Feeder Occupations and Next Steps for Broadband Initiatives

Prepared for America Achieves - February 2021
Emsi Burning Glass provides labor market data that helps to create better outcomes for communities. Our data, which cover more than 99% of the U.S. workforce, are compiled from a wide variety of government sources, job postings, and online profiles and résumés. A variety of our clients use Emsi Burning Glass to align programs with regional needs and demonstrate their institution’s economic impact on their region. Visit economicmodeling.com/ci-consulting to learn more or connect with us.
BACKGROUND and PURPOSE

As the country emerges from Covid-19 and its economic implications, a concerted effort is under way to reemploy the great number of American workers who have lost jobs and income amid the pandemic. Alongside of these disruptions of the past year, the US is also acknowledging historic and contemporary racial inequities that have implications across health, infrastructure, and employment.

As with any major disruption, it is not possible to simply “put the pieces back together”. Many of the most severely impacted industries are unlikely to recover immediately or predictably, and many of the interventions designed to stimulate the economy and increase employment may struggle to find enough workers who are ready to do the necessary work. Recovery cannot be allowed to simply reanimate historic inequities and the practices and systems that have entrenched them.

Publicly supported infrastructure investments can at once create the conditions for longer-term economic recovery and generate near-term opportunities to activate large numbers of unemployed, underemployed, and dislocated workers. We also recognize that stimulus and infrastructure spending is not only a tool for general recovery, but also to increase access to meaningful work for historically marginalized populations.

Among the massive elements of planning infrastructure projects is the need to identify and prepare the Americans who will work on those projects. In some measure, individuals dislocated earlier in 2020 can step back into their roles, already with the skills and credentials needed to do that work safely and effectively. The potential size of the infrastructure projects, however, calls for a larger workforce that cannot be supplied just by workers who had already been doing those roles. Rather, we will need a pipeline of additional workers who can quickly prepare to support these projects. Every worker that needs to be hired is also an opportunity to redress historic inequities and to create opportunities for a workforce that is more representative of the diversity of the country. This research aims to inform how the infrastructure investments can at once address the infrastructure, employment and equity challenges facing the country.

In partnership with the Brookings Institution and under the leadership of America Achieves, Burning Glass Technologies has leveraged its proprietary data and analytic capabilities to support human capital deployment to the infrastructure investments in a way that balances the need for rapid reemployment and the need to achieve equity goals. In planning these efforts, the analyses identifies:

- The ready workforce – those recently dislocated from occupations that will be important to the various infrastructure projects and that can be reactivated to work on those projects more or less immediately
- Workers who may need modest retraining – those workers who are in roles that call for similar skills that are required in the infrastructure workforce. Using Burning Glass’ proprietary skills data, we are able to identify a range of “feeder occupations” who will need less upskilling to become ready for the infrastructure jobs, and who are good candidates for upskilling and reskilling into the infrastructure jobs.
Skills gaps – while substantial skills overlaps are identified, so too are the unique skills called for in the infrastructure occupations. These skills can be the focus of upskilling and reskilling efforts, and can prepare skills-adjacent workers for infrastructure roles most efficiently.

Demographics – some feeder occupations currently employ larger numbers of people of color and youth for whom the new opportunities stand to be especially meaningful. In using the new efforts to address equity priorities, these feeder roles can be especially important sources of talent, and for whom upskilling and reskilling can be especially impactful in creating more diverse and equitable infrastructure workforce.

Next Steps – recognizing that the infrastructure projects will have a defined lifecycle and associated employment opportunities will likely level off, some of the workers recruited into the new infrastructure roles will move forward in their careers to other occupations. Analysis of further skills similarities indicates where advancement from the infrastructure jobs into “Next Step” occupations may be feasible.

This analysis focuses on the Broadband portion of the potential infrastructure initiative.
METHODOLOGY

Data
Burning Glass tracks demand by collecting job postings from more than 40,000 online job sites to develop a comprehensive, real-time portrait of labor market demand. Our software extracts topline information about each job such as title, employer, and industry, and then “reads” each job description to identify specific job titles, skills, and qualifications that employers are seeking.

