Preparing for PORTS Site Reindustrialization

Workforce Transitions in the OVRDC Region: A Skillshed Analysis

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1 Introduction

The Ohio Valley Regional Development Commission (OVRDC) region, as part of Ohio's broader Appalachian area, is experiencing a significant economic transition due to the decline of coal mining, manufacturing, and other traditional industries affected by automation, global competition, and shifting energy and consumer demands. As a result, employment in extractive and goods-producing sectors has steadily declined, and the region has become increasingly dependent on service-sector jobs for economic stability (Appalachian Regional Commission, 2015). However, not all service jobs are growing. Many routine, low-wage service jobs, including *cashiers*, *customer service representatives*, and *administrative support roles*, are also declining due to automation and digitalization. The combined decline in extractive, manufacturing, and routine service-sector employment is placing many workers at continued risk of economic displacement.

Amid these structural changes, the reindustrialization of the U.S. Department of Energy's former Portsmouth Gaseous Diffusion (PORTS) site presents a major opportunity to strengthen the regional economy and the local workforce. New projects in advanced energy, manufacturing, and infrastructure are expected to generate an increase in demand for skilled workers across a wide range of occupations.

This report evaluates training gaps and wage differentials for individuals transitioning from declining occupations to in-demand occupations associated with the redevelopment of the PORTS site. The goal is to provide policymakers, economic development stakeholders, employers, and job seekers with a clearer understanding of the regional workforce landscape, highlight populations that are at greater risk of future unemployment, and offer insights on preparing those individuals for emerging job opportunities tied to industrial, energy, and infrastructure development.

2 Data

2.1 Identify Declining Occupations

To identify declining occupations in the OVRDC region, we conducted a forecasting analysis[1] to estimate future employment trends for each occupation using the region's historical employment data from 2012 to 2022 obtained from IMPLAN (IMPLAN® Model, 2022). For each occupation, we generated employment projections through 2032. Occupations with a projected loss of at least 50 positions between 2022 and 2032 were classified as declining. This process yielded a final list of 14 declining occupations (Table 1). The list includes a range of occupations across retail, administrative support, education, maintenance, and health services, many of which are concentrated in routine, lower-wage, and labor-intensive roles.

Cashiers, *Home Health Aides*, *Stockers*, and *Order Fillers* are projected to see the largest declines, with future job losses of 225, 207, and 185 positions, respectively. These declines reflect broader trends influenced by automation, self-service technologies, and changing retail and care delivery models.

Administrative and clerical roles, such as *Secretaries and Administrative Assistants* and *Customer Service Representatives*, are also expected to decline in the future, underscoreing the continuing impact of digitalization and automation. Educational roles, including *Teaching Assistants* and *Elementary School Teachers*, are also projected to experience moderate future losses.

Table 1: Declining Occupations in the OVRDC Region (2022–2032)

Occupation Code	**Occupation Title**	**Projected Employment Change (2022-2032)**
41-2011.00	Cashiers	-225
31-1121.00	Home Health Aides	-207

Table 1 continued on next page

[1] We used the **Autoregressive Integrated Moving Average** (ARIMA) forecasting method to project employment levels for each occupation from 2023 through 2032.

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Occupation Code	Occupation Title	Employment Change
53-7065.00	Stockers and Order Fillers	-185
43-5071.00	Shipping, Receiving, and Inventory Clerks	-90
53-7061.00	Cleaners of Vehicles and Equipment	-88
43-6014.00	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	-84
25-9042.00	Teaching Assistants, Preschool, Elementary, Middle, and Secondary School, Except Special Education	-77
53-7064.00	Packers and Packagers, Hand	-75
25-2021.00	Elementary School Teachers, Except Special Education	-60
43-4051.00	Customer Service Representatives	-58
49-3023.00	Automotive Service Technicians and Mechanics	-57
37-2011.00	Janitors and Cleaners, Except Maids and Housekeeping Cleaners	-53
49-9071.00	Maintenance and Repair Workers, General	-50
35-3031.00	Waiters and Waitresses	-50

2.2 Identify In-demand Occupations

To identify in-demand occupations, we used the occupation lists provided in the PORTS Partner Survey. In the survey, developers were asked to indicate their anticipated hiring needs for the construction and operations phases of their projects. Survey responses were then mapped to their corresponding Standard Occupational Classification (SOC) codes for consistent classification. The in-demand occupations for the construction phase are presented in Table 2, and those for the operations phase are shown in Table 3.

In total, we identified 51 unique in-demand occupations as necessary for site redevelopment, with 30 occupations associated with the construction phase and 23 occupations tied to the operations phase. Two occupations—*Electricians* and *Security Guards*—appear in both phases.

Table 2: Construction Phase Workforce Demand *(Identified by Developers)*

Occupation Code	Occupation Title
11-3012.00	Administrative Services Managers
47-2021.00	Brickmasons and Blockmasons
47-2051.00	Cement Masons and Concrete Finishers
17-2051.00	Civil Engineers
11-9021.00	Construction Managers

Table 2 continued on next page

Table 2 continued from previous page

Occupation Code	Occupation Title
15-1242.00	Database Administrators
47-2081.00	Drywall and Ceiling Tile Installers
47-2111.00	Electricians
47-4031.00	Fence Erectors
47-2121.00	Glaziers
49-9021.00	Heating, Air Conditioning, and Refrigeration Mechanics and Installers
47-3013.00	Helpers—Electricians
49-9098.00	Helpers—Installation, Maintenance, and Repair Workers
47-3015.00	Helpers—Pipelayers, Plumbers, Pipefitters, and Steamfitters
47-2131.00	Insulation Workers, Floor, Ceiling, and Wall
47-2132.00	Insulation Workers, Mechanical
49-9044.00	Millwrights
19-4051.00	Nuclear Technicians
47-2073.00	Operating Engineers and Other Construction Equipment Operators
47-2141.00	Painters, Construction and Maintenance
47-2152.00	Plumbers, Pipefitters, and Steamfitters
29-2034.00	Radiologic Technologists and Technicians
49-9096.00	Riggers
47-2181.00	Roofers
49-2098.00	Security and Fire Alarm Systems Installers
33-9032.00	Security Guards
47-2211.00	Sheet Metal Workers
47-2221.00	Structural Iron and Steel Workers
49-2022.00	Telecommunications Equipment Installers and Repairers, Except Line Installers
51-4121.00	Welders, Cutters, Solderers, and Brazers

Table 3: Operation Phase Workforce Demand *(Identified by Developers)*

Occupation Code	Occupation Title
13-2011.00	Accountants and Auditors
51-9011.00	Chemical Equipment Operators and Tenders
19-4031.00	Chemical Technicians
13-1041.00	Compliance Officers
15-1231.00	Computer Network Support Specialists
47-2111.00	Electricians
17-2081.00	Environmental Engineers
19-2041.00	Environmental Scientists and Specialists, Including Health

Table 3 continued on next page

Table 3 continued from previous page

Occupation Code	Occupation Title
49-1011.00	First-Line Supervisors of Mechanics, Installers, and Repairers
43-1011.00	First-line Supervisors of Office and Administrative Support Workers
33-1012.00	First-Line Supervisors of Police and Detectives
51-1011.00	First-Line Supervisors of Production and Operating Workers
11-1021.00	General and Operations Managers
17-2112.00	Industrial Engineers
49-9041.00	Industrial Machinery Mechanics
51-9061.00	Inspectors, Testers, Sorters, Samplers, and Weighers
51-8011.00	Nuclear Power Reactor Operators
29-9011.00	Occupational Health and Safety Specialists
29-9012.00	Occupational Health and Safety Technicians
51-8013.00	Power Plant Operators
11-3061.00	Purchasing Managers
33-9032.00	Security Guards
13-1151.00	Training and Development Specialists

3 Methodology and Results

3.1 Cluster Analysis

In this section, we pooled the 51 PORTS site necessary occupations and the 14 declining occupations in the OVRDC region to create a pool of 65 occupations of interest. We then performed a clustering analysis to group all occupations in the pool into smaller clusters based on the required skills, knowledge, job requirements, and education levels of each occupation. This analysis allows us to identify which occupations share similar skills, knowledge, job activities, and responsibilities. Jobs within the same cluster are more similar in terms of requirements and responsibilities than those in different groups.

