

**The Forest Opportunity Roadmap for Maine Workforce Development Strategy**  
**Prepared for**  
**Forest Opportunity Roadmap for Maine (FOR/Maine)**

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## Table of Contents

I.	INTRODUCTION .....	4
II.	THE FOREST PRODUCTS WORKFORCE TODAY .....	5
III.	THE FOREST PRODUCTS WORKFORCE OF TOMORROW .....	6
IV.	THE WORKFORCE PIPELINE.....	13
V.	WORKFORCE PIPELINE CULTIVATION: ATTRACTION, RECRUITMENT, & RETENTION .....	15
VI.	WORKFORCE TRAINING AND EDUCATION.....	18
VII.	RECOMMENDATIONS.....	19
VIII.	TECHNICAL APPENDICES CONTENTS (SEPARATE DOCUMENT).....	22

## I. Introduction

The forest product sector (FPS) is a core industrial driver of Maine's economies and provides good jobs for over 13,000 workers across the state. The sector continues to undergo transition in its traditional industry base, while new technologies and opportunities are emerging leading the path for future growth in the sector. The Forest Opportunity Roadmap for Maine (FOR/ME) initiative is a coordinated effort to drive growth in the sector with a target of reaching \$12 billion in economic output by 2025. The growth will be driven by identifying new markets and technological opportunities to revitalize and diversify Maine's forest economy and communities.<sup>1</sup>

A critical enabler of growth is the availability of a workforce with the necessary skills and knowledge to accommodate labor demands of existing and emerging industries. Goal number 3 of the roadmap calls for preparing the workforce of the future through three strategies: 1. attracting young people to the industry; 2. ensuring that new, replacement and incumbent workers have the skills needed for existing jobs; and 3. prepare the workforce for emerging products/technologies in the forest products industry.

In 2020, FOR/ME established a workforce subcommittee tasked with providing the necessary knowledge to develop a comprehensive workforce strategy(s) that supports long-term competitiveness and growth in Maine's forest product sector and achieves the goals of the broader FOR/ME initiative. An integral part of this effort is to provide a foundational understanding of workforce related challenges and opportunities facing the sector, its stakeholders, and the broader state of Maine. This report and accompanying technical appendices provide the base to inform a workforce strategy and implementation support. The intended use of this study and information is to inform future committee actions and advocacy to address workforce challenges in the sector and align with the goals of the overall initiative.

The focus of the analysis is on understanding current and future workforce demand, labor pools, recruitment and training efforts, and the articulation of career pathways in the forest products industry. The study draws upon existing reports, government and proprietary labor market and economic data, and interviews with industry and workforce stakeholders. The core report that follows provides summary findings and core recommendations to the workforce subcommittee and broader FOR/ME initiative. The core report is supported by several technical appendices that provide data findings and other pertinent reference information to support workforce efforts going forward.

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<sup>1</sup> [https://formaine.org/wp-content/uploads/2020/09/FORMaine\\_Report\\_DL\\_041119.pdf](https://formaine.org/wp-content/uploads/2020/09/FORMaine_Report_DL_041119.pdf)

## II. The Forest Products Workforce Today<sup>2</sup>

Today, the forest products sector (“FPS”) is made up of several core subsectors and value chain industries. These primarily include harvesting and logging, pulp and paper manufacturing, and wood product manufacturing, in addition to various small or emerging industries. At present, the FPS directly employs over 13,000 workers across the state. However, the industry is in transition. Employment in the sector has fallen by 47 percent since 2001 (Table 1), primarily as a result of mill closures. Employment has remained relatively stable over the past 5 years, although disruptions from the coronavirus pandemic in 2020 have had some negative impact. Despite these declines, employment remains significant in all but a few counties (Figure 1).

Employment is largest in wood product manufacturing (5,300), followed by pulp and paper manufacturing (4,500), and harvesting (3,600), among other end use industries, such as biomass energy production. A critical supplier industry to the forest products sector is transportation, comprised primarily of an estimated 1,037 jobs in heavy truck transport that support shipment of wood and end products to and from wood and pulp mills.<sup>3</sup> Three-quarters of those jobs are truck drivers, with the remainder in other occupations, such as material handlers and mechanics that support operations.