We chose to define occupations using an internal BGT taxonomy, as opposed to O*NET / CPS codes. Based on analyses of real-time job titles and requirements for skills and education, Burning Glass Occupations (BGTOCCs) were adapted to reflect current employer demand more accurately—separating out distinct occupations that BLS codes as one occupation in some cases, and consolidating similar occupations that BLS splits out where real-time employer requirements did not vary significantly between job categories. Where possible, we use statistics for BGTOCCs. In some cases, like in defining the median salary and estimating employment numbers, we use a crosswalk that matched BGTOCCs back to O*NET / CPS codes. Additionally, we chose to look at BGTOCCs across the entire labor market, as opposed to constraining to a particular industry. This is because occupations are defined by industry-transferable skills and individuals in an occupation will be able to move more easily across industries as opposed to workers within an industry moving across occupations.

Initiative Level Reports:

Critical Occupations
For the proposed Broadband initiative, we present information centered around the critical occupations. Critical occupations are identified by Brookings and defined as those occupations that have the highest intensity of employment in each initiative relative to the rest of the economy. We hand select critical occupations and matched them to one or more BGT Occupations using a proportional crosswalk based on the job posting frequency. We report all metrics at the BGT Occupation level. The following tables show the mapping from O*NET / CPS Occupation to BGT Occupation.
## Broadband Critical Occupations

<table>
<thead>
<tr>
<th>BGT Occupation</th>
<th>O*NET / CPS Occupation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Satellite / Broadband Technician</td>
<td>Telecommunications Equipment Installers and Repairers, Except Line Installers</td>
</tr>
<tr>
<td>Radio Technician</td>
<td>Radio, Cellular and Tower Equipment Installers and Repairers</td>
</tr>
<tr>
<td>Utility Line Locator / Technician</td>
<td>Electrical Power-Line Installers and Repairers</td>
</tr>
<tr>
<td>Maintenance Helper / Assistant</td>
<td>Helpers--Installation Maintenance and Repair Workers</td>
</tr>
<tr>
<td>Electronics Engineer</td>
<td>Electronics Engineers, Except Computer</td>
</tr>
<tr>
<td>RF Engineer</td>
<td>Electronics Engineers, Except Computer</td>
</tr>
<tr>
<td>Cable Technician / Installer</td>
<td>Telecommunications Line Installers and Repairers</td>
</tr>
</tbody>
</table>

We calculate the following statistics:

**Estimated hiring need metric** is the number of jobs created per amount of money invested. The amount of investment varies across the four initiatives with Broadband and Oil and Gas based on 80 billion dollars and 24 billion dollars, respectively. Data on this metric was provided by Brookings. We used a crosswalk that matched BGTOCCs back to O*NET / CPS codes.

**Median 2019 salary** numbers are from Occupational Employment Statistics (OES). OES reports estimates of employment and wages for approximately 800 occupations based on a semiannual survey that they conduct. Data from self-employed persons are not collected or included in OES estimates. All OES data in this report is at the national level.

Five-year **occupation projections** are produced from a machine learning model combined with an econometric time series method. The model incorporates Burning Glass postings data and several external data sources. External inputs include occupational projections and historical employment statistics from the US Bureau of Labor Statistics (BLS) and internet trend data, which indicate how many people have been searching for occupational information.

We report **current demographic information** for each critical occupation. We include the percent of workers in the critical occupation that are White, Hispanic, Black, and Male. Data on
this metric is provided by Brookings. We used a crosswalk that matched BGTOCCs back to O*NET / CPS codes.

We provide the **most requested minimum education level** and the associated percent of postings requesting that level of education by looking at postings for the occupation between January 1st, 2020 through December 31st, 2020.

We provide the **percent of postings requesting 0 to 2 years of experience** by looking at postings for the occupation between January 1st, 2020 through December 31st, 2020.

