, race, and ethnicity, Figures 2.1, 2.3, 2.4, and 2.5 show worker utilization by level of skill. There is a higher proportion of women and Asian workers in the Skilled jobs as opposed to Laborers jobs. On the other hand, the Black, Hispanic, and All Minority categories have a higher proportion of Laborers than Skilled workers. The percentage of Hispanic Laborers (36.4 percent) is over three times greater than the number of Hispanic workers in the Skilled trades (9.7 percent).

2.3. Utilization by Employee Type

Figure 2.6 shows the breakdown of hours by Laborer (journeyman and apprentice) and by Skilled trades (journeyman and apprentice), and includes utilization percentages across race, ethnicity, and gender.

Overall, minority apprentices continue to be utilized in higher concentrations as Laborers than Skilled trades work. Skilled minority apprentice hours constituted 27.8 percent of total hours while minority Laborer apprentice hours were 56.9 percent of total utilization. For Skilled workers, minority apprentice hours saw a decrease of 21.7 percent from 2016 and minority apprentice Laborers experienced a 43.1 percent decrease over the same period.

Of all Laborer journeyman hours, 35.6 percent were performed by minorities, (a 30 percent decrease from 2016), with all 35.6 percent being performed by Black Laborer journeymen. Skilled journeyman hours increased for minority populations, a 25.5 percent increase from FY 2016, with

pronounced growth in Black skilled journey person hours, 73.0 percent, and Asian skilled journey person hours, 249.0 percent increase from FY 2016 to FY 2021.

Figure 2.6: Percentage of Hours by Employee Type, FY 2021

Laborer						
Hours	Black	Hisp	Asian	Native	Minority	Women
Journey	35.6%	0.0%	0.0%	0.0%	35.6%	0.0%
Apprentice	20.1%	36.4%	0.2%	0.2%	56.9%	0.3%
Total	20.1%	36.4%	0.2%	0.2%	56.9%	0.3%
Skilled						
Hours	Black	Hisp	Asian	Native	Minority	Women
Journey	14.9%	5.6%	0.7%	0.0%	21.2%	1.4%
Apprentice	16.8%	10.0%	0.8%	0.3%	27.8%	2.2%
Total	16.6%	9.7%	0.8%	0.2%	27.3%	2.2%
All Hours						
Hours	Black	Hisp	Asian	Native	Minority	Women
Journey	15.0%	5.6%	0.7%	0.0%	21.3%	1.4%
Apprentice	17.9%	19.5%	0.6%	0.2%	38.2%	1.5%
Total	17.8%	18.8%	0.6%	0.2%	37.4%	1.5%

Source: Econsult Solutions, Inc. (2022)

In determining participation rates for minorities and women in the labor force, it is also important to look at who is entering the trades. Analyzing the utilization of the percentage of apprentices and journeypersons potentially helps to inform current trends in both the Laborer and Skilled categories as well as across gender, race, and ethnicity. In 2021, for all hours, minority journey person utilization was 21.3 percent, an approximately 10-percentage point drop from 2016. Additionally, all minority apprentice utilization decreased by almost 18 percent over the past five fiscal years.

2.4. Utilization by Department⁵

This report tracks the utilization of minority and women workers in the Water, Aviation, Streets, and Public Property Departments. The utilization of all four departments follows the overall trend of significantly higher levels of minority Laborer utilization than minority Skilled utilization. Across all departments except for the Water Department, the utilization of Black Laborers significantly outperforms the utilization of Black Skilled workers. Hispanic Laborers accounted for substantially more employment hours than Hispanic Skilled workers in all departments. Additional effort may be needed to encourage increased recruitment of Skilled Black and Hispanic workers.

⁵ Because utilization is only tracked for City of Philadelphia contracts, the departmental utilization data presented in this section is city based and does not include 11-County MSA utilization.

Figure 2.7: Water Department - Trade/Contractor Utilization by Race/Ethnicity/Gender and Job Type, FY 2021

Percent Utilization	Women	Black	Hispanic	Asian	Native American	All Minority
Laborer	0.4%	18.8%	37.6%	0.0%	0.2%	56.5%
Skilled	3.4%	19.0%	13.3%	1.1%	0.3%	33.7%
All	2.0%	18.9%	24.3%	0.6%	0.2%	44.0%

Source: Econsult Solutions, Inc. (2022)

Figure 2.8: Aviation Division- Trade/Contractor Utilization by Race/Ethnicity/Gender and Job Type, FY 2021

Percent Utilization	Women	Black	Hispanic	Asian	Native American	All Minority
Laborer	0.0%	40.5%	14.8%	1.7%	0.0%	56.9%
Skilled	0.0%	7.0%	0.8%	1.4%	0.2%	9.5%
All	0.0%	12.6%	3.1%	1.5%	0.2%	17.5%

Source: Econsult Solutions, Inc. (2022)

Figure 2.9: Streets Department - Trade/Contractor Utilization by Race/Ethnicity/Gender and Job Type, FY 2021

Percent Utilization	Women	Black	Hispanic	Asian	Native American	All Minority
Laborer	0.0%	17.5%	37.1%	1.3%	0.0%	55.9%
Skilled	0.7%	14.6%	6.9%	0.0%	0.1%	21.7%
All	0.4%	15.7%	18.1%	0.5%	0.1%	34.4%

Source: Econsult Solutions, Inc. (2022)

Figure 2.10: Public Property Department - Trade/Contractor Utilization by Race/Ethnicity/Gender and Job Type, FY 2021

Percent Utilization	Women	Black	Hispanic	Asian	Native American	All Minority
Laborer	0.8%	35.9%	24.0%	0.0%	2.3%	62.2%
Skilled	2.4%	7.1%	11.3%	0.8%	0.0%	19.2%
All	2.3%	9.6%	12.4%	0.7%	0.2%	23.0%

Source: Econsult Solutions, Inc. (2022)

The Water Department accounted for 546,390 specified hours; accounting for more than all other departments combined. The Water Department also reported the overall highest minority utilization rate of all departments at 44 percent. The Public Property Department reported the highest minority

Laborer utilization (62.2 percent), and the Water Department reported the highest minority Skilled utilization (33.7 percent).

The Public Property Department reported the highest utilization of female Laborers (0.8 percent), and the Water Department reported the highest utilization of Skilled Women at 3.4 percent (see Tables 2.10 and 2.7). The Water Department had the highest utilization of Hispanic workers (24.3 percent), and the highest utilization of Black workers (18.9 percent). On the other hand, The Aviation Department had the highest Asian utilization (1.5 percent). The Aviation department reported the lowest percentage of total minority Skilled hours (9.5 percent) of the four departments. Detailed department tables showing the count and distribution of hours by Laborer versus Skilled are included in the Appendix at the end of this report.

2.5. Utilization by EOP Size

Across the Philadelphia MSA and within the city of Philadelphia, there is a need for more minority and female trade workers and Skilled journeypersons specifically. The demand for construction jobs in the Philadelphia region is high at this time and will continue to increase for the next several years with multiple large projects occurring concurrently. While, overall, the achievement of the minority employment goal is high, many smaller EOP projects are not meeting the goal. In other words, several EOP projects are carrying the weight of meeting the goal. In fact, approximately 17 percent of all projects reported zero minority utilization.

When reading this report, one should keep in mind that all EOPs are not equal in size and that some fiscal years see very large, active EOP projects. If participation is not high in larger projects, then it is difficult for small projects to make up the difference. However, the reverse is not true. If large projects are doing well in meeting goals, the small projects still need to do their part to help reach the overall goal. This factor should be considered in goal setting and monitoring.

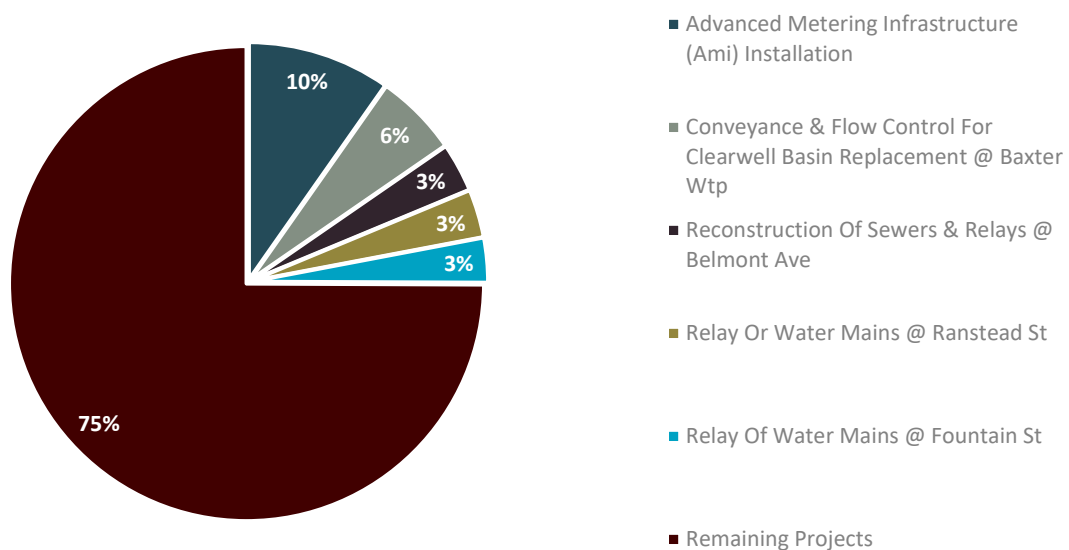
Concerning EOP project achievement for the 221 projects examined, after eliminating projects with employment exclusively in security or custodial work, the top five EOPs carried 25 percent of total minority hours worked (Figure 2.11). For these five projects, 78.2 percent (35,221 hours) of total Laborer hours were performed by minorities and 61.3 percent (56,778 hours) of total Skilled hours were performed by minority workers.

Figure 2.11: Top Five Projects by All Minority Hours, FY 2021

Project Description	EOP Minority Hours	EOP Minority Hours/Total EOP Hours	EOP Minority Hours/Total Minority Hours
Advanced Metering Infrastructure (Ami) Installation	35,756	86.8%	9.7%
Conveyance & Flow Control for Clearwell Basin Replacement @ Baxter Wtp	20,750	51.2%	5.7%
Reconstruction Of Sewers & Relays @ Belmont Ave	12,243	93.6%	3.3%
Relay Or Water Mains @ Ranstead St	12,060	68.0%	3.3%
Relay Of Water Mains @ Fountain St	11,191	44.4%	3.0%
Five Largest Projects by Employment Hours	91,998	37.4%	25.1%
Remaining Projects	275,043	32.6%	74.9%

Source: Econsult Solutions, Inc. (2022)

Figure 2.12: Distribution of Projects by Percentage of All Minority Hours, FY 2021



Source: Econsult Solutions, Inc. (2022)

The Advanced Metering Infrastructure (AMI) Installation project provided the most minority hours, (35,756 hours), accounting for 86.8 percent of its 41,174 total specified hours. Of all specified hours, 61.3 percent (25,225 hours) were performed by Black workers, 21.3 percent (8,755 hours) by Hispanic workers, 4.3 percent (1,776 hours) by Asian workers, and 10.2 percent (4,187 hours) by women. All the work was performed by Skilled workers.

The Conveyance & Flow Control for Clearwell Basin Replacement at Baxter WTP project had a total of 40,549 specified hours, 51.2 percent (20,750 hours) of which were attributed to minority workers. Of all specified hours, 34.9 percent (14,143 hours) were performed by Black workers, 16.3 percent (6,607

hours) by Hispanic workers, and 13.8 percent (5,595 hours) by women. Nearly 64 percent of all work (25,842 hours) was performed by skilled workers.

The Reconstruction of Sewers & Relays at Belmont Ave project had 13,081 total specified hours, 93.6 percent (12,243 hours) of which were attributed to minority workers. Of the 13,081 total specified hours, 52.1 percent (6,814 hours) were performed by Black workers and 41.5 percent (5,429 hours) by Hispanic workers. 28.7% of the work (3,759 hours) was completed by Skilled workers.