Our cluster analysis relies on the Occupation Information Network (O*NET) database provided by the U.S. Department of Labor's Employment and Training Administration, which surveys workers on education, training, and skills required for their occupation (National Center for O*NET Development, 2024). The O*NET data provides continuous, quantitative information on the level and importance of skills, training, and education required to perform a job efficiently.

We employ Ward's clustering method, also known as the minimum variance method (Ward Jr, 1963), to determine the optimal number of clusters. The primary objective of Ward's hierarchy clustering method is to minimize the variance within each cluster by iteratively merging clusters. It begins by

assigning each object to its own cluster and then proceeds to merge the two clusters whose merger results in the smallest increase in the sum of squared distances. The algorithm continues to merge clusters until all objects belong to a single cluster.

Ward's clustering method produces a dendrogram—a tree-like diagram that shows how similar items or groups are combined step by step. Each time two groups are combined, a new branch is added to the diagram. The height of each branch reflects the increase in the within-cluster sum of squared distances at the time of the merge. In simpler terms, a higher branch means the merged groups are more different from each other, while a lower branch means they are more similar. We used this diagram to determine the number of meaningful groups (or clusters) present in the data. A common approach is to look for the point where the branches stop increasing sharply in height—this "leveling off" indicates a natural point to stop merging and suggests the optimal number of clusters.

We grouped the occupations of interest into three clusters. Figure 1 visually displays these clusters in two-dimensional space, where each dot represents an occupation and each colored oval outlines one of the three clusters. Overlapping areas between the ovals suggest that some occupations share characteristics with more than one cluster. The three clusters are as follows:

- **Cluster 1: "Engineers, Technicians, and Specialists"**. There are 18 occupations in this cluster. This cluster includes occupations such as civil engineers, construction managers, and occupational health and safety specialists. There's an emphasis on oversight and planning for manufacturing, utilities, and environmental management. Sixteen of the occupations in this cluster are categorized as in-demand, while the remaining two are categorized as declining occupations. Those in the in-demand category tend to have a greater emphasis on engineering, oversight, and specialties than those in the declining category. (Table 4)

- **Cluster 2: "Managers, Teachers, and Service Related Workers"**. There are 22 occupations in this cluster. This cluster includes occupations such as accountants and auditors, elementary school teachers, and purchasing managers. The declining occupations in this cluster primarily consist of the educational and service roles, while the office roles are mainly found in the in-demand category. Occupations in this cluster tend to emphasize interpersonal communication and organizational skills. Thirteen of these occupations are in demand, while the remaining nine are declining occupations. (Table 5)

- **Cluster 3: "Skilled Trade Workers"**. There are 25 occupations in this cluster. This cluster includes occupations such as electricians, automotive service technicians and mechanics, and roofers. There is an emphasis on technical, hands-on work involved in building, repairing, and maintaining physical structures and mechanical systems. There is an emphasis on both strong manual and technical skills. Twenty-two of these occupations are classified as in-demand, with only three being declining occupations. The in-demand careers are more directly tied to the construction industry and are more specialized, while the declining occupations are more broadly focused on repair and upkeep. (Table 6)

Figure 1: OVRDC Region's Cluster Map

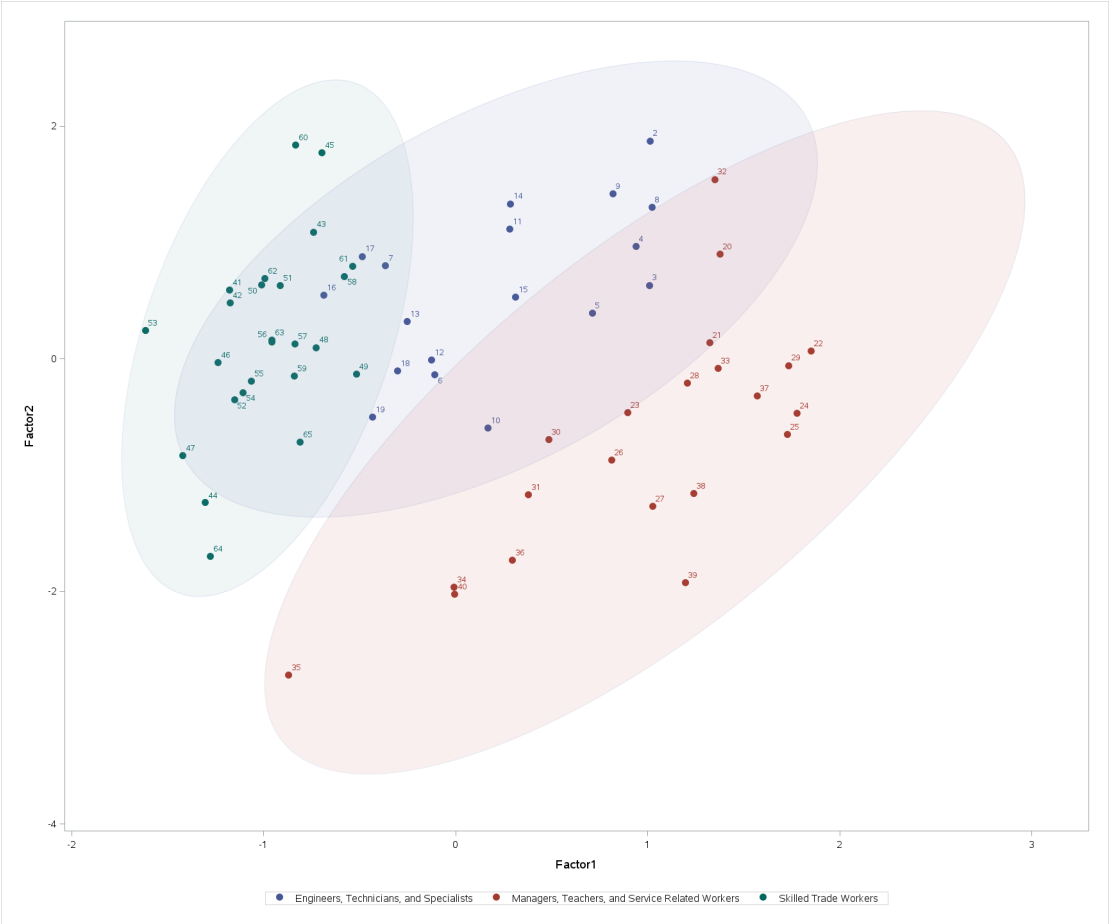

Table 4: Occupations in the ***"Engineers, Technicians, and Specialists"*** Cluster

Occupation Code	Occupation Title	Group
51-9011.00	Chemical Equipment Operators and Tenders	Growing
19-4031.00	Chemical Technicians	Growing
17-2051.00	Civil Engineers	Growing
11-9021.00	Construction Managers	Growing
17-2081.00	Environmental Engineers	Growing
49-1011.00	First-Line Supervisors of Mechanics, Installers, and Repairers	Growing
51-1011.00	First-Line Supervisors of Production and Operating Workers	Growing
17-2112.00	Industrial Engineers	Growing
51-9061.00	Inspectors, Testers, Sorters, Samplers, and Weighers	Growing
51-8011.00	Nuclear Power Reactor Operators	Growing
19-4051.00	Nuclear Technicians	Growing