We provide the **top certifications** by looking at postings for the occupation between January 1st, 2020 through December 31st, 2020. Common certification requirements are good targets for training programs curriculum ensuring that workers are properly prepared for employment. We exclude listing certifications that do not meet sample size requirements.

We report the **necessary and defining skills** for each occupation. An occupation’s necessary skills are specialized skills that are required for that job and are relevant across other similar jobs. An employee needs these skills as building blocks to perform the more complex defining skills. An occupation’s defining skills represent the day-to-day tasks and responsibilities of the job. An employee needs these skills to qualify and perform successfully in this occupation. These skills are crucial for education and training programs and providers to cover.

**Ready workforce metric** is the number of dislocated or unemployed workers from the critical occupation. Data on this metric was provided by Brookings. We used a crosswalk that matched BGTOCCs back to O*NET / CPS codes.

**Feeder Occupations**

For each critical occupation, we identify three or four of feeder occupations. Feeder occupations are previous step occupations that are skills-adjacent to the critical occupations. Workers within the feeder occupations can be upskilled or reskilled to meet projected demand. To pick feeder occupations, we consider similarity scores, salary differentials, unemployment statistics, demographics information, and automation risk.

In this analysis, we use an index of similarity or similarity scores. The similarity scores for occupation pairs have a numeric value between 0 and 1. They can be seen as a proxy measure for the feasibility of transitioning between the two jobs. Job pairs that have a similarity score of 1 can be said to have a perfect fit (and are in fact the same occupation), while job pairs with a similarity score of 0 have the most imperfect fit with no overlapping skills. We look for feeder occupations where making the transition to the critical occupation is advantageous providing the worker with a higher wage or lower risk of automation. Additionally, relevant demographic information including age distribution, race/ethnic information and unemployment estimates are also considered.

We calculate statistics at the individual feeder level or across the group of feeders for the critical occupation. The following statistics are included in this section:
We report the **percent of feeder roles meeting education requirements of target occupation.** This metric is calculated using each occupation’s most requested minimum education level seen from job postings between January 1st, 2020 through December 31st, 2020.

We provide the **percent of feeder roles with higher automation risk than the target occupation.** The automation risk score for an occupation is a numeric value between 0 and 1. Occupations that have an automation score closer to 1 are at a high risk of being automated in the future, while occupations that have a score closer to 0 are at low risk of being automated in the future. Data on the automation risk is based on the 2013 study “The Future of Employment: How Susceptible are Jobs to Computerization?” by Oxford researchers, Carl Benedikt Frey and Michael A. Osborne.

The **available workforce metric** is the number of dislocated or unemployed workers from the feeder occupation. Data on this metric was provided by Brookings. We used a crosswalk that matched BGTOCCs back to O*NET / CPS codes.

We report the **salary difference** between the feeder occupation and the critical occupation. Salary differences are calculated using 2019 median wage estimates from OES.

The **youth metric** is the percent of current workers that are 16 to 24 years old and are currently employed in the critical occupation. Data on this metric was provided by Brookings. We used a crosswalk that matched BGTOCCs back to O*NET / CPS codes.

The **non-white metric** is the percent of current workers that either Black, Multiracial/Other, or Hispanic and are currently employed in the critical occupation. Data on this metric was provided by Brookings. We used a crosswalk that matched BGTOCCs back to O*NET / CPS codes.

**Skill gaps** and **skill overlaps** are provided for each feeder occupation and critical occupation pair. Skill gaps represent the skills that need to be gain for workers in the feeder occupation to successfully transition into employment in the critical occupation. Skill overlaps are the common skills that both the feeder occupation and the critical occupation require to perform successfully.

**Destination Occupations**

For each critical occupation, we identify three or four of destination occupations. Destination occupations are next step occupations that workers in the critical occupation can aim to advance based on skills-adjacency. In addition to skill-adjacency, we look at salary differentials, education requirements and automation risk when selecting destination occupations.