The Relay of Water Mains @ Fountain St had a total of 25,196 specified hours, 44.4 percent (11,191 hours) of which were attributed to minority workers. Of all specified hours, 14.8 percent (3,734 hours) were attributed to Black workers and 29.6 percent (7,458 hours) were attributed to Hispanic workers. Of all the hours, 60.4 percent (15,211 hours) was performed by Skilled workers.

The Relay or Water Mains @ Ranstead St project had 17,726 total specified hours, 68.0 percent (12,060 hours) of which were attributed to minority workers. Of all specified hours, 14.4 percent (2,547 hours) were performed by Black workers, and 53.7 percent (9,513 hours) were performed by Hispanic workers. Of all the hours, 37.7 percent (6,684 hours) were performed by skilled workers.

2.6. Difference from Baseline Goal

Historically, the City has operated under a baseline goal of 32 percent of employment hours being fulfilled by minorities. It is therefore instructive to look at whether individual EOPs exceeded, met, or fell short of that baseline goal. This variance from the 32 percent baseline goal is referred to as “Difference” in this report, with positive Differences meaning exceeding 32 percent (e.g., 40 percent minority hours would be a Difference of +8 percent) and negative Differences meaning falling short of 32 percent (e.g., 20 percent minority hours would be a Difference of -12 percent).

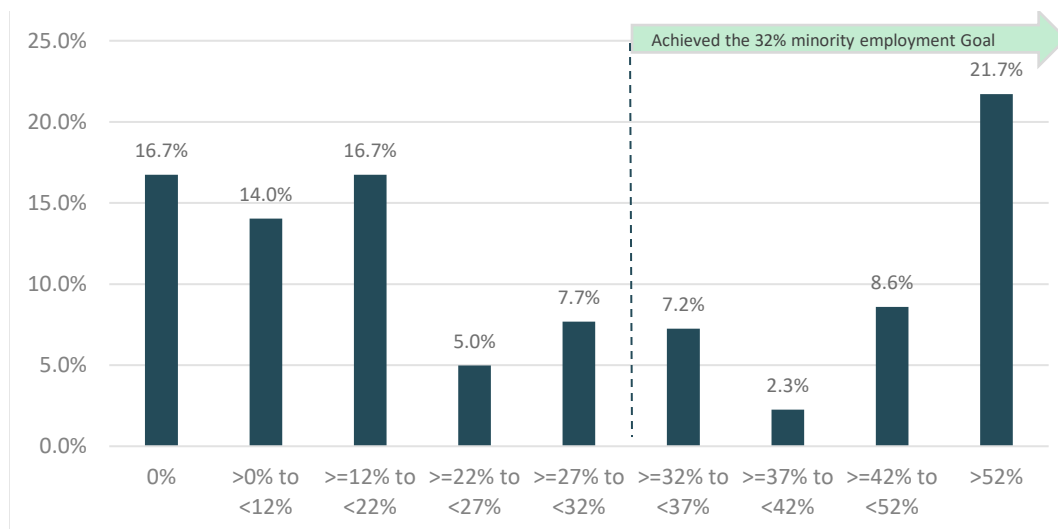
As shown in Figure 2.13, 39.8 percent of the EOP projects analyzed for this report met or exceeded the City’s 32 percent minority employment goal. Projects falling below 32 percent minority utilization or zero percentage points from the goal did not meet the 32 percent minority goal. Out of all EOP projects, 60.2 percent have not achieved the 32 percent goal, with 16.7 percent recording zero minority hours. Forty-eight percent of the EOP projects have not achieved the goal and are more than 10 percentage points below meeting the goal.

Figure 2.13: Number of All EOP Employment Projects by Difference from FY2021 Minority Goal*6

	>0% to <12%	>=12% to <22%	>=22% to <27%	>=27% to <32%	>=32% to <37%	>=37% to <42%	>=42% to <52%	>52%
	Between -32 and - 20 percenta ge points	Between -20 and - 10 percenta ge points	Between -10 and - 5 percenta ge points	Between -5 and 0 percenta ge points	Between 0 and 5 percenta ge points	Between 5 and 10 percenta ge points	Between 10 and 20 percenta ge points	Greater than 20 percenta ge points
	37	31	37	11	17	16	5	19
	16.7%	14.0%	16.7%	5.0%	7.7%	7.2%	2.3%	8.6%
								21.7%

Source: Econsult Solutions, Inc. (2022)

Figure 2.14: Number of All EOP Employment Projects by Difference from FY2021 Minority Goal



Source: Econsult Solutions, Inc. (2022)

The above figures sort EOPs by their Difference amounts. This is helpful to see the distribution of EOPs by minority employment relative to the 32 percent baseline goal. But EOPs are not all the same size, as some are small, and others are quite large. So, it is useful to understand the distribution of Differences not just by EOPs but by the hours represented by those EOPs. Figures 2.15 and 2.16 provide this distribution, by sorting all employment hours into different ranges of Differences for the EOPs those hours are in.

As indicated below, in FY 2021, 40.7 percent of employment hours were in EOPs that exceeded the 32 percent baseline goal. Nearly 17 percent of the hours were in EOPs that exceeded the baseline goal by

*6 The Difference ranges selected show the distribution of projects that were 5 percentage points above and 5 percentage points below the 32 percent goal, or, more specifically, those projects that just missed the goal. Recognizing the distribution of projects that are very close to achieving the stated goal helps to inform policy recommendations. The Difference ranges then move outward to display those projects missing the goal by an increasingly large margin until arriving at the projects well above the goal (>52%) or well below the goal (0%).

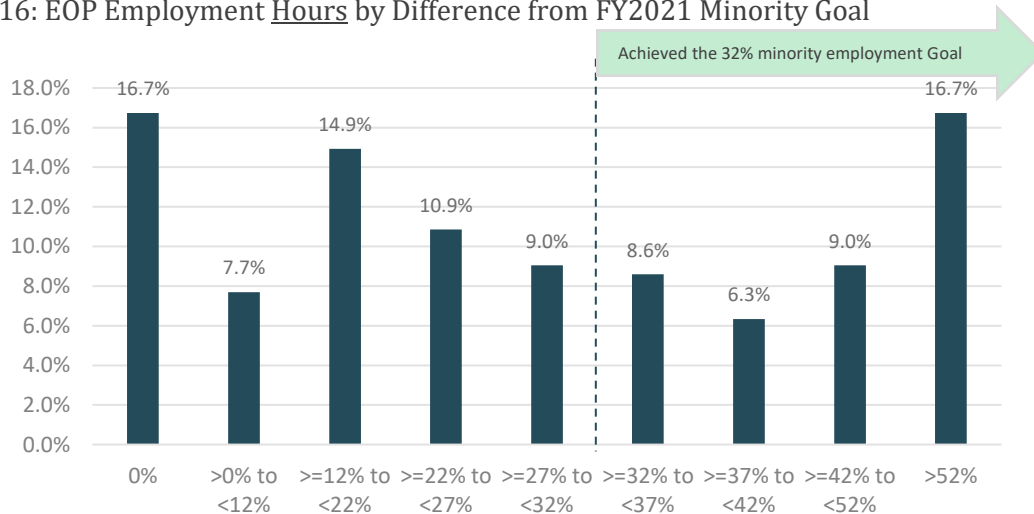
20 percentage points or more. Conversely, 59.3 percent of employment hours were in EOPs that fell short of the 32 percent goal. And a full 37 percent of employment hours were in EOPs that had no minority employment hours at all.

Figure 2.15: EOP Employment Hours by Difference from FY2021 Minority Goal

	>0% to 0%	>=12% to <22%	>=22% to <27%	>=27% to <32%	>=32% to <37%	>=37% to <42%	>=42% to <52%	>52%
	Between -32 and - 20 percentage points	Between -20 and - 10 percentage points	Between -10 and - 5 percentage points	Between -5 and 0 percentage points	Between 0 and 5 percentage points	Between 5 and 10 percentage points	Between 10 and 20 percentage points	Greater than 20 percentage points
	37	17	33	24	20	19	14	20
	16.7%	7.7%	14.9%	10.9%	9.0%	8.6%	6.3%	9.0%
	37							37
	16.7%							16.7%

Source: Econsult Solutions, Inc. (2022)

Figure 2.16: EOP Employment Hours by Difference from FY2021 Minority Goal



Source: Econsult Solutions, Inc. (2022)

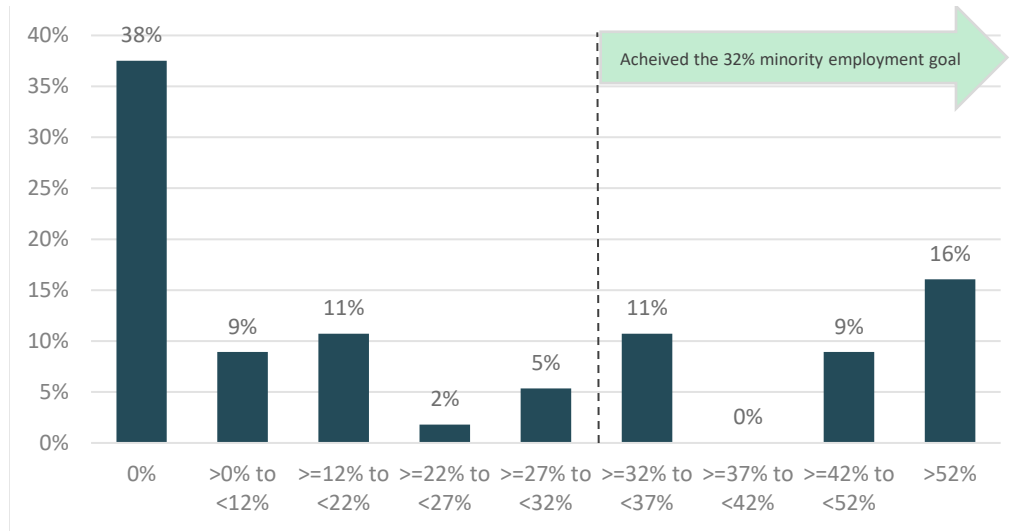
2.7. Difference from Goal (by EOP Size)

Figures 2.17 through 2.20 further evaluate the Difference from the FY 2021 minority goal by project hours as presented in Figure 2.16, mirroring the Difference by contract size analysis presented in the EOP report. The EOP Employment data was distributed into four project sizes: smallest, small to mid, mid to large, and largest by project hours.⁷ The FY 2016 report showed an inverse relationship between project size and percentage of project hours with zero minority participation, and this is the case for FY 2021. Thirty-eight percent of the smallest projects, 27.3 percent of small to mid-size projects, 1.8

⁷ The 221 projects with specified hours were distributed into quartiles by project hours to categorize each project as smallest, small to mid, mid to large, and largest.

percent of the medium projects, and 0 percent of the largest projects had zero minority participation. Similarly, the percentage of EOPs with 52 percent or greater minority participation in employment hours showed a direct correlation with EOP size, with smaller EOPs having a lower such percentage and larger EOPs having a higher such percentage.