Table 4 continued on next page

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Occupation Code	Occupation Title	Group
29-9011.00	Occupational Health and Safety Specialists	Growing
29-9012.00	Occupational Health and Safety Technicians	Growing
51-8013.00	Power Plant Operators	Growing
49-2098.00	Security and Fire Alarm System Installers	Growing
49-2022.00	Telecommunications Equipment Installers and Repairers, Except Line Installers	Growing
53-7064.00	Packers and Packagers, Hand	Declining
43-5071.00	Shipping, Receiving, and Inventory Clerks	Declining

Table 5: Occupations in the ***"Managers, Teachers, and Service Related Workers"*** Cluster

Occupation Code	Occupation Title	Group
13-2011.00	Accountants and Auditors	Growing
11-3013.00	Administrative Services Managers	Growing
13-1041.00	Compliance Officers	Growing
15-1231.00	Computer Network Support Specialists	Growing
15-1242.00	Database Administrators	Growing
19-2041.00	Environmental Scientists and Specialists, Including Health	Growing
43-1011.00	First-Line Supervisors of Office and Administrative Support Workers	Growing
33-1012.00	First-Line Supervisors of Police and Detectives	Growing
11-1021.00	General and Operations Managers	Growing
11-3061.00	Purchasing Managers	Growing
29-2034.00	Radiologic Technologists and Technicians	Growing
33-9032.00	Security Guards	Growing
13-1151.00	Training and Development Specialists	Growing
41-2011.00	Cashiers	Declining
43-4051.00	Customer Service Representatives	Declining
25-2021.00	Elementary School Teachers, Except Special Educations	Declining
31-1121.00	Home Health Aides	Declining
37-2011.00	Janitors and Cleaners, Except Maids and Housekeeping Cleaners	Declining
43-6014.00	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	Declining
53-7065.00	Stockers and Order Fillers	Declining

Table 5 continued on next page

Table 5 continued from previous page

Occupation Code	Occupation Title	Group
25-9042.00	Teaching Assistants, Preschool, Elementary, Middle, and Secondary School, Except Special Education	Declining
35-3031.00	Waiters and Waitresses	Declining

Table 6: Occupations in the ***"Skilled Trade Workers"*** Cluster

Occupation Code	Occupation Title	Group
47-2021.00	Brickmasons and Blockmasons	Growing
47-2051.00	Cement Masons and Concrete Finishers	Growing
47-2081.00	Drywall and Ceiling Tile Installers	Growing
47-2111.00	Electricians	Growing
47-4031.00	Fence Erectors	Growing
47-2121.00	Glaziers	Growing
49-9021.00	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	Growing
47-3013.00	Helpers—Electricians	Growing
49-9098.00	Helpers—Installation, Maintenance, and Repair Workers	Growing
47-3015.00	Helpers—Pipelayers, Plumbers, Pipefitters, and Steamfitters	Growing
49-9041.00	Industrial Machinery Mechanics	Growing
47-2131.00	Insulation Workers, Floor, Ceiling, and Wall	Growing
47-2132.00	Insulation Workers, Mechanical	Growing
49-9044.00	Millwrights	Growing
47-2073.00	Operating Engineers and Other Construction Equipment Operators	Growing
47-2141.00	Painters, Construction and Maintenance	Growing
47-2152.00	Plumbers, Pipefitters, and Steamfitters	Growing
49-9096.00	Riggers	Growing
47-2181.00	Roofers	Growing
47-2211.00	Sheet Metal Workers	Growing
47-2221.00	Structural Iron and Steel Workers	Growing
51-4121.00	Welders, Cutters, Solderers, and Brazers	Growing
49-3023.00	Automotive Service Technicians and Mechanics	Declining
53-7061.00	Cleaners of Vehicles and Equipment	Declining
49-9071.00	Maintenance and Repair Workers, General	Declining

3.2 Skillshed Analysis

3.2.1 Approach

After grouping the occupations of interest into three clusters, we estimated the Euclidean distances across four dimensions – skills, knowledge, job context, and job requirements – between each pair of declining and emerging occupations. A larger Euclidean distance between two occupations indicates a substantial skill and education gap, meaning that transitioning between them is less feasible and would require more extensive training or re-skilling. Conversely, a smaller Euclidean distance suggests that the two occupations are more similar in skill, educational requirements, job context, and job requirement, making transitions more feasible and likely requiring only minimal additional training or up-skilling.

The squared Euclidean distances $[D^2_{(X,Y)}]$ between two occupations is calculated as:

$$D^2_{X,Y} = \sum_{i=0}^{n} (x_i - y_i)^2 \tag{1}$$

where $(x_1, x_2, ..., x_n)$ and $(y_1, y_2, ..., y_n)$ are vectors representing the O*NET assigned numeric values of skills, knowledge, and required task performance for occupations X and Y, respectively. The greater the Euclidean distance between two occupations, the more complex the transition.

To make the results more intuitive, we use color gradients to visualize the feasibility of job transitions. The colors are scaled relative to all possible transitions from declining to in-demand occupations: the smallest Euclidean distance (the easiest transition) is represented by pure green, the median is represented by yellow, and the largest distance (the most challenging transition) is represented by pure red. Shades of green indicate more feasible transitions, while orange and red reflect those that may require substantial retraining or formal education.

Each cell also displays the difference in median hourly wages that a worker would experience when transitioning from a declining occupation to an in-demand occupation. This provides an additional layer of insight, highlighting not only the feasibility of a transition but also whether it would offer comparable or improved earnings, which is critical for reskilling to be worthwhile.

Results are organized by project phase and occupational cluster *(Sections 3.2.1 and 3.2.2).* In each table, declining occupations are listed in the columns and in-demand occupations in the rows. The number next to each occupation indicates its median hourly wage. The color of each cell reflects the relative difficulty of transitioning between the two corresponding occupations, and the number within each cell shows the wage difference when workers transition from the corresponding declining occupation to the corresponding in-demand occupation.

3.2.2 Skillshed Results: Construction Phase

i. **Feasibility of transitions from declining occupations in the "Engineers, Technicians, and Specialists" cluster to in-demand occupations.**

Figures 2, 3, and 4 present the feasibility of transitioning from declining occupations in the **Engineers, Technicians, and Specialists** cluster to in-demand occupations in the **Engineers, Technicians, and Specialists** cluster, **Managers, Teachers, and Service Related Workers** cluster, and **Skilled Trade Workers** cluster, respectively.

According to Figures 2, 3, and 4, job transitions are generally feasible for individuals, who are employed in declining occupations within the **Engineers, Technicians, and Specialists** cluster, to transfer to any occupations in the construction phase across all clusters. These transitions are not only attainable but also often associated with substantial increases in median hourly wages. For instance, with minimal additional training, a worker in the *Packers and Packagers, Hand* occupation could transition to be a *Sheet Metal Worker* and gain a median hourly wage increase of $12.47.

Figure 2: Transitions from declining occupations in the **Engineers, Technicians, and Specialists** cluster to in-demand occupations in the **Engineers, Technicians, and Specialists** cluster.