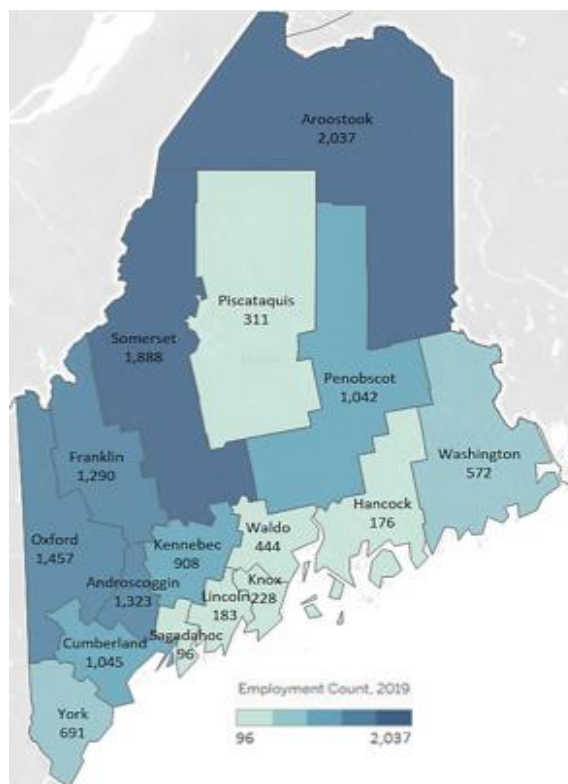


Figure 1: Employment Levels by Maine County, 2019

Subsector/Industry	Employment, 2019	Emp. Change Since 2001		Emp. Change Since 2017	
		Number	Percent	Number	Percent
Harvesting	3,624	(1,019)	-21.9%	89	3.0%
Paper Manufacturing	4,586	(7,673)	-62.6%	162	4.0%
Wood Product Manufacturing	5,397	(3,693)	-40.6%	(339)	-5.9%
Forest Products Sector Total	13,718	(12,406)	-47.5%	(146)	-1.0%

Table 1: Employment Levels and Change by Subsector Industry, 2001-19

<sup>2</sup> Refer to Technical Appendix A for detailed data for this section.

<sup>3</sup> An additional 700 truck drivers are employed *within* the forest product sector by various firms, primarily concentrated in the logging and harvesting subsector industry.

A multitude of new industries are anticipated to emerge in the coming years as new innovations of forest resources reach commercialization and market development that could potentially add hundreds of jobs in the sector.

### III. The Forest Products Workforce of Tomorrow<sup>4</sup>

#### The Aging and Exiting of the Workforce

Within the next ten years (by 2030), over 26% of the forest products workforce will have reached retirement age<sup>5</sup> and are at high probability of exiting the labor force (Figure 2).<sup>6</sup> By 2035, the percentage jumps to 37%, while recent trends in workforce entrants of younger age cohorts is below replacement levels. This percentage is consistent with the statewide proportion of the employed workforce, also estimated at 26%, reaching retirement in the next ten years, and is higher compared to other production oriented sectors, such as manufacturing<sup>7</sup> (21%) and construction (21%). Likewise, approximately 37% of workers in the current transportation supply chain workforce will reach retirement age within the next 10 years.

Currently five percent, or 785 workers, of the sector workforce is 65 years or older. Older age concentration is particularly acute in the harvesting and logging industry where about 300 workers (9%) are already over the typical age of retirement. Another 1,050 workers (31%) are between 55 and 64 years old and will reach retirement age within the next 10 years.

Thirty-seven percent (1,700) of the workforce in pulp and paper manufacturing are between the ages of 55 and 64 and will reach retirement age in the next 10 years. About 130 workers are currently 65 or older and will likely look to exit the labor force in the immediate future. Although