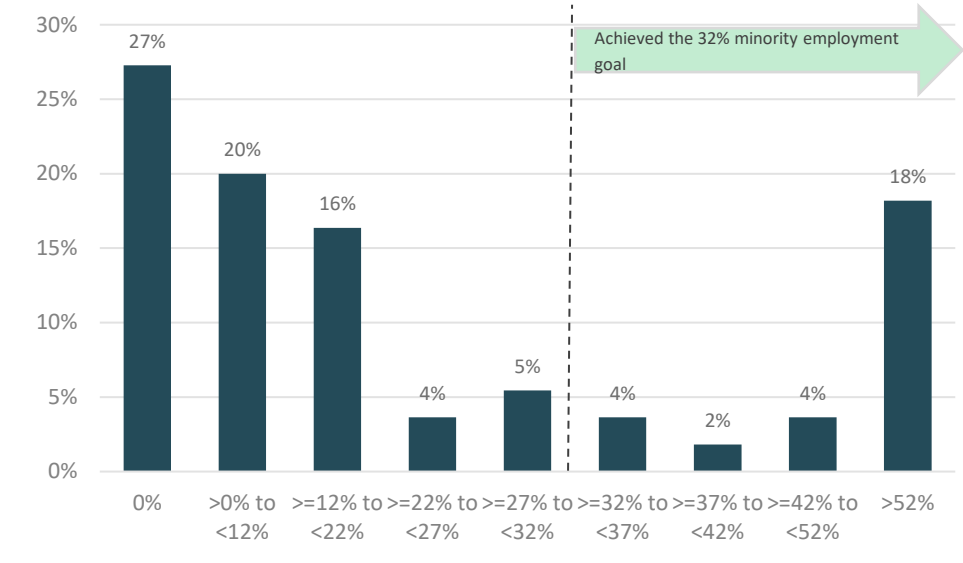
Figure 2.17: Smallest Projects, by Difference Ranges from FY2021 Minority Goal⁸



Source: Econsult Solutions, Inc. (2022)

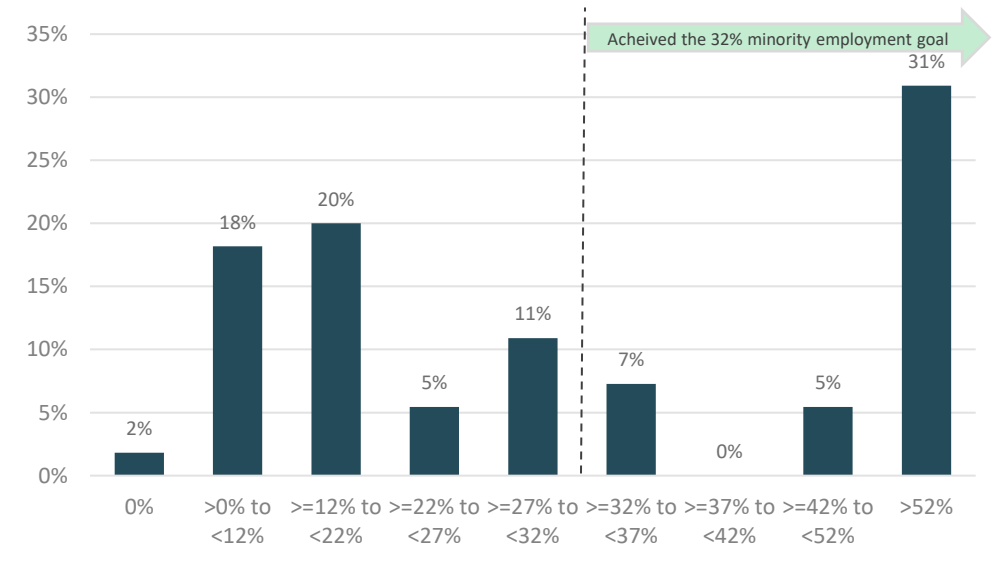
⁸ The smallest projects have less than 340 total specified project hours.

Figure 2.18: Small to Mid-Size Projects, by Difference Ranges from FY2021 Minority Goal⁹



Source: Econsult Solutions, Inc. (2022)

Figure 2.19: Mid to Large-Size Projects, by Difference Ranges from FY2021 Minority Goal¹⁰

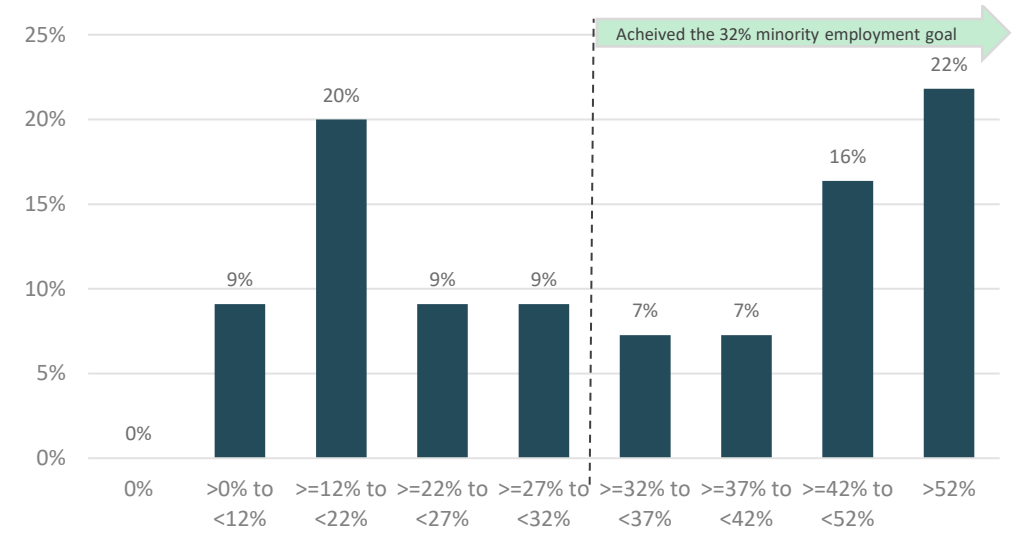


Source: Econsult Solutions, Inc. (2022)

⁹ Small the mid-size projects range from 340 to less than 2,017 total specified project hours.

¹⁰ Mid to large-size projects range from 2,017 to less than 5,466 total specified project hours.

Figure 2.20: Largest Projects, by Difference Ranges from FY2021 Minority Goal¹¹



Source: Econsult Solutions, Inc. (2022)

¹¹ The largest projects have greater than or equal to 5,466 total specified project hours.

3. Availability

3.1. Overview

Whereas utilization represents the proportion of EOP employment hours worked by minorities and women, availability represents the proportion of available construction workers who are minorities and women. This can be estimated using Census data, which provides information on worker characteristics such as race/ethnicity, sex, occupation, and industry. Availability at both the Philadelphia-Camden-Wilmington, PA-NJ-DE-MD MSA, and the city of Philadelphia levels was determined using American Community Survey (ACS) 2014-2018 Equal Employment Opportunity (EEO) Tabulation Data provided by the United States Census Bureau.

3.2. Availability at the City Level

Availability for construction labor is best considered at the City level, since, unlike the procurement of goods and services, which can more easily be with vendors throughout the region and country, construction labor tends to be more local. Hence, availability at the City level is considered first.

All racial and ethnic sub-categories saw lower Availability for Laborer hours than for Skilled hours. Conversely, women had higher Availability for Skilled hours than for Laborer hours.

Relative to FY 2016, Availability is lower for women, Asian, Black, and Native American workers, and higher only for Hispanic workers. In light of the disproportionate effects of the COVID pandemic on labor participation rates, these trends warrant further monitoring in the years to come.

Figure 3.1: Trade/Contractor Availability in Philadelphia City by Race/Ethnicity/Gender and Job Type, FY 2016 & FY 2021

Percent Availability	Women	Black	Hispanic	Asian	Native American	All Minority
FY 2021						
Laborer	0.8%	27.3%	29.2%	2.5%	0.5%	62.6%
Skilled	3.1%	13.7%	14.9%	1.3%	0.1%	32.5%
All	2.5%	16.8%	18.1%	1.6%	0.2%	39.2%
FY 2016						
Laborer	4.7%	35.1%	19.0%	3.1%	0.0%	59.0%
Skilled	2.8%	24.0%	12.1%	3.2%	0.5%	40.9%
All	3.3%	26.7%	13.8%	3.2%	0.4%	45.0%

Source: U.S. Census Bureau (2022); Econsult Solutions, Inc. (2022)

3.3. Availability at the Region Level

Availability for construction labor is now considered at the Region level, since while this is a less preferred geographic unit it is true that construction projects can draw labor from a broader region beyond city limits. Hence, Availability at the Region level is considered here.

Relative to FY 2016, Availability is unchanged or slightly up for all racial, ethnic, and sex categories. As with Availability at the City level, most racial, ethnic, and sex categories saw higher Availability for Laborer hours than for Skilled hours.

Figure 3.2: Trade/Contractor Availability in Philadelphia-Camden-Wilmington, PA-NJ-DE-MD Metro Area by Race/Ethnicity/Gender and Job Type, FY 2016 & FY 2021

Percent Availability	Women	Black	Hispanic	Asian	Native American	All Minority
FY 2021						
Laborer	1.7%	15.9%	22.2%	2.2%	0.2%	42.8%
Skilled	3.2%	8.9%	11.6%	0.8%	0.2%	22.8%
All	2.8%	10.5%	14.0%	1.1%	0.2%	27.3%
FY 2016						
Laborer	2.8%	16.2%	17.5%	1.4%	0.0%	35.9%
Skilled	2.3%	9.2%	8.3%	1.1%	0.2%	19.5%
All	2.4%	10.5%	10.1%	1.2%	0.2%	22.7%

Source: U.S. Census Bureau (2022); Econsult Solutions, Inc. (2022)

4. Disparity

4.1. Overview

As noted above, when it comes to the utilization of minorities and women in EOP employment hours, disparity can be inferred by comparing utilization to availability. Specifically, a Disparity ratio can be calculated, which is Utilization divided by Availability. Thus, a Disparity ratio of less than 1 (i.e., Utilization is less than Availability) suggests that a disparity exists in the Utilization of minorities and women in EOP employment hours relative to their Availability.

4.2. Disparity at the City Level

Disparity ratios in this sub-section compare the utilization of minorities and women in construction labor hours associated with FY 2021 EOPs, relative to their availability in the labor force in the city as indicated by federal census data for the years 2016 to 2021. Therefore, if Utilization lags Availability, that may indicate that the City is under-utilizing minorities and women in EOP projects and further remedies may be warranted.

Disparity ratios have improved for women, Asian, and Black workers, although as noted in Section 3, some of this is due to lower Availability which is an effect of constrained labor participation rates during COVID. Conversely, Disparity ratios have gone down for Hispanics and Native Americans.

With the exception of Hispanics, all racial, ethnic, and sex categories, Disparity ratios are lower for Laborer hours than for Skilled hours. In some cases, these Differences are quite pronounced, and therefore this should be flagged for further exploration and potentially remediation.

Figure 4.1: Trade/Contractor Disparity in Philadelphia City by Race/Ethnicity/Gender and Job Type Excluding Security Jobs, FY 2016- FY 2021¹²

Utilization/Availability	Women	Black	Hispanic	Asian	Native American	All Minority
FY 2021						
Laborer	0.42	0.73	1.25	0.07	0.45	0.91
Skilled	0.71	1.21	0.65	0.59	1.64	0.84
All	0.60	1.06	1.04	0.36	1.03	0.95
FY 2016						
Laborer	0.21	0.56	1.89	0.62	N/A	0.99
Skilled	0.24	0.45	0.63	0.03	0.58	0.46
All	0.25	0.56	1.50	0.30	1.85	0.83

Source: U.S. Census Bureau (2022); Econsult Solutions, Inc. (2022)

¹² Security guard and custodian hours were eliminated from the utilization analysis. See Appendix B for disparity ratios inclusive of security guards.

4.3. Disparity at the Region Level

Disparity ratios in this sub-section compare the utilization of minorities and women in construction labor hours associated with FY 2021 EOPs, relative to their availability in the labor force in the region as indicated by federal Census data for the years 2016 to 2021. While these region-based Disparity ratios should be deemphasized relative to their city-based counterparts, they still provide information on City utilization of minorities and women relative to their availability in the region.

Compared to FY 2016, disparity ratios are up for women, Asian, and Black workers, although some of this is due to lower Availability which is an effect of constrained labor participation rates during COVID. Conversely, Disparity ratios are down for Hispanics and Native Americans.

Disparity ratios are generally lower for Laborer hours than for Skilled hours, although the differences are not as pronounced as with City-based Disparity ratios.

Figure 4.2: Trade/Contractor Disparity in Philadelphia-Camden-Wilmington, PA-NJ-DE-MD Metro Area by Race/Ethnicity/Gender and Job Type Excluding Security Jobs, FY 2016- FY 2021¹³

Utilization/Availability	Women	Black	Hispanic	Asian	Native American	All Minority
FY 2021						
Laborer	0.19	1.26	1.64	0.08	1.47	1.33
Skilled	0.68	1.87	0.83	0.94	1.41	1.20
All	0.54	1.70	1.34	0.51	1.42	1.37
FY 2016						
Laborer	0.35	1.21	2.05	1.42	29.88	1.63
Skilled	0.28	1.19	0.93	0.08	1.37	0.97
All	0.33	1.42	2.06	0.80	3.90	1.64

Source: U.S. Census Bureau (2022); Econsult Solutions, Inc. (2022)

¹³ Security guard and custodian hours were eliminated from the utilization analysis. See Appendix B for disparity ratios inclusive of security guards.