Title		Packers and Packagers, Hand	Shipping, Receiving, and Inventory Clerks
		$17.79	$20.56
Civil Engineers	$44.94	$27.15	$24.38
Construction Managers	$46.36	$28.57	$25.80
Nuclear Technicians	$50.11	$32.32	$29.55
Security and Fire Alarm Systems Installers	$29.34	$11.55	$8.78
Telecommunications Equipment Installers and Repairers, Except Line Installers	$29.81	$12.02	$9.25

Figure 3: Transitions from declining occupations in the **Engineers, Technicians, and Specialists** cluster to in-demand occupations in the **Managers, Teachers, and Service Related Workers** cluster.

Title		Packers and Packagers, Hand	Shipping, Receiving, and Inventory Clerks
		$17.79	$20.56
Administrative Services Managers	$45.77	$27.98	$25.21
Database Administrators	$45.20	$27.41	$24.64
Radiologic Technologists and Technicians	$36.29	$18.50	$15.73
Security Guards	$17.40	-$0.39	-$3.16

Figure 4: Transitions from declining occupations in the **Engineers, Technicians, and Specialists** cluster to in-demand occupations in the **Skilled Trade Workers** cluster.

Title		Packers and Packagers, Hand	Shipping, Receiving, and Inventory Clerks
		$17.79	$20.56
Brickmasons and Blockmasons	$30.78	$12.99	$10.22
Cement Masons and Concrete Finishers	$29.83	$12.04	$9.27
Drywall and Ceiling Tile Installers	$28.64	$10.85	$8.08
Electricians	$30.56	$12.77	$10.00
Fence Erectors	$22.41	$4.62	$1.85
Glaziers	$29.34	$11.55	$8.78
Heating, Air Conditioning, and Refrigeration Mechanics and Installers	$29.08	$11.29	$8.52
Helpers--Electricians	$19.58	$1.79	-$0.98
Helpers--Installation, Maintenance, and Repair Workers	$18.96	$1.17	-$1.60
Helpers--Pipelayers, Plumbers, Pipefitters, and Steamfitters	$18.92	$1.13	-$1.64
Insulation Workers, Floor, Ceiling, and Wall	$27.23	$9.44	$6.67
Insulation Workers, Mechanical	$32.64	$14.85	$12.08
Millwrights	$35.25	$17.46	$14.69
Operating Engineers and Other Construction Equipment Operators	$30.01	$12.22	$9.45
Painters, Construction and Maintenance	$25.79	$8.00	$5.23
Plumbers, Pipefitters, and Steamfitters	$30.06	$12.27	$9.50
Riggers	$22.88	$5.09	$2.32
Roofers	$27.13	$9.34	$6.57
Sheet Metal Workers	$30.26	$12.47	$9.70
Structural Iron and Steel Workers	$34.53	$16.74	$13.97
Welders, Cutters, Solderers, and Brazers	$23.75	$5.96	$3.19

ii. **Feasibility of transitions from declining occupations in the "Managers, Teachers, and Service Related Workers" cluster to in-demand occupations.**

Figures 5, 6, and 7 present the feasibility of transitioning from declining occupations in the **Managers, Teachers, and Service Related Workers** cluster to in-demand occupations in the **Engineers, Technicians, and Specialists** cluster, **Managers, Teachers, and Service Related Workers** cluster, and **Skilled Trade Workers** cluster, respectively.

The results suggest that transitioning from declining jobs in the **Managers, Teachers, and Service Related Workers** cluster to in-demand jobs in the **Engineers, Technicians, and Specialists** and **Skilled Trade Workers** clusters is challenging and requires substantial re-skilling or up-skilling, as indicated by the predominance of red and orange shades in Figures 5 and 7.

By contrast, transitions from declining jobs to in-demand jobs within the **Managers, Teachers, and Service Related Workers** cluster appear more feasible. In particular, transitions into the occupations of *administrative services managers* and *database administrators* are relatively straight forward for many declining Office, Education, and Service occupations, while also offering higher median wages, as indicated by the green shades in Figure 6.

Another example that underscores the importance of identifying the optimal career paths is the case of a *Customer Service Representative*. Transitioning from a *Customer Service Representative* to an *Administrative Services Manager* results in a wage gain of **$24.85** per hour and the transition is relatively feasible (Figure 6).

Conversely, transitioning from a *Customer Service Representative* to a *Brickmason* results in a wage gain of **$9.68** per hour; however, the transition and is challenging, as illustrated with a deep red shade (Figure 7). This suggests a low level of skill overlap and a significant mismatch in knowledge and job requirements, making the transition difficult. Workers attempting this path would likely face a steep learning curve and might need support from targeted training programs or workforce development initiatives.

Figure 5: Transitions from declining occupations in the **Managers, Teachers, and Service Related Workers** cluster to in-demand occupations in the **Engineers, Technicians, and Specialists** cluster.

Title		Cashiers	Customer Service Representatives	Elementary School Teachers, Except Special Education	Home Health Aides	Janitors and Cleaners, Except Maids and Housekeeping Cleaners	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	Stockers and Order Fillers	Teaching Assistants, Preschool, Elementary, Middle, and Secondary School, Except Special Education	Waiters and Waitresses
		$13.72	$20.92	$29.97	$16.78	$16.69	$21.84	$17.83	$16.94	$17.32
Civil Engineers	$44.94	$31.22	$24.02	$14.97	$28.16	$28.25	$23.10	$27.11	$28.00	$27.62
Construction Managers	$46.36	$32.64	$25.44	$16.39	$29.58	$29.67	$24.52	$28.53	$29.42	$29.04
Nuclear Technicians	$50.11	$36.39	$29.19	$20.14	$33.33	$33.42	$28.27	$32.28	$33.17	$32.79
Security and Fire Alarm Systems Installers	$29.34	$15.62	$8.42	-$0.63	$12.56	$12.65	$7.50	$11.51	$12.40	$12.02
Telecommunications Equipment Installers and Repairers, Except Line Installers	$29.81	$16.09	$8.89	-$0.16	$13.03	$13.12	$7.97	$11.98	$12.87	$12.49

Figure 6: Transitions from declining occupations in the **Managers, Teachers, and Service Related Workers** cluster to in-demand occupations in the **Managers, Teachers, and Service Related Workers** cluster.

Title		Cashiers	Customer Service Representatives	Elementary School Teachers, Except Special Education	Home Health Aides	Janitors and Cleaners, Except Maids and Housekeeping Cleaners	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	Stockers and Order Fillers	Teaching Assistants, Preschool, Elementary, Middle, and Secondary School, Except Special Education	Waiters and Waitresses
		$13.72	$20.92	$29.97	$16.78	$16.69	$21.84	$17.83	$16.94	$17.32
Administrative Services Managers	$45.77	$32.05	$24.85	$15.80	$28.99	$29.08	$23.93	$27.94	$28.83	$28.45
Database Administrators	$45.20	$31.48	$24.28	$15.23	$28.42	$28.51	$23.36	$27.37	$28.26	$27.88
Radiologic Technologists and Technicians	$36.29	$22.57	$15.37	$6.32	$19.51	$19.60	$14.45	$18.46	$19.35	$18.97
Security Guards	$17.40	$3.68	-$3.52	-$12.57	$0.62	$0.71	-$4.44	-$0.43	$0.46	$0.08

Figure 7: Transitions from declining occupations in the **Managers, Teachers, and Service Related Workers** cluster to in-demand occupations in the **Skilled Trade Workers** cluster.