We calculate the following statistics for each destination occupation:

We report the **salary difference** between the critical occupation and destination occupation. Salary differences are calculated using 2019 median wage estimates from OES.
We provide the **change in requested education level** between the critical occupation and destination occupation. This metric is calculated using each occupation’s most requested minimum education level seen from job postings between January 1st, 2020 through December 31st, 2020.

We report the **change in automation risk score** from the critical occupation to the destination occupation. A positive number for this metric indicates that the destination occupation is at higher risk of automation than the critical occupation.

We approximate the **labor market demand** by looking at postings for the occupation between January 1st, 2020 through December 31st, 2020.
BROADBAND EXPANSION: OCCUPATION AND JOB IMPLICATIONS
Critical Occupation Profile: Broadband/Satellite Technician

Estimated Hiring Need: 26,357
Average Salary: $56,222
Projected Growth: -3.7%
Current Demographics:
- Gender: Male 92%, Female 8%
- Race: White 65%, Black 25%, Hispanic 10%
- Education: 42% High School, 16% Bachelor's, 42% Graduate

Back to Work Opportunity:
Projected Demand: 26,357 roles to fill
Ready Workforce: 14,816 dislocated Satellite/Broadband Technicians
Potentially Available Workforce: 15,106 skills similar dislocated workers

Skill Gaps and Overlaps

Feeder Occupations:
- Insulation Worker: Repair, Power Tools, Writing, Sales, Hand Tools
- Satellite/Broadband Technician: Telecommunications, Scheduling, Customer Service, Sales, Repair
- Telemarketer: Telecommunications, Scheduling, Customer Service, Product Sales, Customer Contact

Workers from feeder occupations contribute several broader skills that will be useful for retraining as Satellite / Broadband Technicians, such as repair, hand and power tools and customer service. Efforts to transition workers will need to focus on broadband, routers and troubleshooting, as those are unique to Cable Technicians / Installers.
## Next Step Occupations

<table>
<thead>
<tr>
<th>Critical Occupation</th>
<th>Next-Step Occupations</th>
<th>Wage Increase</th>
<th>Change in Educ. Req.</th>
<th>Change in Automation Risk*</th>
<th>12 Month Demand</th>
</tr>
</thead>
<tbody>
<tr>
<td>Satellite/ Broadband Technician</td>
<td>Electrical Substation / Relay Repairer</td>
<td>+$26,558</td>
<td>HS -&gt; HS</td>
<td>-1%</td>
<td>1,130</td>
</tr>
<tr>
<td></td>
<td>Network / Systems Support Specialist</td>
<td>+$7,238</td>
<td>HS -&gt; Assoc./BA</td>
<td>+26%</td>
<td>21,342</td>
</tr>
<tr>
<td></td>
<td>Electrician</td>
<td>-$42</td>
<td>HS -&gt; HS</td>
<td>-24%</td>
<td>57,756</td>
</tr>
<tr>
<td></td>
<td>Avionics Technician</td>
<td>+$7,475</td>
<td>HS -&gt; HS</td>
<td>+30%</td>
<td>5,921</td>
</tr>
</tbody>
</table>

* A positive number in red indicates that the Next-Step Occupation is at higher risk of automation than the Critical occupation.
Critical Occupation Profile: Cable Technician / Installer

- Estimated Hiring Need: 18,437
- Average Salary: $56,750
- Projected Growth: 0%
- Current Demographics:
  - 56% White
  - 39% Hispanic
  - 6% Black
  - 0% Male
- 97% of postings request High School degree
- 66% of postings request 0-2 years of experience
- Certifications: NCSA Certification, Pole Climbing Certification

Back to Work Opportunity:

- Projected Demand: 18,437 roles to fill
- Ready Workforce: 4,070 dislocated Cable Technician / Installer
- Potentially Available Workforce: 99,427 skills-similar dislocated workers

100% Similar Education
Percent of feeder roles meeting education requirements of critical occupation

100% Higher HR
Percent of feeder roles with higher automation risk than critical occupation