5. Recommended Goals

Utilization, availability, and disparity for EOP employment hours, as covered in the previous sections, yields some key observations which in turn informs the recommended goal levels the City should consider going forward.

Figure 5.1 brings together FY 2021 Utilization and Availability, also displaying FY 2016 numbers for comparison purposes. Based on these levels, recommended EOP employment goal levels are advanced (alongside the equivalent recommendations from the FY 2016 report), which are 40 percent overall, including 60 percent for Laborer and 30 percent for Skilled.

Figure 5.1: EOP Recommended EOP Employment Goal for Minorities by Employment Type (FY 2016 Figures in Parentheses)

Labor Type	Utilization	Availability	Recommended Goal
Laborer	57% (51%)	63% (59%)	60% (60%)
Skilled	27% (18%)	32% (40%)	30% (30%)
All	37% (31%)	39% (45%)	40% (40%)

Source: Econsult Solutions, Inc. (2022)

As indicated above, recommended goal levels are unchanged from what was advanced in the FY 2016 report. Since that previous report, Utilization and Availability levels for Laborer hours have both gone up, making the proposed 60 percent goal no longer a small stretch but rather well within what seems warranted. For Skilled hours, the large gap between Utilization and Availability has narrowed considerably, from 18 percent Utilization versus 40 percent Availability in FY 2016, to 27 percent Utilization versus 33 percent Availability in FY 2021, further justifying the 30 percent goal.

Figure 5.2 takes a closer look at minority sub-categories, again displaying FY 2016 numbers for comparison purposes. Accounting for updated estimates for Utilization and Availability, new recommended EOP employment goal levels can be advanced (alongside the equivalent recommendations from the FY 2016 report).

Figure 5.2: EOP Recommended EOP Employment Goal for Minorities by Race/Ethnicity and by Employment Type (FY 2016 Figures in Parentheses)

Race/Ethnicity	Laborer Hours	Skilled Hours	All Hours
Black	29% (30%)	17% (18%)	20% (22%)
Hispanic	29% (27%)	13% (10%)	18% (15%)
Asian	2% (3%)	1% (2%)	2% (3%)
Total	60% (60%)	30% (30%)	40% (40%)

Source: Econsult Solutions, Inc. (2022)

For instance, higher Availability among Hispanic workers (including Laborer Availability of 29 percent, up from 19 percent in FY 2016) seems to warrant a slight upward adjustment in Hispanic employment goals, which is now 18 percent for all hours, up from 15 percent in FY 2016. Black and Asian goal levels, conversely, are now slightly lower, 20 percent (versus 22 percent in FY 2016) for Black workers and 2 percent (versus 3 percent in FY 2016) for Asian workers.

Lastly, the same exercise can be undertaken to determine goal levels for women (see Figure 5.3). Here, historically low numbers, and in particular a significant decline in female Availability for Laborer hours, seem to warrant a downward adjustment in recommended EOP employment goal levels.

Figure 5.3: Recommended EOP Employment Goal for Women by Employment Type (FY 2016 Figures in Parentheses)

Labor Type	FY 2021 Utilization	FY 2021 Availability	Recommended Goal
Laborer	0.3% (1.0%)	0.8% (4.7%)	1.0% (5.0%)
Skilled	2.2% (0.7%)	3.1% (2.8%)	3.0% (5.0%)
All	1.5% (0.8%)	2.5% (3.3%)	2.5% (5.0%)

Source: Econsult Solutions, Inc. (2022)

Unlike for Utilization and Availability for minorities, Utilization and Availability for women is higher for Skilled hours than for Laborer hours. Recommended goals are now lower than what was advanced in FY 2016, 2.5 percent overall, including 1.0 percent for Laborer hours and 3.0 percent for Skilled hours (all 5 percent in FY 2016).

Appendix A: List of Trades Considered “Skilled”¹⁴

1. Asbestos Worker
2. Boilermaker
3. Bricklayer
4. Building Engineer
5. Carpenter
6. Cement Mason
7. Dry Wall Finisher
8. Electrician
9. Elevator
10. Forestry Equipment Operator
11. General Forestry
12. Glazier
13. Grounds
14. Guest Clerk
15. HVAC
16. Installation Technician
17. Ironworker
18. Landscape Laborer
19. Line Construction
20. Maintenance Mechanic
21. Millwright
22. Painter
23. Piledriverman
24. Plasterer
25. Plumber
26. Pointer, Caulker, & Cleaner
27. Power Equipment Operator

¹⁴ Custodial, janitorial, and security guard were removed from the primary analysis because the nature of the work significantly varies from other skilled construction trades.

28. Roofer
29. Sheet Metal Worker
30. Soft Floor Layer (Resilient Floor)
31. Sprinkler Fitter
32. Steam Fitter
33. Stone Mason
34. Surveying & Layout
35. Terrazzo Mechanic
36. Tile Finisher
37. Tile Setter
38. Truck Driver

Appendix B: Utilization and Disparity for All EOP Projects

Figure B.1: Trade/Contractor Utilization by the City of Philadelphia by Race/Ethnicity/Gender and Job Type, FY 2021

Utilization Percentage	Women	Black	Hispanic	Asian	Native American	All Minority
Laborer	0.3%	20.1%	36.4%	0.2%	0.2%	56.9%
Skilled	20.0%	51.3%	6.8%	0.4%	0.1%	58.6%
All	16.0%	44.9%	12.9%	0.3%	0.1%	58.3%

Source: Econsult Solutions, Inc. (2022)

Figure B.2: Trade/Contractor Disparity in Philadelphia City by Race/Ethnicity/Gender and Job Type, FY 2016- FY 2021

Utilization/Availability	Women	Black	Hispanic	Asian	Native American	All Minority
FY 2021						
Laborer	0.42	0.73	1.25	0.07	0.45	0.91
Skilled	6.55	3.73	0.46	0.29	0.82	1.80
All	6.27	2.68	0.71	0.22	0.62	1.49
FY 2016						
Laborer	0.18	0.54	1.64	0.22	N/A	0.86
Skilled	0.25	0.38	0.63	0.06	1.23	0.43
All	0.23	0.49	1.26	0.13	1.39	0.70

Source: U.S. Census Bureau (2022); Econsult Solutions, Inc. (2022)

Figure B.3: Trade/Contractor Disparity in Philadelphia-Camden-Wilmington, PA-NJ-DE-MD Metro Area by Race/Ethnicity/Gender and Job Type, FY 2016- FY 2021

Utilization/Availability	Women	Black	Hispanic	Asian	Native American	All Minority
FY 2021						
Laborer	0.19	1.26	1.64	0.08	1.47	1.33
Skilled	6.31	5.77	0.59	0.47	0.70	2.58
All	5.62	4.28	0.92	0.30	0.85	2.13
FY 2016						
Laborer	0.30	1.16	1.78	0.50	10.00	1.42
Skilled	0.30	0.99	0.92	0.18	2.89	0.90
All	0.31	1.25	1.72	0.34	2.92	1.38

Source: U.S. Census Bureau (2022); Econsult Solutions, Inc. (2022)

Appendix C: Count and Distribution of Hours by Skilled Trade

Figure C.1: Top 10 Skilled Trades by Total Hours

Skilled Trade	Black	Hispanic	Asian	Native American	All Minority	Women	Total Employees
Power Equipment Operator	18,649	23,254	-	547	42,449	4,040	143,471
Electrician	7,806	3,466	1,527	-	12,798	992	92,660
Installation Technician	25,225	8,755	1,776	-	35,756	4,187	41,174
Carpenter	3,885	2,061	24	128	6,097	239	40,853
Elevator	2,218	152	-	-	2,370	-	37,014
Roofer	9,509	1,345	747	11	11,612	73	35,843
Steam Fitter	480	672	213	-	1,364	-	28,394
Truck Driver	8,629	5,525	-	3	14,156	118	27,722
Cement Mason	3,615	1,844	-	300	5,758	328	25,810
Maintenance Mechanic	5,082	3,240	-	-	8,322	-	18,952

Figure C.2: Count and Distribution of Skilled Trades by Race/Ethnicity/Gender

Skilled Trade	Count						Total Employees	Distribution (%)					
	Black	Hispanic	Asian	Native American	All Minority	Women		Black	Hispanic	Asian	Native American	All Minority	Women
Asbestos Worker	1,012	3,765	710	-	5,487	480	10,115	10.0%	37.2%	7.0%	0.0%	54.2%	4.7%
Apprentice	96	-	-	-	96	-	291	33.0%	0.0%	0.0%	0.0%	33.0%	0.0%
Journey	916	3,765	710	-	5,391	480	9,824	9.3%	38.3%	7.2%	0.0%	54.9%	4.9%
Boilermaker	56	-	-	-	56	-	144	38.9%	0.0%	0.0%	0.0%	38.9%	0.0%
Journey	56	-	-	-	56	-	144	38.9%	0.0%	0.0%	0.0%	38.9%	0.0%
Bricklayer	88	45	-	-	133	-	3,634	2.4%	1.2%	0.0%	0.0%	3.7%	0.0%
Journey	88	45	-	-	133	-	3,634	2.4%	1.2%	0.0%	0.0%	3.7%	0.0%
Building Engineer	188	-	-	-	188	188	7,656	2.5%	0.0%	0.0%	0.0%	2.5%	2.5%
Journey	188	-	-	-	188	188	7,656	2.5%	0.0%	0.0%	0.0%	2.5%	2.5%
Carpenter	3,885	2,061	24	128	6,097	239	40,853	9.5%	5.0%	0.1%	0.3%	14.9%	0.6%
Apprentice	736	435	24	-	1,195	8	3,466	21.2%	12.6%	0.7%	0.0%	34.5%	0.2%
Journey	3,149	1,626	-	128	4,902	231	37,387	8.4%	4.3%	0.0%	0.3%	13.1%	0.6%
Cement Mason	3,615	1,844	-	300	5,758	328	25,810	14.0%	7.1%	0.0%	1.2%	22.3%	1.3%
Apprentice	32	394	-	-	426	-	1,987	1.6%	19.8%	0.0%	0.0%	21.4%	0.0%
Journey	3,583	1,450	-	300	5,332	328	23,824	15.0%	6.1%	0.0%	1.3%	22.4%	1.4%
Dry Wall Finisher	-	-	-	-	-	-	238	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Journey	-	-	-	-	-	-	238	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Electrician	7,806	3,466	1,527	-	12,798	992	92,660	8.4%	3.7%	1.6%	0.0%	13.8%	1.1%
Apprentice	1,628	1,426	305	-	3,358	124	12,682	12.8%	11.2%	2.4%	0.0%	26.5%	1.0%
Journey	6,178	2,040	1,222	-	9,440	868	79,978	7.7%	2.6%	1.5%	0.0%	11.8%	1.1%
Elevator	2,218	152	-	-	2,370	-	37,014	6.0%	0.4%	0.0%	0.0%	6.4%	0.0%
Apprentice	2,218	-	-	-	2,218	-	7,543	29.4%	0.0%	0.0%	0.0%	29.4%	0.0%
Journey	-	152	-	-	152	-	29,471	0.0%	0.5%	0.0%	0.0%	0.5%	0.0%
Forestry Equipment Operator	-	-	-	-	-	-	16	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Journey	-	-	-	-	-	-	16	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
General Forestry	-	16	-	-	16	-	20	0.0%	80.0%	0.0%	0.0%	80.0%	0.0%

City of Philadelphia Economic Opportunity Plan Employment Composition Analysis: Fiscal Year 2021
Dec 7, 20202