Title		Cashiers	Customer Service Representatives	Elementary School Teachers, Except Special Education	Home Health Aides	Janitors and Cleaners, Except Maids and Housekeeping Cleaners	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	Stockers and Order Fillers	Teaching Assistants, Preschool, Elementary, Middle, and Secondary School, Except Special Education	Waiters and Waitresses
		$13.72	$20.92	$29.97	$16.78	$16.69	$21.84	$17.83	$16.94	$17.32
Brickmasons and Blockmasons	$30.78	$17.06	$9.86	$0.81	$14.00	$14.09	$8.94	$12.95	$13.84	$13.46
Cement Masons and Concrete Finishers	$29.83	$16.11	$8.91	-$0.14	$13.05	$13.14	$7.99	$12.00	$12.89	$12.51
Drywall and Ceiling Tile Installers	$28.64	$14.92	$7.72	-$1.33	$11.86	$11.95	$6.80	$10.81	$11.70	$11.32
Electricians	$30.56	$16.84	$9.64	$0.59	$13.78	$13.87	$8.72	$12.73	$13.62	$13.24
Fence Erectors	$22.41	$8.69	$1.49	-$7.56	$5.63	$5.72	$0.57	$4.58	$5.47	$5.09
Glaziers	$29.34	$15.62	$8.42	-$0.63	$12.56	$12.65	$7.50	$11.51	$12.40	$12.02
Heating, Air Conditioning, and Refrigeration Mechanics and Installers	$29.08	$15.36	$8.16	-$0.89	$12.30	$12.39	$7.24	$11.25	$12.14	$11.76
Helpers--Electricians	$19.58	$5.86	-$1.34	-$10.39	$2.80	$2.89	-$2.26	$1.75	$2.64	$2.26
Helpers--Installation, Maintenance, and Repair Workers	$18.96	$5.24	-$1.96	-$11.01	$2.18	$2.27	-$2.88	$1.13	$2.02	$1.64
Helpers--Pipelayers, Plumbers, Pipefitters, and Steamfitters	$18.92	$5.20	-$2.00	-$11.05	$2.14	$2.23	-$2.92	$1.09	$1.98	$1.60
Insulation Workers, Floor, Ceiling, and Wall	$27.23	$13.51	$6.31	-$2.74	$10.45	$10.54	$5.39	$9.40	$10.29	$9.91
Insulation Workers, Mechanical	$32.64	$18.92	$11.72	$2.67	$15.86	$15.95	$10.80	$14.81	$15.70	$15.32
Millwrights	$35.25	$21.53	$14.33	$5.28	$18.47	$18.56	$13.41	$17.42	$18.31	$17.93
Operating Engineers and Other Construction Equipment Operators	$30.01	$16.29	$9.09	$0.04	$13.23	$13.32	$8.17	$12.18	$13.07	$12.69
Painters, Construction and Maintenance	$25.79	$12.07	$4.87	-$4.18	$9.01	$9.10	$3.95	$7.96	$8.85	$8.47
Plumbers, Pipefitters, and Steamfitters	$30.06	$16.34	$9.14	$0.09	$13.28	$13.37	$8.22	$12.23	$13.12	$12.74
Riggers	$22.88	$9.16	$1.96	-$7.09	$6.10	$6.19	$1.04	$5.05	$5.94	$5.56
Roofers	$27.13	$13.41	$6.21	-$2.84	$10.35	$10.44	$5.29	$9.30	$10.19	$9.81
Sheet Metal Workers	$30.26	$16.54	$9.34	$0.29	$13.48	$13.57	$8.42	$12.43	$13.32	$12.94
Structural Iron and Steel Workers	$34.53	$20.81	$13.61	$4.56	$17.75	$17.84	$12.69	$16.70	$17.59	$17.21
Welders, Cutters, Solderers, and Brazers	$23.75	$10.03	$2.83	-$6.22	$6.97	$7.06	$1.91	$5.92	$6.81	$6.43

iii. **Feasibility of transitions from declining occupations in the "Skilled Trade Workers" cluster to in-demand occupations.**

Figures 8, 9, and 10 present the feasibility of transitioning from declining occupations in the **Skilled Trade Workers** cluster to in-demand occupations in the **Engineers, Technicians, and Specialists** cluster, **Managers, Teachers, and Service Related Workers** cluster, and **Skilled Trade Workers** cluster, respectively.

There are some promising opportunities for workers in the **Skilled Trade Workers** cluster to transition into occupations in the **Engineers, Technicians, and Specialists** cluster. Notably, transitions into roles such as *Security and Fire Alarm Systems Installers* and *Telecommunications Equipment Installers and Repairers, Except Line Installers* are relatively feasible and economically rewarding. Workers who choose these career transition path would gain **$6.74–$13.10** in hourly income (Figure 8), and the transitions are shaded green, indicating moderate skill alignment and realistic retraining pathways.

However, transitions to higher-skill roles in the **Engineers, Technicians, and Specialists** cluster, such as *Nuclear Technicians* or *Construction Managers*, although yielding large wage gains (up to **$33.40** per hour), are significantly more challenging. These are indicated by orange or yellow shades and would likely require intensive up-skilling or formal credentials. (Figure 8)

Most of the feasible and economically rewarding career pathways for workers who are employed in the **within the Skilled Trade Workers** are transitions into in-demand jobs within the same cluster. Figure 10 shows that nearly all intra-cluster transitions are associated with positive wage differentials – often in the range of **$5–$13** per hour – and are represented by green shades, signifying close alignment in skills and job context. For example, transitioning from a *Painter* to a *Sheet Metal Worker* or from a *Roofer* to a *Structural Iron and Steel Worker* offers both feasible movement and higher wages.

Meanwhile, Figure 9 shows that transitioning into the **Managers, Teachers, and Service Related Workers** cluster is more limited. Although occupations such as *Database Administrators* and *Administrative Services Managers* offer substantial wage gains (**$20.91–$29.06** per hour), the orange and yellow shading indicates that these paths are more difficult for skilled trades workers to pursue, likely due to substantial gaps in formal education, soft skills, or domain-specific knowledge.

Figure 8: Transitions from declining occupations in the **Skilled Trade Workers** cluster to in-demand occupations in the **Engineers, Technicians, and Specialists** cluster.

Title		Automotive Service Technicians and Mechanics	Cleaners of Vehicles and Equipment	Maintenance and Repair Workers, General
		$22.60	$16.71	$24.29
Civil Engineers	$44.94	$22.34	$28.23	$20.65
Construction Managers	$46.36	$23.76	$29.65	$22.07
Nuclear Technicians	$50.11	$27.51	$33.40	$25.82
Security and Fire Alarm Systems Installers	$29.34	$6.74	$12.63	$5.05
Telecommunications Equipment Installers and Repairers, Except Line Installers	$29.81	$7.21	$13.10	$5.52

Figure 9: Transitions from declining occupations in the **Skilled Trade Workers** cluster to in-demand occupations in the **Managers, Teachers, and Service Related Workers** cluster.

Title		Automotive Service Technicians and Mechanics	Cleaners of Vehicles and Equipment	Maintenance and Repair Workers, General
		$22.60	$16.71	$24.29
Administrative Services Managers	$45.77	$23.17	$29.06	$21.48
Database Administrators	$45.20	$22.60	$28.49	$20.91
Radiologic Technologists and Technicians	$36.29	$13.69	$19.58	$12.00
Security Guards	$17.40	-$5.20	$0.69	-$6.89

Figure 10: Transitions from declining occupations in the **Skilled Trade Workers** cluster to in-demand occupations in the **Skilled Trade Workers** cluster.