Skills:
Unemployed and underemployed workers in feeder occupations bring in some skills important to work as a Cable Technician / Installer

Necessary Skills:
- Hand Tools
- Customer Service
- Test Equipment
- Lifting Ability
- Occupational Health and Safety
- Electrical Skills
- Repair
- Telecommunications
- Fiber Optics
- Cabling
- CATS Cable

Feeder Occupations:
- Electrician’s Assistant
- Insulation Worker
- Courier / Messenger

Skill Gaps and Overlaps

Workers from feeder occupations contribute several broader skills that will be useful for retraining as Cable Technicians / Installers, such as repair, hand and power tools and customer service. Efforts to transition workers will need to focus on telecommunications, fiber optics and cabling, as those are unique to Cable Technicians / Installers.
### Next Step Occupations

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</tr>
</thead>
<tbody>
<tr>
<td>Network / Systems Support Specialist</td>
<td>+$6,710</td>
<td>HS -&gt; Assoc./BA</td>
<td>+16%</td>
<td>21,342</td>
<td></td>
</tr>
<tr>
<td>Electrician</td>
<td>-$570</td>
<td>HS -&gt; HS</td>
<td>-34%</td>
<td>57,756</td>
<td></td>
</tr>
<tr>
<td>Avionics Technician</td>
<td>+$6,947</td>
<td>HS -&gt; HS</td>
<td>+20%</td>
<td>5,921</td>
<td></td>
</tr>
<tr>
<td>Crane Operator</td>
<td>-$60</td>
<td>HS -&gt; HS</td>
<td>+31%</td>
<td>9,163</td>
<td></td>
</tr>
</tbody>
</table>

* A positive number in red indicates that the Next-Step Occupation is at higher risk of automation than the Critical occupation.
Initiative: **Broadband**

Critical Occupation Profile: **Radio Technician**

- **$55,380** Average Salary
- **1,626** Estimated Hiring Need
- **1%** Projected Growth
- **64%** of postings request High School degree
- **44%** of postings request 0-2 years of experience
- **100%** Similar Education
- **100%** Higher AIR

**Back to Work Opportunity:**

- **Projected Demand:** 1,626 roles to fill
- **Ready Workforce:** 1,021 dislocated Radio Technicians
- **Potentially Available Workforce:** 7,501 skills-similar dislocated workers

**Skills:**

- Schematic Design
- Electrical Industry Knowledge
- Two-Way Radio Operation
- Calibration
- Technical Support

- Necessary Skills:
  - Necessary skills required for this job and relevant across other similar jobs. These skills are building blocks for more complex defining skills.

- Defining Skills:
  - Repair
  - Test Equipment
  - Oscilloscopes
  - Telecommunications/Cabling

**Broadcast Technician**

- **Skill Overlap**
  - Repair
  - Customer Service

- **Skill Gap**
  - Troubleshooting
  - Test Equipment
  - Oscilloscopes
  - Cabling

**Tower Climber / Technician**

- **Skill Overlap**
  - Telecommunications
  - Repair
  - Soldering
  - Two-Way Radio Operation
  - Wiring

- **Skill Gap**
  - Test Equipment
  - Troubleshooting
  - Repair
  - Oscilloscopes

**Television / Satellite Television Installer**

- **Skill Overlap**
  - Cabling
  - Telecommunications
  - Customer Service
  - Technical Support

- **Skill Gap**
  - Troubleshooting
  - Test Equipment
  - Oscilloscopes

Workers from feeder occupations contribute several broader skills that will be useful for retraining as Radio Technicians, such as repair, wiring, telecommunications and customer service. Efforts to transition workers will need to focus on oscilloscopes and test equipment, as those are unique to Radio Technicians.
# Next Step Occupations