Skilled Trade	Black	Hispanic	Asian	Native American	All Minority	Women	Total Employees	Black	Hispanic	Asian	Native American	All Minority	Women
Journey	-	16	-	-	16	-	20	0.0%	80.0%	0.0%	0.0%	80.0%	0.0%
Glazier	12	84	-	-	95	-	1,338	0.9%	6.2%	0.0%	0.0%	7.1%	0.0%
Apprentice	-	12	-	-	12	-	307	0.0%	3.8%	0.0%	0.0%	3.8%	0.0%
Journey	12	72	-	-	84	-	1,032	1.1%	7.0%	0.0%	0.0%	8.1%	0.0%
Grounds	3	1,879	-	-	1,882	-	2,710	0.1%	69.3%	0.0%	0.0%	69.4%	0.0%
Journey	3	1,879	-	-	1,882	-	2,710	0.1%	69.3%	0.0%	0.0%	69.4%	0.0%
Guest Clerk	1,065	-	-	-	1,065	-	2,574	41.4%	0.0%	0.0%	0.0%	41.4%	0.0%
Journey	1,065	-	-	-	1,065	-	2,574	41.4%	0.0%	0.0%	0.0%	41.4%	0.0%
HVAC	-	-	-	-	-	-	5	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Journey	-	-	-	-	-	-	5	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Installation Technician	25,225	8,755	1,776	-	35,756	4,187	41,174	61.3%	21.3%	4.3%	0.0%	86.8%	10.2%
Journey	25,225	8,755	1,776	-	35,756	4,187	41,174	61.3%	21.3%	4.3%	0.0%	86.8%	10.2%
Ironworker	872	600	52	128	1,651	-	13,257	6.6%	4.5%	0.4%	1.0%	12.5%	0.0%
Apprentice	-	-	-	-	-	-	951	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Journey	872	600	52	128	1,651	-	12,306	7.1%	4.9%	0.4%	1.0%	13.4%	0.0%
Landscape Laborer	9,198	3,743	-	-	12,941	-	16,923	54.4%	22.1%	0.0%	0.0%	76.5%	0.0%
Journey	9,198	3,743	-	-	12,941	-	16,923	54.4%	22.1%	0.0%	0.0%	76.5%	0.0%
Line Construction	3,259	822	-	71	4,152	-	18,518	17.6%	4.4%	0.0%	0.4%	22.4%	0.0%
Apprentice	130	-	-	-	130	-	1,012	12.8%	0.0%	0.0%	0.0%	12.8%	0.0%
Journey	3,129	822	-	71	4,022	-	17,506	17.9%	4.7%	0.0%	0.4%	23.0%	0.0%
Maintenance Mechanic	5,082	3,240	-	-	8,322	-	18,952	26.8%	17.1%	0.0%	0.0%	43.9%	0.0%
Journey	5,082	3,240	-	-	8,322	-	18,952	26.8%	17.1%	0.0%	0.0%	43.9%	0.0%
Millwright	509	501	-	320	1,330	-	14,000	3.6%	3.6%	0.0%	2.3%	9.5%	0.0%
Apprentice	429	209	-	-	638	-	3,875	11.1%	5.4%	0.0%	0.0%	16.5%	0.0%
Journey	80	292	-	320	692	-	10,125	0.8%	2.9%	0.0%	3.2%	6.8%	0.0%
Painter	1,036	459	-	-	1,495	1,620	15,257	6.8%	3.0%	0.0%	0.0%	9.8%	10.6%
Apprentice	486	-	-	-	486	-	2,217	21.9%	0.0%	0.0%	0.0%	21.9%	0.0%
Journey	550	459	-	-	1,009	1,620	13,040	4.2%	3.5%	0.0%	0.0%	7.7%	12.4%
Piledriverman	-	198	-	-	198	1,629	13,761	0.0%	1.4%	0.0%	0.0%	1.4%	11.8%

City of Philadelphia Economic Opportunity Plan Employment Composition Analysis: Fiscal Year 2021
 Dec 7, 20202

Skilled Trade	Total Employees						Total Employees						
	Black	Hispanic	Asian	Native American	All Minority	Women	Black	Hispanic	Asian	Native American	All Minority	Women	
Apprentice	-	152	-	-	152	505	1,078	0.0%	14.1%	0.0%	0.0%	14.1%	46.8%
Journey	-	46	-	-	46	1,124	12,683	0.0%	0.4%	0.0%	0.0%	0.4%	8.9%
Plasterer	-	-	-	-	-	-	268	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Journey	-	-	-	-	-	-	268	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Plumber	2,274	46	-	-	2,320	-	12,140	18.7%	0.4%	0.0%	0.0%	19.1%	0.0%
Apprentice	313	-	-	-	313	-	584	53.6%	0.0%	0.0%	0.0%	53.6%	0.0%
Journey	1,961	46	-	-	2,007	-	11,556	17.0%	0.4%	0.0%	0.0%	17.4%	0.0%
Pointer, Caulker, & Cleaner	-	5	-	-	5	-	939	0.0%	0.5%	0.0%	0.0%	0.5%	0.0%
Apprentice	-	-	-	-	-	-	76	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Journey	-	5	-	-	5	-	863	0.0%	0.5%	0.0%	0.0%	0.5%	0.0%
Power Equipment Operator	18,649	23,254	-	547	42,449	4,040	143,471	13.0%	16.2%	0.0%	0.4%	29.6%	2.8%
Apprentice	16	-	-	-	16	-	463	3.5%	0.0%	0.0%	0.0%	3.5%	0.0%
Journey	18,633	23,254	-	547	42,433	4,040	143,008	13.0%	16.3%	0.0%	0.4%	29.7%	2.8%
Roofer	9,509	1,345	747	11	11,612	73	35,843	26.5%	3.8%	2.1%	0.0%	32.4%	0.2%
Apprentice	706	32	-	-	738	41	3,263	21.6%	1.0%	0.0%	0.0%	22.6%	1.3%
Journey	8,804	1,313	747	11	10,874	32	32,581	27.0%	4.0%	2.3%	0.0%	33.4%	0.1%
Sheet Metal Worker	790	16	-	-	806	-	6,860	11.5%	0.2%	0.0%	0.0%	11.7%	0.0%
Apprentice	223	-	-	-	223	-	1,335	16.7%	0.0%	0.0%	0.0%	16.7%	0.0%
Journey	567	16	-	-	583	-	5,526	10.3%	0.3%	0.0%	0.0%	10.6%	0.0%
Soft Floor Layer (Resilient Floor)	-	74	-	-	74	-	1,612	0.0%	4.6%	0.0%	0.0%	4.6%	0.0%
Journey	-	74	-	-	74	-	1,612	0.0%	4.6%	0.0%	0.0%	4.6%	0.0%
Sprinkler Fitter	1,958	-	-	-	1,958	-	7,582	25.8%	0.0%	0.0%	0.0%	25.8%	0.0%
Apprentice	-	-	-	-	-	-	64	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Journey	1,958	-	-	-	1,958	-	7,518	26.0%	0.0%	0.0%	0.0%	26.0%	0.0%
Steam Fitter	480	672	213	-	1,364	-	28,394	1.7%	2.4%	0.8%	0.0%	4.8%	0.0%
Apprentice	-	-	-	-	-	-	5,944	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Journey	480	672	213	-	1,364	-	22,450	2.1%	3.0%	0.9%	0.0%	6.1%	0.0%
Stone Mason	203	107	-	-	310	-	2,196	9.2%	4.9%	0.0%	0.0%	14.1%	0.0%

City of Philadelphia Economic Opportunity Plan Employment Composition Analysis: Fiscal Year 2021
Dec 7, 20202

Skilled Trade	Black	Hispanic	Asian	Native American	All Minority	Women	Total Employees	Black	Hispanic	Asian	Native American	All Minority	Women
Journey	203	107	-	-	310	-	2,196	9.2%	4.9%	0.0%	0.0%	14.1%	0.0%
Surveying & Layout	-	-	-	-	-	43	214	0.0%	0.0%	0.0%	0.0%	0.0%	20.1%
Journey	-	-	-	-	-	43	214	0.0%	0.0%	0.0%	0.0%	0.0%	20.1%
Terrazzo Mechanic	-	-	-	-	-	-	730	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Journey	-	-	-	-	-	-	730	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Tile Finisher	-	-	-	-	-	-	1,648	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Journey	-	-	-	-	-	-	1,648	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Tile Setter	-	-	-	-	-	-	1,047	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Journey	-	-	-	-	-	-	1,047	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Truck Driver	8,629	5,525	-	3	14,156	118	27,722	31.1%	19.9%	0.0%	0.0%	51.1%	0.4%
Journey	8,629	5,525	-	3	14,156	118	27,722	31.1%	19.9%	0.0%	0.0%	51.1%	0.4%
Total	107,617	62,671	5,049	1,507	176,843	13,936	647,292	16.6%	9.7%	0.8%	0.2%	27.3%	2.2%

Appendix D: Count and Distribution of Hours by Employee Type

Figure D.1 Count and Distribution of Hours by Employee Type

All Hours	Black	Hispanic	Asian	Native American	All Minority	Women	Total Employees
Apprentice	7,124	2,659	329	-	10,112	678	47,449
Journey	167,640	181,692	5,336	2,262	356,929	14,378	934,006
Total	174,764	184,351	5,665	2,262	367,041	15,056	981,454
Laborer							
Apprentice	112	-	-	-	112	-	315
Journey	67,035	121,680	617	755	190,087	1,120	333,847
Total	67,147	121,680	617	755	190,199	1,120	334,162
Skilled							
Apprentice	7,012	2,659	329	-	10,000	678	47,134
Journey	100,605	60,012	4,720	1,507	166,843	13,258	600,158
Total	107,617	62,671	5,049	1,507	176,843	13,936	647,292

Appendix E: Count and Distribution of Hours by Department

Figure E.1: Water Department Count and Distribution of Hours by Employee Type

Water Department	Black	Hispanic	Asian	Native American	All Minority	Women	Total Employees
Apprentice	2,063	1,606	240	-	3,909	666	15,862
Journey	101,273	131,082	3,031	1,293	236,678	10,504	530,529
Total	103,336	132,688	3,271	1,293	240,587	11,170	546,390

Figure E.2: Aviation Department Count and Distribution of Hours by Employee Type

Aviation Department	Black	Hispanic	Asian	Native American	All Minority	Women	Total Employees
Apprentice	164	-	-	-	164	-	4,105
Journey	7,712	1,958	923	128	10,720	24	58,154
Total	7,875	1,958	923	128	10,884	24	62,259

Figure E.3: Streets Department Count and Distribution of Hours by Employee Type

Streets Department	Black	Hispanic	Asian	Native American	All Minority	Women	Total Employees
Apprentice	335	642	-	-	977	-	3,440
Journey	11,508	13,024	354	71	24,956	328	72,025
Total	11,843	13,666	354	71	25,933	328	75,465

Figure E.4: Public Property Department Count and Distribution of Hours by Employee Type

Public Property Department	Black	Hispanic	Asian	Native American	All Minority	Women	Total Employees
Apprentice	1,594	315	-	-	1,909	4	8,265
Journey	3,965	6,867	398	131	11,361	1,309	49,431
Total	5,559	7,182	398	131	13,270	1,313	57,695

Appendix F: Performance vs. Goal Level

Figure E.1: Summary of Project Performance vs. Goal by Project

	Met Minority Goal	All Projects (only those with specified hours)	% Met Minority Goals	Met Female Goals	All Projects	% Met Female Goals
All Hours	88	221	39.8%	10	221	4.5%
Laborer Hours	110	134	82.1%	3	134	2.2%
Skilled Hours	45	160	28.1%	10	160	6.3%