Title		Automotive Service Technicians and Mechanics	Cleaners of Vehicles and Equipment	Maintenance and Repair Workers, General
		$22.60	$16.71	$24.29
Brickmasons and Blockmasons	$30.78	$8.18	$14.07	$6.49
Cement Masons and Concrete Finishers	$29.83	$7.23	$13.12	$5.54
Drywall and Ceiling Tile Installers	$28.64	$6.04	$11.93	$4.35
Electricians	$30.56	$7.96	$13.85	$6.27
Fence Erectors	$22.41	-$0.19	$5.70	-$1.88
Glaziers	$29.34	$6.74	$12.63	$5.05
Heating, Air Conditioning, and Refrigeration Mechanics and Installers	$29.08	$6.48	$12.37	$4.79
Helpers--Electricians	$19.58	-$3.02	$2.87	-$4.71
Helpers--Installation, Maintenance, and Repair Workers	$18.96	-$3.64	$2.25	-$5.33
Helpers--Pipelayers, Plumbers, Pipefitters, and Steamfitters	$18.92	-$3.68	$2.21	-$5.37
Insulation Workers, Floor, Ceiling, and Wall	$27.23	$4.63	$10.52	$2.94
Insulation Workers, Mechanical	$32.64	$10.04	$15.93	$8.35
Millwrights	$35.25	$12.65	$18.54	$10.96
Operating Engineers and Other Construction Equipment Operators	$30.01	$7.41	$13.30	$5.72
Painters, Construction and Maintenance	$25.79	$3.19	$9.08	$1.50
Plumbers, Pipefitters, and Steamfitters	$30.06	$7.46	$13.35	$5.77
Riggers	$22.88	$0.28	$6.17	-$1.41
Roofers	$27.13	$4.53	$10.42	$2.84
Sheet Metal Workers	$30.26	$7.66	$13.55	$5.97
Structural Iron and Steel Workers	$34.53	$11.93	$17.82	$10.24
Welders, Cutters, Solderers, and Brazers	$23.75	$1.15	$7.04	-$0.54

3.2.3 Skillshed Results: Operation and Maintenance Phase

i. **Feasibility of transitions from declining occupations in the "Engineers, Technicians, and Specialists" cluster to in-demand occupations.**

Figure 11 presents the feasibility of transitions from declining occupations in the **Engineers, Technicians, and Specialists** cluster to in-demand occupations within the same cluster. This intra-cluster analysis reveals several promising pathways for displaced workers, particularly those in operational or technician roles. For example, workers previously employed as *Packers and Packagers* or *Shipping, Receiving, and Inventory Clerks* could transition to in-demand roles such as *First-Line Supervisors*, *Power Plant Operators of Production and Operating Workers*, or *Inspectors, Testers, Sorters, Samplers, and Weighers*. These transitions offer substantial wage gains, ranging from approximately **$1.66** to over **$19** per hour, and are shaded in green, indicating a relatively high degree of skill transferability.

Figure 12 shows the feasibility of transitions from **declining occupations** in the **Engineers, Technicians, and Specialists** cluster to in-demand occupations in the **Managers, Teachers, and Service Related Workers** cluster. The results suggest that although cross-cluster transitions are more difficult due to differences in domain-specific expertise, several opportunities remain viable with support for upskilling. For example, workers formerly employed as *Shipping, Receiving, and Inventory Clerks* could transition into in-demand roles like *General and Operation Managers*, *Compliance Officer*, or *First-Line Supervisors of Office and Administrative Support Workers*, with wage gains ranging from **$9.64** to **$25.11** per hour. These are highlighted in green shades, indicating potential for transition with some retraining.

Figure 13 presents the transition opportunities from declining occupations in the **Engineers, Technicians, and Specialists** cluster to in-demand occupations in the **Skilled Trade Workers** cluster. Although this cross-cluster transition pathway is less conventional, there are a few feasible opportunities. Notably, workers coming from roles like *Packers and Packagers, Hand* could consider transitioning into skilled trades such as *Electricians* or *Industrial Machinery Mechanics*. These transitions offer substantial wage gains—up to **$12.81** per hour—and are shaded in green and yellow, indicating a moderate degree of skill transferability and retraining requirements.

Figure 11: Transitions from declining occupations in the **Engineers, Technicians, and Specialists** cluster to in-demand occupations in the **Engineers, Technicians, and Specialists** cluster.

Title		Packers and Packagers, Hand	Shipping, Receiving, and Inventory Clerks
		$17.79	$20.56
Chemical Equipment Operators and Tenders	$28.00	$10.21	$7.44
Chemical Technicians	$26.30	$8.51	$5.74
Environmental Engineers	$51.00	$33.21	$30.44
First-Line Supervisors of Mechanics, Installers, and Repairers	$37.23	$19.44	$16.67
First-Line Supervisors of Production and Operating Workers	$32.68	$14.89	$12.12
Industrial Engineers	$47.83	$30.04	$27.27
Inspectors, Testers, Sorters, Samplers, and Weighers	$22.22	$4.43	$1.66
Nuclear Power Reactor Operators	$59.63	$41.84	$39.07
Occupational Health and Safety Specialists	$39.76	$21.97	$19.20
Occupational Health and Safety Technicians	$29.03	$11.24	$8.47
Power Plant Operators	$47.02	$29.23	$26.46

Figure 12: Transitions from declining occupations in the **Engineers, Technicians, and Specialists** cluster to in-demand occupations in the **Managers, Teachers, and Service Related Workers** cluster.

Title		Packers and Packagers, Hand	Shipping, Receiving, and Inventory Clerks
		$17.79	$20.56
Accountants and Auditors	$37.33	$19.54	$16.77
Compliance Officers	$36.07	$18.28	$15.51
Computer Network Support Specialists	$30.47	$12.68	$9.91
Environmental Scientists and Specialists, Including Health	$38.77	$20.98	$18.21
First-Line Supervisors of Office and Administrative Support Workers	$30.20	$12.41	$9.64
First-Line Supervisors of Police and Detectives	$47.12	$29.33	$26.56
General and Operations Managers	$45.67	$27.88	$25.11
Purchasing Managers	$62.12	$44.33	$41.56
Security Guards	$17.40	-$0.39	-$3.16
Training and Development Specialists	$30.67	$12.88	$10.11

Figure 13: Transitions from declining occupations in the **Engineers, Technicians, and Specialists** cluster to in-demand occupations in the **Skilled Trade Workers** cluster.

Title		Packers and Packagers, Hand	Shipping, Receiving, and Inventory Clerks
		$17.79	$20.56
Electricians	$30.56	$12.77	$10.00
Industrial Machinery Mechanics	$30.60	$12.81	$10.04

ii. **Feasibility of transitions from declining occupations in the "Managers, Teachers, and Service Related Workers" cluster to in-demand occupations.**

Figure 14 illustrates the feasibility of transitions from declining occupations in the **Managers, Teachers, and Service Related Workers** cluster to in-demand occupations in the **Engineers, Technicians, and Specialists** cluster. While these cross-cluster transitions offer substantial wage gains, they are significantly challenging. The deep red and orange shading across much of the matrix signals a low degree of skill overlap between the **Managers, Teachers, and Service Related Workers** cluster and the **Engineers, Technicians, and Specialists** cluster. This suggests that such transitions would require considerable retraining and formal education in technical fields such as engineering or energy systems.

Figure 15 presents transition opportunities from declining occupations to in-demand occupations within the **Managers, Teachers, and Service Related Workers** cluster. The results highlight that **intra-cluster transitions are generally easier and more accessible**, as occupations within the same cluster typically share similar skill sets, work environments, and educational requirements. Many transitions are shaded in strong green, indicating high feasibility and minimal retraining needs. For instance, transitioning from a *Customer Service Representative* to a *General and Operations Manager* results in a significant wage gain of **$24.75** per hour and is marked by a strong green shading, indicating relatively smooth transferability.