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<th>Next-Step Occupation</th>
<th>Wage Increase</th>
<th>Change in Educ. Req.</th>
<th>Change in Automation Risk*</th>
<th>12 Month Demand</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radio Technician</td>
<td>Electrical Substation / Relay Repairer</td>
<td>+$27,400</td>
<td>HS -&gt; HS</td>
<td>-55%</td>
<td>1,130</td>
</tr>
<tr>
<td></td>
<td>Network / Systems Support Specialist</td>
<td>+$8,080</td>
<td>HS -&gt; Assoc./BA</td>
<td>-28%</td>
<td>21,342</td>
</tr>
<tr>
<td></td>
<td>Electrical and Electronics Technician</td>
<td>+$8,080</td>
<td>HS -&gt; HS</td>
<td>-11%</td>
<td>58,815</td>
</tr>
<tr>
<td></td>
<td>Sound Engineering Technician</td>
<td>-$640</td>
<td>HS -&gt; BA</td>
<td>-80%</td>
<td>1,948</td>
</tr>
</tbody>
</table>

* A positive number in red indicates that the Next-Step Occupation is at higher risk of automation than the Critical occupation.
Critical Occupation Profile: Utility Line Locator / Technician

- **Estimated Hiring Need**: 8,282
- **Average Salary**: $72,520
- **Projected Growth**: -1%
- **Current Demographics**:
  - 89% White
  - 9% Hispanic
  - 1% Native American
  - 90% Male

**Certifications**:
- CDL Class A
- First Aid / CPR / AED

**Back to Work Opportunity**:

- **Projected Demand**: 8,282 roles to fill
- **Ready Workforce**:
  - 5,222 dislocated Utility Line Locator / Technician
- **Potentially Available Workforce**:
  - 10,690 skills-similar dislocated workers

**Skills**:
- Line employed and underemployed workers in feeder occupations bring in some skills important to work as an Utility Line Locator / Technician.
- **Essential Skills**:
  - Occupational Health and Safety
  - New Construction
  - Switchgear
  - Hand Tools
  - Detection and Measurement Equipment
- **Definable Skills**:
  - Telecommunications
  - Repair
  - OSHA Knowledge
  - Transformers

**Skill Gaps and Overlaps**

**Broadcast Technician**
- **Skill Overlap**:
  - Repair
  - Customer Service

**Electrician’s Assistant**
- **Skill Center**:
  - Customer Service
  - Repair
  - Transformers
  - Occupational Health and Safety

**Television / Satellite Television Installer**
- **Skill Overlap**:
  - Cabling
  - Telecommunications
  - Customer Service
  - Repair
  - Wiring
  - Hand Tools

**Under Center**:
- **Skill Gap**:
  - Troubleshooting
  - Test Equipment
  - Oscilloscopes

**Feeder Occupations**:
- Workers from feeder occupations contribute several broader skills that will be useful for retraining as Utility Line Locators / Technicians, such as repair, telecommunications and customer service. Efforts to transition workers will need to focus on oscilloscopes, test equipment, switchgear, and detection and measurement equipment, as those are unique to Utility Line Locators / Technicians.
## Next Step Occupations

<table>
<thead>
<tr>
<th>Next-Step Occupations</th>
<th>Wage Increase</th>
<th>Change in Educ. Req.</th>
<th>Change in Automation Risk*</th>
<th>12 Month Demand</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrical Substation/ Relay Repairer</td>
<td>$10,260</td>
<td>HS -&gt; HS</td>
<td>+28%</td>
<td>1,130</td>
</tr>
<tr>
<td>Geographer / GIS Specialist</td>
<td>$10,935</td>
<td>HS -&gt; BA</td>
<td>+21%</td>
<td>17,716</td>
</tr>
<tr>
<td>MRI / CT Technician / Technologist</td>
<td>$890</td>
<td>HS -&gt; Assoc.</td>
<td>+13%</td>
<td>28,594</td>
</tr>
<tr>
<td>Ultrasound Technologist / Sonographer</td>
<td>$1,431</td>
<td>HS -&gt; Assoc.</td>
<td>+25%</td>
<td>30,313</td>
</tr>
</tbody>
</table>