Appendix G: Itemization of All FY21 EOPs, Sorted by Number of Employment Hours

Figure G.1: Count and Distribution of Hours by Project

Project	Black	Hispanic	Asian	Native American	Other	All Minority	Women	Minority %	Met Minority Goal	Female %	Met Female Goal
3836/ECMS102274-SCHUYLKILL RIVER SWING BRIDGE SRDC	2,231	878	-	-	319	3,109	-	18.7%	0	0.0%	0
3858/15TH STREET BRIDGE AND TRAFFIC UPGRADES ALONG CALLOWHILL STEET	4,147	4,119	-	71	-	8,336	238	32.4%	1	0.9%	0
3862/MILLING AND PAVING IN 4TH HIGHWAY DISTRICT	1,179	1,708	354	-	728	3,241	-	69.9%	1	0.0%	0
3867/B2007136-TRAFFIC SIGNALS AND LIGHTING EQUIPMENT MODERNIZATION	8	35	-	-	-	43	-	16.3%	0	0.0%	0
3878/ECMS105488 CITYWIDE 105	3,344	4,845	53	300	133	8,542	-	51.7%	1	0.0%	0
3879 GREEN LIGHT GO (GLG-3) CHELTENHEN	4,685	3,756	-	-	-	8,441	3	36.0%	1	0.0%	0
3881/ECMS110781 PHILA HISTORIC ST LIMITED TO ADA RAMPS	288	390	-	-	-	678	-	74.8%	1	0.0%	0
3882/B2008778 MAIN ST AND SHURS LN	889	328	-	-	-	1,217	-	26.3%	0	0.0%	0
3883/B2007783-2020 RESURFACING IN 2ND & 3RD HIGHWAY DISTRICT	1,051	2,448	-	-	-	3,499	86	38.3%	1	0.9%	0
3884/B20077852/2020 MILLING & CASTING ADJUSTMENT IN THE 2ND HIGHWAY DISTRICT	1,197	1,860	-	-	-	3,056	-	45.2%	1	0.0%	0
3886/2020 MILLING AND CASTING ADJUSTMENT IN 1ST HIGHWAY DISTRICT	1,234	2,105	8	-	416	3,347	40	42.6%	1	0.5%	0
3895/ECMS-108095/CITYWIDE RESURF/RAMPS ADA/108	782	1,800	-	-	-	2,582	-	52.4%	1	0.0%	0
3900/CHESTNUT-WALNUT FIBER OPTICS INSTALLATION	40	65	-	-	-	105	-	7.0%	0	0.0%	0
8TH AND DIAMOND PLAYGROUND ADVANCED METERING INFRASTRUCTURE (AMI) INSTALLATION	25,225	8,755	1,776	-	1,651	35,756	4,187	86.8%	1	10.2%	1
ANNUAL SERVICE CONTRACT 2018	65	183	-	-	-	248	-	14.8%	0	0.0%	0
ASBESTOS, LEAD, AND MOLD REQUIREMENTS	796	3,549	390	-	-	4,735	424	88.6%	1	7.9%	1

City of Philadelphia Economic Opportunity Plan Employment Composition Analysis: Fiscal Year 2021
Dec 7, 20202

Project	Black	Hispanic	Asian	Native American	Other	All Minority	Women	Minority %	Met Minority Goal	Female %	Met Female Goal
B2109147/21-5490 VISION ZERO	32	38	-	-	-	70	4	34.2%	1	2.0%	0
B2109147/21-5491-VISION ZERO	-	-	-	-	-	-	-	0.0%	0	0.0%	0
BELFRY SANITARY PUMPING STATION IMPROVEMENTS @ MANATAWNA AVE	65	97	44	-	-	206	-	13.5%	0	0.0%	0
BITTENBENDER REQUIREMENTS CITYWIDE	32	282	16	6	-	336	-	11.1%	0	0.0%	0
BOILER SERVICE AND INSPECTION (G.A) CHILLER & COOLING TOWER REPLACEMENT @ CENTRAL LABORATORY	12	-	78	-	-	90	-	42.7%	1	0.0%	0
CHURCH CREEK IMPROVEMENTS	204	243	-	-	-	446	-	49.9%	1	0.0%	0
CITY ELECTRICAL REQUIREMENTS	-	-	-	-	-	-	4	0.0%	0	3.2%	0
CITY REQUIREMENTS ELECTRICAL CITYWIDE ELECTRICAL REQUIREMENTS PALMAN	163	-	-	-	-	163	60	27.7%	0	10.2%	1
CITYWIDE ELECTRICAL REQUIREMENTS VARIOUS PROJECTS	584	128	-	48	-	760	207	17.1%	0	4.7%	0
CITYWIDE ELECTRONIC SAFETY AND SECURITY REQUIREMENTS	56	-	-	-	-	56	-	5.4%	0	0.0%	0
CITYWIDE MECHANICAL REQUIREMENTS CITYWIDE REQUIREMENT SITE IMPROVEMENTS	72	136	-	72	-	280	-	53.0%	1	0.0%	0
CJC ELEVATOR AND ESCALATOR UPGRADE	32	-	-	-	-	32	56	1.5%	0	2.6%	0
CJC ELEVATORS AND ESCALATOR UPGRADES	387	232	-	-	104	619	-	18.9%	0	0.0%	0
COLUMBUS SQUARE PARK CONSTRUCTION FOR THE CLEARWELL BASIN @ BAXTER WTP (ELEC)	-	-	-	-	-	-	-	0.0%	0	0.0%	0
CONSTRUCTION FOR THE CLEARWELL BASIN @ BAXTER WTP (GCON)	-	-	-	-	-	-	166	0.0%	0	29.5%	1
CONSTRUCTION OF GREEN INFRASTRUCTURE @ BUIST AVE	32	112	-	-	-	144	-	18.4%	0	0.0%	0
CONSTRUCTION OF GREEN INFRASTRUCTURE @ RIDGE AVE (SR 0013)	488	319	80	-	-	887	48	20.5%	0	1.1%	0
CONSTRUCTION OF GREEN INFRASTRUCTURE @ WISSINOMING PARK (PLA)	4,699	639	40	-	-	5,378	-	20.5%	0	0.0%	0
	-	-	-	-	-	-	-	0.0%	0	0.0%	0
	367	627	-	-	-	994	-	32.0%	0	0.0%	0
	2,159	2,037	-	-	-	4,196	-	35.3%	1	0.0%	0

City of Philadelphia Economic Opportunity Plan Employment Composition Analysis: Fiscal Year 2021
Dec 7, 20202

Project	Black	Hispanic	Asian	Native American	Other	All Minority	Women	Minority %	Met Minority Goal	Female %	Met Female Goal
CONSTRUCTION OF GREEN STORMWATER INFRASTRUCTURE & RIGHT OF WAY CONNECTIONS	93	78	-	-	-	171	4	60.4%	1	1.4%	0
CONSTRUCTION OF GREEN STORMWATER INFRASTRUCTURE @ ARAMINGO AVE	201	1,159	-	-	18	1,360	40	31.8%	0	0.9%	0
CONSTRUCTION OF GREEN STORMWATER INFRASTRUCTURE @ BINGHAM ST	569	1,020	-	-	-	1,589	-	14.9%	0	0.0%	0
CONSTRUCTION OF GREEN STORMWATER INFRASTRUCTURE @ COBBS CREEK PARK	112	80	-	-	-	192	-	100.0%	1	0.0%	0
CONSTRUCTION OF GREEN STORMWATER INFRASTRUCTURE @ COMLY ST	1,285	726	-	-	372	2,011	39	25.8%	0	0.5%	0
CONSTRUCTION OF GREEN STORMWATER INFRASTRUCTURE @ FELTONVILLE PLAZA	80	1,245	-	-	-	1,325	-	51.7%	1	0.0%	0
CONSTRUCTION OF GREEN STORMWATER INFRASTRUCTURE @ FRANCIS MYERS RECREATION CENTER (PLA)	152	3,771	-	6	395	3,929	-	25.3%	0	0.0%	0
CONSTRUCTION OF GREEN STORMWATER INFRASTRUCTURE @ HORROCKS ST	24	24	-	-	-	48	-	19.7%	0	0.0%	0
CONSTRUCTION OF GREEN STORMWATER INFRASTRUCTURE @ JASPER ST II	-	1,927	-	-	-	1,927	-	35.2%	1	0.0%	0
CONSTRUCTION OF GREEN STORMWATER INFRASTRUCTURE @ LEOPARD ST	-	-	-	-	-	-	-	0.0%	0	0.0%	0
CONSTRUCTION OF GREEN STORMWATER INFRASTRUCTURE @ MONTGOMERY AVE	64	530	-	-	-	594	-	28.4%	0	0.0%	0
CONSTRUCTION OF GREEN STORMWATER INFRASTRUCTURE @ MORRIS PARK	761	1,163	12	26	-	1,961	-	58.8%	1	0.0%	0
CONSTRUCTION OF GREEN STORMWATER INFRASTRUCTURE @ N. 38TH ST	358	888	-	-	-	1,246	-	65.0%	1	0.0%	0
CONSTRUCTION OF GREEN STORMWATER INFRASTRUCTURE @ N. 39TH ST	250	3,534	-	400	-	4,184	-	68.6%	1	0.0%	0
CONSTRUCTION OF GREEN STORMWATER INFRASTRUCTURE @ NORTHERN LIBERTIES	-	-	-	-	-	-	-	0.0%	0	0.0%	0
CONSTRUCTION OF GREEN STORMWATER INFRASTRUCTURE @ RORER ST	750	446	-	216	-	1,412	-	58.1%	1	0.0%	0
CONSTRUCTION OF GREEN STORMWATER INFRASTRUCTURE @ ROWLAND AVE	1,300	669	-	-	42	1,969	-	30.6%	0	0.0%	0
CONSTRUCTION OF GREEN STORMWATER INFRASTRUCTURE @ TEMPLE STATION GREEN ST	44	44	-	-	-	88	-	35.3%	1	0.0%	0

City of Philadelphia Economic Opportunity Plan Employment Composition Analysis: Fiscal Year 2021
Dec 7, 20202

Project	Black	Hispanic	Asian	Native American	Other	All Minority	Women	Minority %	Met Minority Goal	Female %	Met Female Goal
CONSTRUCTION OF GREEN STORMWATER INFRASTRUCTURE @ W. BUTLER ST	-	50	-	-	-	50	-	30.5%	0	0.0%	0
CONSTRUCTION OF GREEN STORMWATER INFRASTRUCTURE @ WAYNE AVE	571	2,601	-	-	-	3,172	-	69.7%	1	0.0%	0
CONSTRUCTION OF GREEN STORMWATER INFRASTRUCTURE @ WEST PACIFIC ST	178	1,480	-	-	-	1,658	-	68.8%	1	0.0%	0
CONSTRUCTION OF GREEN STORMWATER INFRASTRUCTURE @ WOLF ST	248	3,023	-	-	-	3,271	-	77.5%	1	0.0%	0
CONVEYANCE & FLOW CONTROL FOR CLEARWELL BASIN REPLACEMENT @ BAXTER WTP	14,143	6,607	-	-	-	20,750	5,595	51.2%	1	13.8%	1
COVID-19 MEDICAL SURGE FACILITY (LIACOURAS CENTER)	176	-	-	-	-	176	-	100.0%	1	0.0%	0
COVID-19 QUARANTINE FACILITY (FAIRFIELD)	1,065	-	-	-	121	1,065	-	54.4%	1	0.0%	0
COVID-19 QUARANTINE FACILITY (HOLIDAY INN)	48	-	-	-	-	48	48	70.6%	1	70.6%	1
COVID-19 QUARANTINE FACILITY (RODEWAY INN)	-	-	-	-	618	-	-	0.0%	0	0.0%	0
DIGESTER DEWATERING & MAINTENANCE @ NORTHEAST & SOUTHWEST WPCPS	5,140	-	-	-	-	5,140	747	52.6%	1	7.6%	1
DISINFECTION SYSTEM BETTERMENT @ SWWPCP	-	152	-	-	-	152	72	11.3%	0	5.3%	0
DISSOLVED AIR FLOTATION SYSTEM IMPROVEMENTS (PLA) @ SWWPCP	663	48	-	290	-	1,001	-	19.5%	0	0.0%	0
DREDGE & DISPOSE OF SEDIMENT FROM RAW WATER BASIN @ BAXTER WTP	-	-	-	-	-	-	-	0.0%	0	0.0%	0
DRINKING WATER SYSTEM SECURITY IMPROVEMENTS @ VARIOUS FACILITIES (ELEC)	712	-	-	-	-	712	-	6.7%	0	0.0%	0
E TERMINAL AND CONCOURSE ROOF - GENERAL	5,911	921	32	-	-	6,864	-	43.3%	1	0.0%	0
EAST POPLAR PLAYGROUND	1,031	353	-	-	-	1,384	-	87.1%	1	0.0%	0
ELECTRICAL SERVICE & PUMP MOTOR REPLACEMENT & NEW STANDBY GENERATORS @ BELMONT RWPS (PLA)	16	157	-	-	-	173	-	2.2%	0	0.0%	0
ELEVATORS & ESCALATORS AT MSB & ONE PARKWAY 1515 MECH	64	-	-	-	-	64	-	26.0%	0	0.0%	0