Figure 16 illustrates the feasibility of transitions from declining occupations in the **Managers, Teachers, and Service Related Workers** cluster to in-demand occupations in the **Skilled Trade Workers** cluster. While these transitions generally offer significant wage gains, they are predominantly shaded in yellow and red, indicating that they are relatively difficult to achieve. This difficulty arises from the considerable gap in technical training and industry-specific skills required to enter skilled trades.

Figure 14: Transitions from declining occupations in the **Managers, Teachers, and Service Related Workers** cluster to in-demand occupations in the **Engineers, Technicians, and Specialists** cluster.

Title		Cashiers	Customer Service Representatives	Elementary School Teachers, Except Special Education	Home Health Aides	Janitors and Cleaners, Except Maids and Housekeeping Cleaners	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	Stockers and Order Fillers	Teaching Assistants, Preschool, Elementary, Middle, and Secondary School, Except Special Education	Waiters and Waitresses
		$13.72	$20.92	$29.97	$16.78	$16.69	$21.84	$17.83	$16.94	$17.32
Chemical Equipment Operators and Tenders	$28.00	$14.28	$7.08	-$1.97	$11.22	$11.31	$6.16	$10.17	$11.06	$10.68
Chemical Technicians	$26.30	$12.58	$5.38	-$3.67	$9.52	$9.61	$4.46	$8.47	$9.36	$8.98
Environmental Engineers	$51.00	$37.28	$30.08	$21.03	$34.22	$34.31	$29.16	$33.17	$34.06	$33.68
First-Line Supervisors of Mechanics, Installers, and Repairers	$37.23	$23.51	$16.31	$7.26	$20.45	$20.54	$15.39	$19.40	$20.29	$19.91
First-Line Supervisors of Production and Operating Workers	$32.68	$18.96	$11.76	$2.71	$15.90	$15.99	$10.84	$14.85	$15.74	$15.36
Industrial Engineers	$47.83	$34.11	$26.91	$17.86	$31.05	$31.14	$25.99	$30.00	$30.89	$30.51
Inspectors, Testers, Sorters, Samplers, and Weighers	$22.22	$8.50	$1.30	-$7.75	$5.44	$5.53	$0.38	$4.39	$5.28	$4.90
Nuclear Power Reactor Operators	$59.63	$45.91	$38.71	$29.66	$42.85	$42.94	$37.79	$41.80	$42.69	$42.31
Occupational Health and Safety Specialists	$39.76	$26.04	$18.84	$9.79	$22.98	$23.07	$17.92	$21.93	$22.82	$22.44
Occupational Health and Safety Technicians	$29.03	$15.31	$8.11	-$0.94	$12.25	$12.34	$7.19	$11.20	$12.09	$11.71
Power Plant Operators	$47.02	$33.30	$26.10	$17.05	$30.24	$30.33	$25.18	$29.19	$30.08	$29.70

Figure 15: Transitions from declining occupations in the **Managers, Teachers, and Service Related Workers** cluster to in-demand occupations in the **Managers, Teachers, and Service Related Workers** cluster.

Title		Cashiers	Customer Service Representatives	Elementary School Teachers, Except Special Education	Home Health Aides	Janitors and Cleaners, Except Maids and Housekeeping Cleaners	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	Stockers and Order Fillers	Teaching Assistants, Preschool, Elementary, Middle, and Secondary School, Except Special Education	Waiters and Waitresses
		$13.72	$20.92	$29.97	$16.78	$16.69	$21.84	$17.83	$16.94	$17.32
Accountants and Auditors	$37.33	$23.61	$16.41	$7.36	$20.55	$20.64	$15.49	$19.50	$20.39	$20.01
Compliance Officers	$36.07	$22.35	$15.15	$6.10	$19.29	$19.38	$14.23	$18.24	$19.13	$18.75
Computer Network Support Specialists	$30.47	$16.75	$9.55	$0.50	$13.69	$13.78	$8.63	$12.64	$13.53	$13.15
Environmental Scientists and Specialists, Including Health	$38.77	$25.05	$17.85	$8.80	$21.99	$22.08	$16.93	$20.94	$21.83	$21.45
First-Line Supervisors of Office and Administrative Support Workers	$30.20	$16.48	$9.28	$0.23	$13.42	$13.51	$8.36	$12.37	$13.26	$12.88
First-Line Supervisors of Police and Detectives	$47.12	$33.40	$26.20	$17.15	$30.34	$30.43	$25.28	$29.29	$30.18	$29.80
General and Operations Managers	$45.67	$31.95	$24.75	$15.70	$28.89	$28.98	$23.83	$27.84	$28.73	$28.35
Purchasing Managers	$62.12	$48.40	$41.20	$32.15	$45.34	$45.43	$40.28	$44.29	$45.18	$44.80
Security Guards	$17.40	$3.68	-$3.52	-$12.57	$0.62	$0.71	-$4.44	-$0.43	$0.46	$0.08
Training and Development Specialists	$30.67	$16.95	$9.75	$0.70	$13.89	$13.98	$8.83	$12.84	$13.73	$13.35

Figure 16: Transitions from declining occupations in the **Managers, Teachers, and Service Related Workers** cluster to in-demand occupations in the **Skilled Trade Workers** cluster.

Title		Cashiers	Customer Service Representatives	Elementary School Teachers, Except Special Education	Home Health Aides	Janitors and Cleaners, Except Maids and Housekeeping Cleaners	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	Stockers and Order Fillers	Teaching Assistants, Preschool, Elementary, Middle, and Secondary School, Except Special Education	Waiters and Waitresses
		$13.72	$20.92	$29.97	$16.78	$16.69	$21.84	$17.83	$16.94	$17.32
Electricians	$30.56	$16.84	$9.64	$0.59	$13.78	$13.87	$8.72	$12.73	$13.62	$13.24
Industrial Machinery Mechanics	$30.60	$16.88	$9.68	$0.63	$13.82	$13.91	$8.76	$12.77	$13.66	$13.28

iii. **Feasibility of transitions from declining occupations in the "Skilled Trade Workers" cluster to in-demand occupations.**

Figure 17 highlights the feasibility of transitions from declining occupations in the **Skilled Trade Workers** cluster to in-demand occupations in the **Engineers, Technicians, and Specialists** cluster. Although these cross-cluster transitions are less common, they appear to be both feasible and economically attractive for several roles. Notably, transitioning from automotive-related occupations such as *Maintenance and Repair Workers, General* to roles like *First-Line Supervisor of Mechanics, Installers, and Repairers* or *Power Plant Operators* yields wage gains of **$12.94** and **$22.73** per hour, respectively, and is marked by green shading, indicating relatively strong transferability. This suggests that certain technical skills in the trades can map well onto engineering and specialist roles, particularly with targeted upskilling.

Figure 18 presents transition opportunities from declining occupations within the **Skilled Trade Workers** cluster to in-demand occupations in the **Managers, Teachers, and Service Related Workers** cluster. While some transitions offer notable wage gains—such as from *Maintenance and Repair Workers, General* to *General and Operations Managers* (a **$21.38** increase), these pathways often require substantial retraining and upskilling, as indicated by the prevalence of red and orange shading, indicating that such cross cluster transitions tend to be more challenging due to significant differences in skill sets, qualifications, and workplace environments.

Figure 19 illustrates that intra-cluster transitions within the **Skilled Trade Workers** cluster, such as from declining automotive roles to in-demand occupations like *Electricians* or *Industrial Machinery Mechanics*. These transitions are notably more accessible as illustrated by the strong green shading and offer meaningful hourly wage gains ranging from **$6.27 to $8.00** per hour. This pattern reinforces the conclusion that **intra-cluster transitions within the Skilled Trades are generally easier and more attainable**, owing to the overlapping technical skill sets and similar work environments shared across these roles.