* A positive number in red indicates that the Next-Step Occupation is at higher risk of automation than the Critical occupation.
COVID-19: The Economic Impact Analysis on MRRPC Service Region

Executive Summary

Initiative: Broadband

Critical Occupation Profile: Maintenance Helper / Assistant

- Estimated Hiring Need: 582
- Average Salary: $30,530
- Projected Growth: 3.1%
- Certification:
  - OSHA Certification

Back to Work Opportunity:

Projected Demand: 582 roles to fill

Ready Workforce: 362 displaced Maintenance Helper / Assistant

Potentially Available Workforce: 992,359 skills-similar displaced workers

100% Similar Education: Percent of feeder roles meeting education requirements of Critical occupation
66% Higher AR: Percent of feeder roles with higher annual rate than Critical occupation

Skills:

- Vacuuming and janitorial work
- Painting
- Cleaning
- HVAC

Defining Skills:
- Defining skills represent the day-to-day tasks and responsibilities of the job.
- An employee needs these skills to qualify for and perform successfully in this occupation.

Janitor / Cleaner
- N/A total feeder
- 0% salary

Landscaping / Groundskeeping Worker
- 550 total feeder
- 1% salary

Laborer / Warehouse Worker
- 300 total feeder
- 4% salary

Skill Gaps and Overlaps

Feeder Occupations:

Janitor / Cleaner
- Machinery
- Painting
- Customer Service
- Cleaning
- Repair
- Occupational Health and Safety

Landscaping / Groundskeeping Worker
- Plumbing
- Carpentry
- Preventative Maintenance
- HVAC

Laborer / Warehouse Worker
- Scheduling
- Customer Service
- Cleaning

Workers from feeder occupations contribute several broader skills that will be useful for retraining as Maintenance Helpers / Assistants, such as repair, machinery and cleaning. Efforts to transition workers will need to focus on predictive and preventative maintenance, as that is unique to Maintenance Helpers / Assistants.
## Next Step Occupations

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<th>12 Month Demand</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Building and General Maintenance Technician</td>
<td>+$12,941</td>
<td>HS -&gt; HS</td>
<td>-30%</td>
<td>353,169</td>
</tr>
<tr>
<td></td>
<td>Repair / Service Technician</td>
<td>+$9,089</td>
<td>HS -&gt; HS</td>
<td>-15%</td>
<td>133,917</td>
</tr>
<tr>
<td></td>
<td>Locksmith</td>
<td>+$11,410</td>
<td>HS -&gt; HS</td>
<td>-2%</td>
<td>2,332</td>
</tr>
<tr>
<td></td>
<td>Industrial Mechanic</td>
<td>+$23,060</td>
<td>HS -&gt; HS</td>
<td>-12%</td>
<td>34,252</td>
</tr>
</tbody>
</table>

* A positive number in red indicates that the Next-Step Occupation is at higher risk of automation than the Critical occupation.
Critical Occupation Profile: Electronics Engineer

**Initiative:** Broadband

**2,187**
Estimated Hiring Need

$105,570
Average Salary

0%
Projected Growth

100%
Current Demographics
Male: 60%
Female: 40%

20%
Projected Growth

100%
of postings request Bachelor's degree

20%
of postings request 0-2 years of experience

**Certifications**
- Security Clearance
- ABET accredited
- Driver's License

**Back to Work Opportunity:**

**Projected Demand:**
2,187 roles to fill

**Ready Workforce:**
1,537 dislocated Electronics Engineers

**Potentially Available Workforce:**
12,962 skills-similar dislocated workers

66% Similar Education
Percent of feeder roles meeting education requirements of critical occupation

100% Higher AR
Percent of feeder roles with higher automation risk than critical occupation

**Skills:**
- Unemployed and underemployed workers in feeder occupations bring in some skills important to work as an Electronics Engineer
- **Necessary Skills**
  - Simulation
  - MATLAB
  - System Engineering
  - Physics
  - Test Equipment
- **Defining Skills**
  - Electronics Engineering
  - Electronics Design
  - Circuit Design
  - VHDL/Verilog
  - description Language
  - Digital Signal Processing