City of Philadelphia Economic Opportunity Plan Employment Composition Analysis: Fiscal Year 2021
 Dec 7, 20202

Project	Black	Hispanic	Asian	Native American	Other	All Minority	Women	Minority %	Met Minority Goal	Female %	Met Female Goal
ELEVATORS & ESCALATORS AT MSB & ONE PARKWAY 1515 PLUMB	-	-	-	-	-	-	-	0.0%	0	0.0%	0
ELEVATORS & ESCALATORS AT MSB BUILDING AND ONE PARKWAY 1515 ARCH G-CON	431	108	-	11	4,114	550	-	6.1%	0	0.0%	0
EMERGENCY HVAC REPAIR SERVICE (G.A) ENERGY EFFICEINT LIGHTING UPGRADES @ SWWPCP	12	-	40	-	-	52	-	36.2%	1	0.0%	0
ENGINE 37 ELEC	8	445	398	-	-	850	-	13.6%	0	0.0%	0
ENGINE 37 ELEC	816	9	-	-	-	825	88	35.2%	1	3.8%	0
ENGINE 37 G-CON	24	83	-	-	-	107	-	2.9%	0	0.0%	0
ENGINE 37 MECH	56	-	-	-	-	56	-	5.4%	0	0.0%	0
ENGINE 37 PLUMB	-	-	-	-	-	-	-	0.0%	0	0.0%	0
ESCALATORS & ELEVATORS AT MSB BUILDING & ONE PARKWAY 1515 ELEC	-	792	-	-	-	792	290	21.2%	0	7.8%	1
FAB ELEVATORS G-CON	-	-	-	-	-	-	-	0.0%	0	0.0%	0
FAB HVAC ELEC	-	40	45	-	-	85	-	28.5%	0	0.0%	0
FAB HVAC RENOVATIONS MECH	537	-	-	-	-	537	216	17.2%	0	6.9%	0
FISHTOWN POOL RENOVATION	1,389	1,976	4	131	-	3,499	-	38.7%	1	0.0%	0
FJ MYERS REC CENTER	56	60	-	-	-	116	-	35.4%	1	0.0%	0
FLUORIDE SYSTEM IMPROVEMENTS @ BAXTER WTP	-	57	-	-	-	57	-	19.0%	0	0.0%	0
HAYES PLAYGROUND	-	40	-	-	-	40	-	100.0%	1	0.0%	0
HEALTH CARE CENTER #10	1,122	-	-	-	-	1,122	40	100.0%	1	3.6%	0
HEALTH CENTER #12 ELEC	28	-	-	-	-	28	28	12.3%	0	12.3%	1
HEALTH CENTER #12 MECH	-	-	-	-	-	-	-	0.0%	0	0.0%	0
HEALTH CENTER 12 G-CON	12	-	-	-	-	12	-	5.7%	0	0.0%	0
HVAC DISTRIBUTION UPGRADE FOR AB & F RAMP TOWERS - MECHANICAL	356	-	-	-	-	356	-	8.9%	0	0.0%	0
HVAC SYSTEM REPLACEMENT @ TORRESDALE FILTERED WPS	1,068	34	-	-	-	1,102	56	14.8%	0	0.8%	0
HVAC SYSTEM UPGRADES @ BAXTER WTP (PLA)	49	-	-	-	-	49	4	12.3%	0	1.0%	0
IMPROVEMENTS TO HYDRATED LIME SYSTEM @ BAXTER WTP	1,199	320	24	-	-	1,543	-	27.9%	0	0.0%	0

City of Philadelphia Economic Opportunity Plan Employment Composition Analysis: Fiscal Year 2021
Dec 7, 20202

Project	Black	Hispanic	Asian	Native American	Other	All Minority	Women	Minority %	Met Minority Goal	Female %	Met Female Goal
IMPROVEMENTS TO MECHANICAL SYSTEMS CONCOURSE B & C - ELECTRICAL	-	-	-	-	-	-	-	0.0%	0	0.0%	0
IMPROVEMENTS TO MECHANICAL SYSTEMS CONCOURSE B & C - MECHANICAL	876	112	176	-	-	1,164	-	12.7%	0	0.0%	0
LANDSCAPING & GROUNDS MAINTENANCE (GSI) SURFACE FEATURES	5,489	234	-	-	394	5,723	-	69.6%	1	0.0%	0
LEMON HILL MANSION ELEC	-	-	-	-	-	-	-	0.0%	0	0.0%	0
LEMON HILL MANSION MECH	8	-	-	-	-	8	-	47.1%	1	0.0%	0
LEMON HILL MANSION, LEMON HILL DRIVE G-CON	-	-	-	-	-	-	-	0.0%	0	0.0%	0
MAINTENANCE BUILDING BOILER REPLACEMENT AT SOUTHWEST WPCP	176	72	-	-	-	248	-	31.3%	0	0.0%	0
MAJA PLAYGROUND	118	90	5	-	-	213	-	32.1%	1	0.0%	0
MAPLEWOOD MALL	1,515	102	-	203	37	1,820	-	37.0%	1	0.0%	0
MECHANICAL EQUIPMENT ROOM (MER) IMPROVEMENTS (12,13,17) - MECHANICAL	-	-	-	-	197	-	-	0.0%	0	0.0%	0
MECHANICAL REQUIREMENTS	149	-	-	-	-	149	-	92.5%	1	0.0%	0
MILES MACK	1,241	418	24	-	-	1,683	8	31.9%	0	0.2%	0
MLK REC CENTER ROOF REPLACEMENT	144	131	-	-	-	275	-	43.4%	1	0.0%	0
NAVY YARD ENHANCEMENT CAP	-	1,960	-	-	1,113	1,960	-	29.1%	0	0.0%	0
NEW GRAVITY THICKNER FACILITIES @ NEWPCP (ELECTRICAL)	-	-	-	-	-	-	-	0.0%	0	0.0%	0
NEW STORAGE FACILITY @ PWD FIELD HEADQUARTERS	215	88	-	-	-	303	-	10.6%	0	0.0%	0
NEW STORAGE FACILITY @ PWD FIELD HEADQUARTERS (ELEC)	-	8	4	-	-	12	-	4.3%	0	0.0%	0
NORTHERN LIBERTIES PHASE V	3,133	4,276	-	-	-	7,408	-	56.6%	1	0.0%	0
OM & S SERVICES FOR TRI PLEX (2019)	7,093	3,240	-	-	12,284	10,333	1,808	21.5%	0	3.8%	0
ON CALL ELECTRICAL CONSTRUCTION	-	-	-	-	-	-	-	0.0%	0	0.0%	0
ON CALL GENERAL CONSTRUCTION 2020	-	-	-	-	377	-	-	0.0%	0	0.0%	0
ON CALL SITE CONSTRUCTION	-	-	-	-	-	-	-	0.0%	0	0.0%	0
ON CALL SITE CONSTRUCTION 2020	592	24	-	-	-	616	-	21.1%	0	0.0%	0
PARKING LOT & SERVICE ROADS @ SOUTHWEST WPCP	352	510	-	304	-	1,166	-	64.2%	1	0.0%	0

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Dec 7, 20202

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PARKLAND FOREST RESTORATION (2020)	-	16	-	-	-	16	-	44.4%	1	0.0%	0
PAVING REQUIREMENTS CONTRACT	184	841	-	-	-	1,025	-	28.4%	0	0.0%	0
PHILA. INTERNATIONAL FM	5,780	680	-	-	3,054	6,459	-	12.5%	0	0.0%	0
PHL CBRA BUILDING CONSTRUCTION	1,810	48	-	-	-	1,858	-	17.6%	0	0.0%	0
PHL TAXIWAY S EMERGENCY ASPHALT PAVEMENT REPAIR	-	-	-	-	-	-	-	0.0%	0	0.0%	0
PICC PRISON ELEVATORS ELEC.	-	704	-	-	-	704	16	41.2%	1	0.9%	0
PICC PRISON ELEVATORS G-CON	733	459	-	-	-	1,192	16	29.6%	0	0.4%	0
PICC PRISON ELEVATORS MECH	-	-	-	-	-	-	-	0.0%	0	0.0%	0
PICC PRISON PROJECT	-	-	-	-	855	-	-	0.0%	0	0.0%	0
PICC PRISON PROJECT ELEC	-	-	-	-	-	-	-	0.0%	0	0.0%	0
PICC ROOF REPLACEMENT	-	24	-	-	-	24	16	42.9%	1	28.6%	1
PICC ROOF REPLACEMENT ELEC	-	-	-	-	-	-	-	0.0%	0	0.0%	0
PIER 264 NORTH EMERGENCY INTAKE GATE HOUSE UPGRADE @ BAXTER WTP	-	74	-	-	-	74	-	15.2%	0	0.0%	0
PLUMBING & HEATING REPAIR SERVICE (G.A)	849	318	95	-	-	1,262	-	23.8%	0	0.0%	0
POLICE DISTRICT #2 G-CON	-	104	8	-	-	112	-	4.4%	0	0.0%	0
POLICE DISTRICT #2 MECH	72	-	-	-	-	72	-	9.5%	0	0.0%	0
POLICE DISTRICT #2 PLUMBING	24	-	-	-	-	24	-	8.9%	0	0.0%	0
PRETREATMENT BUILDING RESTORATION @ QUEEN LANE WTP	521	128	-	-	-	649	41	25.3%	0	1.6%	0
PRISON CAMPUS PARKING LOT G-CON	66	111	-	-	18	176	-	27.5%	0	0.0%	0
PWD GSI 1720248 (AKRF)	1,504	89	-	-	-	1,592	-	75.0%	1	0.0%	0
RECONSTRUCTION OF SEWERS & RELAYS @ BELMONT AVE	6,814	5,429	-	-	-	12,243	-	93.6%	1	0.0%	0
RECONSTRUCTION OF SEWERS & RELAYS @ DELHI ST	973	2,683	-	-	22	3,656	42	42.2%	1	0.5%	0
RECONSTRUCTION OF SEWERS & RELAYS @ FERNON ST.	585	7,333	-	-	-	7,918	-	91.7%	1	0.0%	0
RECONSTRUCTION OF SEWERS & RELAYS @ FOULKROD ST	2,065	3,218	-	-	-	5,283	-	75.0%	1	0.0%	0
RECONSTRUCTION OF SEWERS & RELAYS @ GRISOM ST	1,576	4,654	-	-	-	6,230	-	73.1%	1	0.0%	0