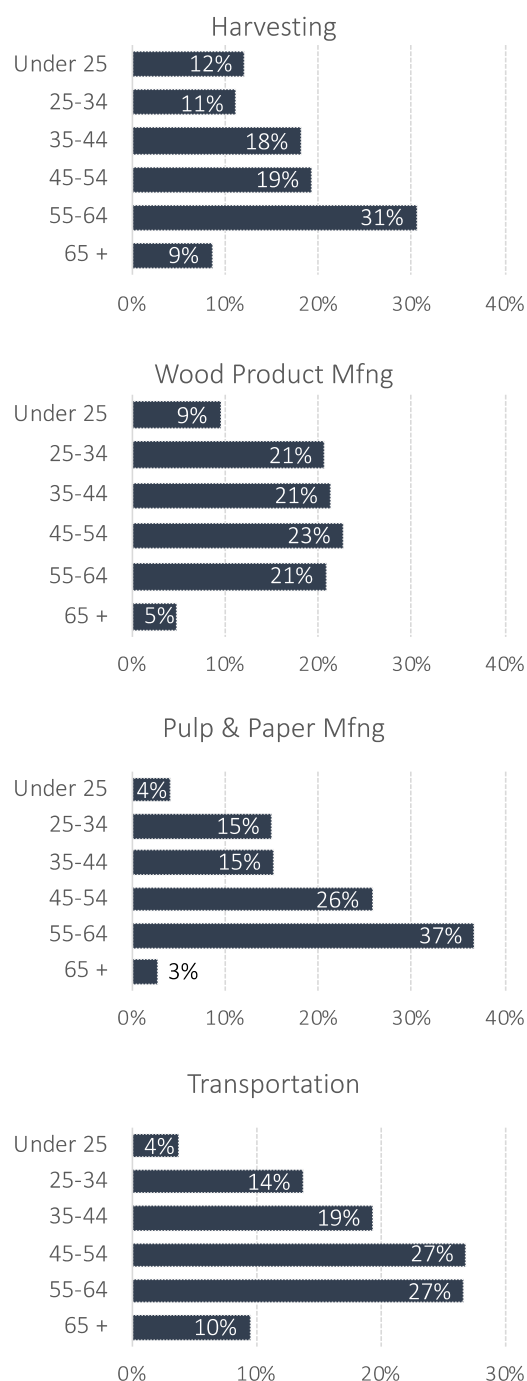


Figure 2: Workforce Age Composition by Subsector and Critical Supply Chain Industry

<sup>4</sup> Refer to Technical Appendix B for detailed data for this section.

<sup>5</sup> Age 65 is considered the threshold for defining retirement age.

<sup>6</sup> While some workers will exit the labor force years after 65, others are expected to exit before reaching 65.

<sup>7</sup> Manufacturing share is net of employment in the forest products sector.

workers in the harvesting and logging industry are more likely to work well past the typical retirement age, this is less common within the pulp and paper manufacturing industry. There are various reasons for this related to the respective industry employment structure and intensity of workforce demands between both industries.

The age of the workforce in wood product manufacturing is relatively more balanced on the whole, than both harvesting and pulp and paper manufacturing, though 5 percent of current workers are 65 and over and are expected to need replacement in the immediate future.

Forest Products is not alone in facing these challenges. An aging demographic is a constraint across a number of similar and competitor industries in Maine, including construction, manufacturing (all other), and transportation and warehousing. These related sectors will need to replace a combined 25,000 or more workers over the next 10 years suggesting competition will only intensify as industries and firms compete for a shrinking supply of local labor. This ultimately may erode the competitiveness of local industry as wages rise, and production and productivity suffer because of a lack of workers. Under these circumstances, we expect technology investments by businesses to increase as a substitution for labor, though labor augmenting capital investments will likely be limited to larger operators and businesses, while smaller operators will be more limited in their ability to do so.

### **Projected Workforce Replacement Demands for Existing Industry**

Based on the age composition and economic forecast for the current industry structure<sup>8</sup>, workforce replacement demands for the core sub-sectors are projected across 2 scenarios; a base case that assumes constant output and labor productivity (Scenario 1), and a second case that accounts for modest increases in labor productivity for the same level of output (Scenario 2).<sup>9,10</sup> Labor replacement projections are shown in Table 2.<sup>11</sup>

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<sup>8</sup> The forecasts relied on are derived from our economic model developed by Regional Economic Modeling Inc (REMI) and are considered a baseline forecast without addition of emerging technology industries. Because of uncertainty in which technologies will establish a commercial presence in Maine, emerging technology industries are excluded from the baseline forecast. However, there will likely be impact on existing value chain industry labor demand as emerging technologies take shape. We account for those labor demands under the emerging technology labor projections.

<sup>9</sup> Over time, technology labor substitution will likely reduce labor requirements, while increasing labor productivity and wages. These scenarios assume relatively modest real growth in output of existing industries over the 10-year period. The vast majority of sector growth driving the FOR/ME targets are assumed to result from emerging technology industries. Any significant growth in the existing industries would likely have a proportional increase in labor demands presented here.