Figure 17: Transitions from declining occupations in the **Skilled Trade Workers** cluster to in-demand occupations in the **Engineers, Technicians, and Specialists** cluster.

Title		Automotive Service Technicians and Mechanics	Cleaners of Vehicles and Equipment	Maintenance and Repair Workers, General
		$22.60	$16.71	$24.29
Chemical Equipment Operators and Tenders	$28.00	$5.40	$11.29	$3.71
Chemical Technicians	$26.30	$3.70	$9.59	$2.01
Environmental Engineers	$51.00	$28.40	$34.29	$26.71
First-Line Supervisors of Mechanics, Installers, and Repairers	$37.23	$14.63	$20.52	$12.94
First-Line Supervisors of Production and Operating Workers	$32.68	$10.08	$15.97	$8.39
Industrial Engineers	$47.83	$25.23	$31.12	$23.54
Inspectors, Testers, Sorters, Samplers, and Weighers	$22.22	-$0.38	$5.51	-$2.07
Nuclear Power Reactor Operators	$59.63	$37.03	$42.92	$35.34
Occupational Health and Safety Specialists	$39.76	$17.16	$23.05	$15.47
Occupational Health and Safety Technicians	$29.03	$6.43	$12.32	$4.74
Power Plant Operators	$47.02	$24.42	$30.31	$22.73

Figure 18: Transitions from declining occupations in the **Skilled Trade Workers** cluster to in-demand occupations in the **Managers, Teachers, and Service Related Workers** cluster.

Title		Automotive Service Technicians and Mechanics	Cleaners of Vehicles and Equipment	Maintenance and Repair Workers, General
		$22.60	$16.71	$24.29
Accountants and Auditors	$37.33	$14.73	$20.62	$13.04
Compliance Officers	$36.07	$13.47	$19.36	$11.78
Computer Network Support Specialists	$30.47	$7.87	$13.76	$6.18
Environmental Scientists and Specialists, Including Health	$38.77	$16.17	$22.06	$14.48
First-Line Supervisors of Office and Administrative Support Workers	$30.20	$7.60	$13.49	$5.91
First-Line Supervisors of Police and Detectives	$47.12	$24.52	$30.41	$22.83
General and Operations Managers	$45.67	$23.07	$28.96	$21.38
Purchasing Managers	$62.12	$39.52	$45.41	$37.83
Security Guards	$17.40	-$5.20	$0.69	-$6.89
Training and Development Specialists	$30.67	$8.07	$13.96	$6.38

Figure 19: Transitions from declining occupations in the **Skilled Trade Workers** cluster to in-demand occupations in the **Skilled Trade Workers** cluster.

Title		Automotive Service Technicians and Mechanics	Cleaners of Vehicles and Equipment	Maintenance and Repair Workers, General
		$22.60	$16.71	$24.29
Electricians	$30.56	$7.96	$13.85	$6.27
Industrial Machinery Mechanics	$30.60	$8.00	$13.89	$6.31

4 Key Takeaways

Without major new investment, the OVRDC region faces notable declines across several occupations, including jobs in the service, education, and manual labor sectors. As shown in Table 1, some of the largest projected employment losses include *Cashiers*, *Home Health Aides*, *Stockers and Order Fillers*, and *Shipping, Receiving, and Inventory Clerks.* These roles are typically entry-level, routine, or physically demanding and are particularly vulnerable to automation, digital self-service technologies, and shifting industry demands. Other declining occupations include *Secretaries and Administrative Assistants*, *Customer Service Representatives*, and *Janitors and Cleaners*, reflecting a broader trend in declining support and low-skill maintenance roles. Importantly, several educational support positions such as *Teaching Assistants* and *Elementary School Teachers* also show negative growth, indicating structural changes in the public education workforce. The decline in both frontline service roles and traditional administrative support highlights the urgent need for strategic retraining programs that facilitate transitioning into more resilient, in-demand occupations across sectors.

The redevelopment of the PORTS site presents a critical opportunity to reverse this trajectory. The project is expected to generate significant hiring needs in skilled trades, construction management, technical operations, and environmental safety. This creates a clear pathway for displaced workers to transition into higher-wage, more stable careers—provided that targeted training and reskilling programs are in place to support these shifts.

The construction phase of the PORTS site development is expected to generate strong demand for a wide range of occupations, primarily in skilled trades, construction management, and technical support roles. Key trades-based positions include *Electricians*, *Plumbers, Pipefitters, and Steamfitters*, *Welders*, *Sheet Metal Workers*, *Drywall Installers*, *Brickmasons*, *Millwrights*, *Heating, Air Conditioning, and Refrigeration Mechanics*, *Security and Fire Alarm Systems Installers*, and *Telecommunications Equipment Installers*, and *Operating Engineers*, all of which are essential for physical site development and infrastructure installation. In addition to skilled trades, the new developments will require higher-level technical and managerial personnel, including *Construction Managers*, *Civil Engineers*, *Administrative Services Managers*, *Database Administrators*, and even *Nuclear Technicians.*

The operations phase of the PORTS site will require a workforce with a distinct set of technical, administrative, and safety-oriented skills. Unlike the construction phase, which is heavily reliant on trades and labor, the operations phase places greater emphasis on ongoing facility management, compliance, and process control. In-demand occupations include technical roles such as *Chemical Equipment Operators*, *Chemical Technicians*, *Industrial Machinery Mechanics*, *Inspectors*, *Power Plant Operators*, and *Nuclear Power Reactor Operators.* Additionally, scientific and environmental expertise is essential, as seen in the need for *Environmental Scientists*, *Environmental Engineers*, and *Occupational Health and Safety Specialists/Technicians.*

Supervisory and managerial positions also play a crucial role in the operations phase, including *First-Line Supervisors* across operations, maintenance, office administration, and public safety, *General and Operations Managers*, *Purchasing Managers*, and *Compliance Officers*. Additionally, organizational effectiveness will also rely on professionals like *Accountants*, *Computer Network Support Specialists*, and *Training and Development Specialists*.

Overall, the hiring demand for both the development and operation of the PORTS site reflects the complexity and technical rigor of the development effort, underscoring the need to align regional training and credentialing programs with the specialized labor requirements of this large-scale infrastructure project.

The skillshed analysis serves as a practical tool to guide career transitions within the OVRDC region. By aligning declining occupations in the region with emerging roles tied to the PORTS development project, the analysis helps local workers and training providers identify high-opportunity pathways that support both regional workforce resilience and the labor needs of a major infrastructure investment.

The skillshed analysis reveals several important patterns in workforce transition opportunities. Most notably, transitions within the same occupational cluster, such as those within the **Skilled Trade Workers** cluster, are generally more feasible and accessible. These intra-cluster moves often involve overlapping technical skills, similar job contexts, and modest reskilling needs, making them practical pathways for displaced workers.

In contrast, cross-cluster transitions, such as from service-related occupations to technical or managerial roles, can offer substantial wage gains but are more challenging due to large gaps in skills, education, or experience. While some of these transitions yield hourly wage increases, they typically require significant upskilling or formal training to be viable.

As the OVRDC region faces structural job declines across service, administrative, and manual labor sectors, the PORTS redevelopment effort presents a timely opportunity to create high-quality, sustainable employment. By identifying feasible transitions and the training required to bridge skills gaps, the skillshed framework empowers local stakeholders—workers, educators, and policymakers alike—to build a more resilient, future-ready workforce.

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