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Dec 7, 20202

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RECONSTRUCTION OF SEWERS & RELAYS @ HOLLYWOOD ST (PLA)	325	2,438	-	-	-	2,763	-	85.3%	1	0.0%	0
RECONSTRUCTION OF SEWERS & RELAYS @ LIVINGSTON ST	172	5,822	-	-	-	5,994	-	98.8%	1	0.0%	0
RECONSTRUCTION OF SEWERS & RELAYS @ MORRIS ST	24	580	-	-	-	604	-	12.8%	0	0.0%	0
REHABILITATION OF MECHANICAL & ELECTRICAL SYSTEMS @ CENTRAL SCHUYLKILL PUMPING STATION (GCON)	-	16	-	-	-	16	-	1.3%	0	0.0%	0
REHABILITATION OF SEDIMENTATION TANKS & FLOCCULATION SYSTEM @ BELMONT WTP	-	-	-	-	-	-	-	0.0%	0	0.0%	0
RELAY OF WATER MAINS & ABANDONMENT OF WATER MAINS @ N. 28TH ST	-	16	-	-	-	16	-	50.0%	1	0.0%	0
RELAY OF WATER MAINS & CONSTRUCTION OF GREEN INFRASTRUCTURE @ 50TH ST	322	4,565	-	-	-	4,887	-	67.5%	1	0.0%	0
RELAY OF WATER MAINS & CONSTRUCTION OF GREEN INFRASTRUCTURE @ ADAMS AVE	16	32	-	-	-	48	-	27.3%	0	0.0%	0
RELAY OF WATER MAINS & CONSTRUCTION OF GREEN INFRASTRUCTURE @ LONGSHORE AVE	92	-	-	-	-	92	-	2.3%	0	0.0%	0
RELAY OF WATER MAINS & CONSTRUCTION OF GREEN INFRASTRUCTURE @ MCCLELLAN ST (PLA)	741	879	17	-	29	1,637	-	45.5%	1	0.0%	0
RELAY OF WATER MAINS & CONSTRUCTION OF GREEN INFRASTRUCTURE @ RACE ST	3,222	1,796	-	-	32	5,018	-	38.8%	1	0.0%	0
RELAY OF WATER MAINS & RECONSTRUCTION OF SEWERS @ AGATE ST	1,415	3,542	-	-	-	4,957	48	37.4%	1	0.4%	0
RELAY OF WATER MAINS & RECONSTRUCTION OF SEWERS @ GALLOWAY ST	81	-	-	-	-	81	-	100.0%	1	0.0%	0
RELAY OF WATER MAINS & RECONSTRUCTION OF SEWERS @ HIRST ST	8	41	-	8	-	57	-	35.5%	1	0.0%	0
RELAY OF WATER MAINS & RECONSTRUCTION OF SEWERS @ RIVER RD	636	484	52	-	-	1,172	16	20.2%	0	0.3%	0
RELAY OF WATER MAINS & RECONSTRUCTION OF SEWERS @ TRINITY ST	80	387	-	-	-	467	-	79.2%	1	0.0%	0
RELAY OF WATER MAINS & RECONSTRUCTION OF SEWERS @ W. HARVEY ST	138	927	-	13	-	1,077	-	33.7%	1	0.0%	0

City of Philadelphia Economic Opportunity Plan Employment Composition Analysis: Fiscal Year 2021
Dec 7, 20202

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RELAY OF WATER MAINS & RECONSTRUCTION OF SEWERS @ W. MASTER ST	119	2,322	-	-	-	2,441	-	70.2%	1	0.0%	0
RELAY OF WATER MAINS & RECONSTRUCTION OF SEWERS @ WEST HUNTINGDON ST	73	172	-	-	656	245	-	4.3%	0	0.0%	0
RELAY OF WATER MAINS @ 21ST ST	2,502	962	-	-	-	3,464	-	69.4%	1	0.0%	0
RELAY OF WATER MAINS @ ALLEGHNEY AVE	1,468	962	-	-	584	2,430	-	43.7%	1	0.0%	0
RELAY OF WATER MAINS @ ARDLEIGH ST	420	1,199	-	-	-	1,619	-	26.0%	0	0.0%	0
RELAY OF WATER MAINS @ BAMBREY ST	346	961	-	-	-	1,307	8	23.5%	0	0.1%	0
RELAY OF WATER MAINS @ FOUNTAIN ST	3,734	7,458	-	-	-	11,191	-	44.4%	1	0.0%	0
RELAY OF WATER MAINS @ N. MASCHER ST	153	5,363	-	-	-	5,516	64	42.3%	1	0.5%	0
RELAY OF WATER MAINS @ ORTODOX ST	32	192	-	-	-	224	-	75.7%	1	0.0%	0
RELAY OF WATER MAINS @ RIDGE AVE.	1,006	2,377	-	-	-	3,383	-	26.6%	0	0.0%	0
RELAY OF WATER MAINS @ S. 8TH ST	367	1,456	-	-	-	1,823	18	79.2%	1	0.8%	0
RELAY OR WATER MAINS @ RANSTEAD ST	2,547	9,513	-	-	-	12,060	-	68.0%	1	0.0%	0
REPAIR, MAINTENCANCE AND/OR ENGINEERING SERVICES FOR ELECTRICAL EQUIPMENT AND SYSTEMS	-	-	-	-	-	-	-	0.0%	0	0.0%	0
REPLACEMENT OF FILTER UNDERDRAINS & MEDIA @ BELMONT WTP	179	-	-	-	-	179	-	5.5%	0	0.0%	0
REPLACEMENT OF FLOCCULATOR SHAFTS & BEARINGS @ BAXTER WTP (PLA)	340	68	-	-	-	408	-	10.1%	0	0.0%	0
REPLACEMENT OF LOUVERS FILTERS & HEATERS @ BELMONT WTP	16	-	-	-	-	16	-	6.8%	0	0.0%	0
REPLACEMENT OF RAW WATER VENTURI METER & CHAMBER NEAR QUEEN LANE RWPS	21	143	-	-	-	164	-	19.9%	0	0.0%	0
REPLACEMENT OF SODIUM HYPOCHLORITE LOOP FEED SYSTEM @ BELMONT WTP	521	477	567	-	-	1,564	-	28.3%	0	0.0%	0
REPLACEMENT OF WASHWATER PUMPS, MOTORS & CONTROL VALVES @ BELMONT WTP	-	47	-	-	-	47	-	6.4%	0	0.0%	0
REQUIREMENTS CONTRACT	-	-	-	-	-	-	-	0.0%	0	0.0%	0
RESTROOM RENOVATIONS PHASE 4 - ELECTRICAL	-	225	-	-	-	225	-	25.8%	0	0.0%	0

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Dec 7, 20202

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RESTROOM RENOVATIONS PHASE 4 - GENERAL	1,311	638	-	-	-	1,948	-	61.6%	1	0.0%	0
RESTROOM RENOVATIONS PHASE 4 - MECHANICAL	16	-	-	-	-	16	-	4.1%	0	0.0%	0
RESTROOM RENOVATIONS PHASE 4 - PLUMBING	40	-	-	-	-	40	-	16.7%	0	0.0%	0
RETURN SLUDGE LINE FST 2 @ NEWPCP (ELEC)	-	-	-	-	-	-	-	0.0%	0	0.0%	0
RETURN SLUDGE LINE FST 2 @ NEWPCP (GEN)	102	8	-	30	-	140	-	64.1%	1	0.0%	0
RIVERA REC RENOVATION	338	1,004	320	-	-	1,662	-	73.2%	1	0.0%	0
SANITARY FORCE MAIN RECONSTRUCTION @ 26TH ST	85	567	-	-	-	652	-	60.9%	1	0.0%	0
SCRUM CONCENTRATION BUILDING SWITCHGEAR & MCC REPLACEMENT @ SWWPCP	8	156	241	-	-	405	-	20.9%	0	0.0%	0
SECURITY SYSTEMS AND FIRE ALARMS ELEC. SEWER CONSTRUCTION @ S. CHRISTOPHER COLUMBUS BLVD	145	54	-	-	-	199	-	6.0%	0	0.0%	0
SEWER LINING & RELAYS @ LUDLOW	312	2,215	-	-	-	2,527	-	31.0%	0	0.0%	0
SLUDGE GAS PIPING REPLACEMENT @ NORTHEAST WPCP	-	-	-	-	-	-	-	0.0%	0	0.0%	0
SLUDGE RETURN LINE REPLACEMENT @ SOUTHEAST WPCP	32	61	-	-	-	93	-	4.8%	0	0.0%	0
SODIUM HYPOCHLORITE STORAGE TANKS MIXING SYSTEM MODIFICATIONS @ BELMONT WTP	16	-	-	-	-	16	-	34.4%	1	0.0%	0
STORMWATER PUMPING STATION REHABILITATION PROJECT (GENERAL) @ 26TH ST	-	-	-	-	-	-	-	0.0%	0	0.0%	0
TAXIWAY J CONCRETE PAVEMENT REPAIR	36	16	-	-	-	52	-	4.4%	0	0.0%	0
TELECOM ROOM HVAC UPGRADE - ELECTRICAL	-	-	-	-	-	-	-	0.0%	0	0.0%	0
TELECOM ROOM HVAC UPGRADE - MECHANICAL	232	-	-	-	-	232	-	13.6%	0	0.0%	0
TERMINAL B/C CORE ROOF REPLACEMENT - GENERAL	1,454	120	747	-	-	2,321	24	21.0%	0	0.2%	0

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Dec 7, 20202

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TERMINAL B/C CORE ROOF REPLACEMENT - MECHANICAL	110	-	-	-	-	110	-	23.1%	0	0.0%	0
TERMINAL B/C VESTIBULE UPGRADE	32	-	-	-	-	32	-	3.0%	0	0.0%	0
TERMINAL B/C VESTIBULE UPGRADE - ELECTRICAL	-	10	-	-	-	10	-	18.2%	0	0.0%	0
TERMINAL B/C VESTIBULE UPGRADE - MECHANICAL	4	-	-	-	-	4	-	7.7%	0	0.0%	0
TERMINAL D/E APRON REPAIRS	368	332	-	-	123	700	-	36.1%	1	0.0%	0
TERMINALS D, E & F RESTROOM RENOVATIONS PHASE 3 GENERAL	300	191	-	128	-	618	-	8.3%	0	0.0%	0
TERMINALS D, E & F RESTROOM RENOVATIONS PHASE 3 MECHANICAL	136	-	-	-	-	136	-	15.0%	0	0.0%	0
TREES & TREE PLANTING	-	1,665	-	-	-	1,665	-	83.0%	1	0.0%	0
TRENCHLESS SEWER REHABILITATION	-	-	-	-	-	-	-	0.0%	0	0.0%	0
TRENCHLESS SEWER REHABILITATION ANNUAL SERVICE	1,500	650	9	-	46	2,159	142	50.4%	1	3.3%	0
U.S COMMUNITTEES STENTON FAMILY MANOR	509	144	-	-	-	653	-	20.5%	0	0.0%	0
UPGRADED BALFOUR ST ENTRANCE @ NEWPCP	-	-	-	-	-	-	-	0.0%	0	0.0%	0
VARIOUS PHILADELPHIA PARKS & RECS	3	1,879	-	-	-	1,882	-	69.4%	1	0.0%	0
WATERLOO PLAYGROUND	850	1,866	-	-	24	2,716	-	67.9%	1	0.0%	0
WEST OAK LANE PUMPING STATION REHABILITATION (ELEC)	8	373	8	-	-	389	-	17.8%	0	0.0%	0
WEST OAK LANE PUMPING STATION REHABILITATION (GCON)	633	91	-	-	-	724	-	32.1%	1	0.0%	0
Total	174,764	184,351	5,665	2,262	28,981	367,041	15,056	37.4%	88	1.5%	10

Appendix H: About Econsult Solutions, Inc. & Milligan Consulting

This report was produced by Econsult Solutions, Inc. (“ESI”). ESI is a Philadelphia-based economic consulting firm that provides businesses and public policy makers with economic consulting services in urban economics, real estate economics, transportation, public infrastructure, development, public policy and finance, community and neighborhood development, planning, as well as expert witness services for litigation support. Its principals are nationally recognized experts in urban development, real estate, government and public policy, planning, transportation, non-profit management, business strategy and administration, as well as litigation and commercial damages. Staff members have outstanding professional and academic credentials, including active positions at the university level, wide experience at the highest levels of the public policy process and extensive consulting experience.

Milligan Consulting (Milligan) is a Limited Liability Corporation (LLC), which was initially established under Milligan & Company as a sole proprietorship in 1987 in Philadelphia County, Pennsylvania. Milligan & Company is a minority and veteran-owned firm which became a Pennsylvania LLC in 1999 as a regional full-service Consulting and Certified Public Accounting firm. The firm is currently in its 34th year of business. In 2021, the consulting practice was established as a separate entity from the accounting practice to become Milligan Consulting with fifteen existing employees and continues to be controlled by Principals, M. Denise Bailey, John Milligan, and Diane King. The firm is headquartered in Philadelphia, PA and serves clients nationally. Over the past thirty years, Milligan has developed highly-specialized niche practices in the areas of: Civil Rights Program Oversight (including DBE, Equal Employment Opportunity (EEO), Americans with Disabilities Act (ADA), and Title VI); Management, and Training; Transportation Oversight and Compliance; and Economic Development Consulting.

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