66% Similar Education

**Electronic Engineer**

- Electrical/Electronic Designer
  - 3,181 available workers
  - $44,046 salary
  - 6% female, 44% non-white

- Electrical and Electronics Technician
  - 10,982 available workers
  - $31,259 salary
  - 7% female, 53% non-white

- Sound Engineering Technician
  - 980 available workers
  - $55,830 salary
  - 4% female, 73% non-white

**Skill Gaps and Overlaps**

**Electrical / Electronic Designer**

- **Skill Overlap**
  - Project Management
  - Circuit Design

- **Qualifying Skills**
  - Electronic Engineering
  - Troubleshooting
  - Systems Engineering
  - MATLAB

**Sound Engineering Technician**

- **Skill Overlap**
  - Repair
  - C

- **Qualifying Skills**
  - Electronics Design and Engineering
  - CAD/Design
  - Physics

**Electrical and Electronics Technician**

- **Skill Overlap**
  - Electronics Industry
  - Knowledge

- **Qualifying Skills**
  - Test Equipment
  - Simulation
  - MATLAB

**Feeder Occupations:**

Workers from feeder occupations contribute several broader skills that will be useful for retraining as Electronics Engineers, such as repair, electronics industry knowledge and project management. Efforts to transition workers will need to focus on electronic and systems engineering, MATLAB and circuit design, as these are unique to Electronics Engineers.
## Next Step Occupations

<table>
<thead>
<tr>
<th>Critical Occupation</th>
<th>Next-Step Occupations</th>
<th>Wage Increase</th>
<th>Change in Educ. Req.</th>
<th>Change in Automation Risk*</th>
<th>12 Month Demand</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electronics Engineer</td>
<td>Software Developer / Engineer</td>
<td>+$1,940</td>
<td>BA -&gt; BA</td>
<td>+2%</td>
<td>899,451</td>
</tr>
<tr>
<td></td>
<td>Hardware Engineer</td>
<td>+$11,650</td>
<td>BA -&gt; BA</td>
<td>+20%</td>
<td>10,247</td>
</tr>
<tr>
<td></td>
<td>Engineering Manager</td>
<td>+$39,239</td>
<td>BA -&gt; BA</td>
<td>-1%</td>
<td>69,967</td>
</tr>
</tbody>
</table>

* A positive number in red indicates that the Next-Step Occupation is at higher risk of automation than the Critical occupation.
Critical Occupation Profile: RF Engineer

Back to Work Opportunity:

Projected Demand: 2,187 roles to fill
Ready Workforce: 1,537 displaced RF Engineers
Potentially Available Workforce: 12,092 skills-similar displaced workers

Skill Gaps and Overlaps

Workers from feeder occupations contribute several broader skills that will be useful for retraining as RF Engineers, such as MATLAB and simulation. Efforts to transition workers will need to focus on RF engineering and design and systems engineering, as those are more unique to RF Engineers.
### Next Step Occupations

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</tr>
</thead>
<tbody>
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<td>RF Engineer</td>
<td>Software Developer / Engineer</td>
<td>+$1,940</td>
<td>BA -&gt; BA</td>
<td>-2%</td>
<td>899,451</td>
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<td>Hardware Engineer</td>
<td>+$11,650</td>
<td>BA -&gt; BA</td>
<td>+20%</td>
<td>10,247</td>
</tr>
<tr>
<td></td>
<td>Data Scientist</td>
<td>+$17,270</td>
<td>BA -&gt; BA</td>
<td>-1%</td>
<td>35,063</td>
</tr>
<tr>
<td></td>
<td>Business Intelligence Architect / Developer</td>
<td>+$1,940</td>
<td>BA -&gt; BA</td>
<td>+2%</td>
<td>59,809</td>
</tr>
</tbody>
</table>

* A positive number in red indicates that the Next-Step Occupation is at higher risk of automation than the Critical occupation.