<sup>10</sup> No increase in productivity is assumed under transportation under either scenario. However, over the longer-term horizon as autonomous transportation emerges, there will be obvious implications for labor demands.

<sup>11</sup> Any number of factors could alter the projections, including changes in real output, pronounced changes in labor productivity, or changes in overall market conditions. These projections are not assumed to be evenly distributed geographically or by firm. Each firm will have varying degrees of age composition across occupations and will therefore have different replacement demands over the projection period.

Labor replacement demands for the entire forest products sector range from 4,770 to 5,200 over the next fifteen years under Scenario 1 assuming constant real output, current employment levels, and minimal labor productivity increases. This represents approximately 29% to 36% of the current workforce size. Under Scenario 2, the replacement demands range from 4,380 to 4,850 over the next ten to fifteen years. Under the base case scenario, total short-term/immediate, defined as within the next 5 years, labor replacement demands for the sector are estimated to be between 760 and 840 workers. These levels fall slightly assuming modest labor productivity increases ranging from 750 to 830. Over the medium term, defined as between 5 and 15 years, between 4,000 and 4,400 workers may need replacement under the base scenario, while between 3,600 to slightly over 4,000 workers are projected during the medium-term horizon assuming modest increases in labor productivity.

#### Scenario 1: Base Case Replacement Projections

	Short-term / Immediate		Medium-term Horizon		Total targeting 2030-35	
	Low	High	Low	High	Low	High
Harvesting	280	309	994	1,099	1,274	1,409
Pulp & Paper Manufacturing	127	141	1,614	1,784	1,742	1,925
Wood Product Manufacturing	215	238	906	1,002	1,121	1,239
Transportation*	93	103	263	291	356	394
Other	51	57	227	251	278	308
Forest Products Sector Total	767	847	4,005	4,427	4,772	5,274

Notes: Range is based on 5% confidence intervals. Units include full-time and part-time employment. Assumes no significant change to labor productivity over the projection period. Transportation refers to employment in supply chain and does not include FP firm transportation. Other refers to residual FP industry employment, including biomass.

#### Scenario 2: Modest Labor Productivity Improvement Case Replacement Projections

	Short-term / Immediate		Medium-term Horizon		Total targeting 2030-35	
	Low	High	Low	High	Low	High
Harvesting	274	303	895	989	1,169	1,292
Pulp & Paper Manufacturing	125	138	1,453	1,606	1,578	1,744
Wood Product Manufacturing	211	233	816	901	1,026	1,134
Transportation*	93	103	263	291	356	394
Other	50	56	204	226	255	281
Forest Products Sector Total	753	833	3,631	4,013	4,384	4,846

Notes: Range is based on 5% confidence intervals. Units include full-time and part-time employment. Assumes a 2% increase in labor productivity in the short-term and 10% increase in labor productivity over the 10 year intermediate period (excludes Transportation). Transportation refers to employment in supply chain and does not include FP firm transportation. Other refers to residual FP industry employment, including biomass.

Table 2: Forest Product Replacement Demand Projection Scenarios

The harvesting sub-sector has the largest most immediate need for replacements (270-300). Pulp and paper manufacturing will demand the largest number of replacements, during the medium-term horizon (1,453 to 1,606) and on a cumulative basis (1,578 to 1,744) over the full projection period. The transportation supplier workforce will need to replace between 350 and 400 workers in both scenarios.



### ***Current labor demands stretch across occupations***

In general, replacement projections assume age compositions will be similar across occupations<sup>12</sup> and will be reflected in the occupational structure of each subsector. Hundreds of occupations in the sector are summarized by specialization to a subsector (Figure 3). The percentages in Figure 3 indicate the share of jobs in that subsector that are unique to the subsector and are not commonly found in other industries. In the case of harvesting, 74% of jobs are unique to the subsector, while just 10% of jobs in pulp and paper are unique to that subsector.

These measures have two important implications. The first is that for a higher percentage of specialized labor, firms are more constrained in where they can find workers with appropriate skills and knowledge, and likely draw from relatively smaller pools of labor. Coupled with geographic challenges, labor constraints are more intense. This is the case in the harvesting subsector. On the other hand, non-specialized jobs are more commonly found in other industries, share more transferable occupations and skill sets, and likely have larger pools of workers from which to recruit. This is the case with pulp and paper manufacturing.

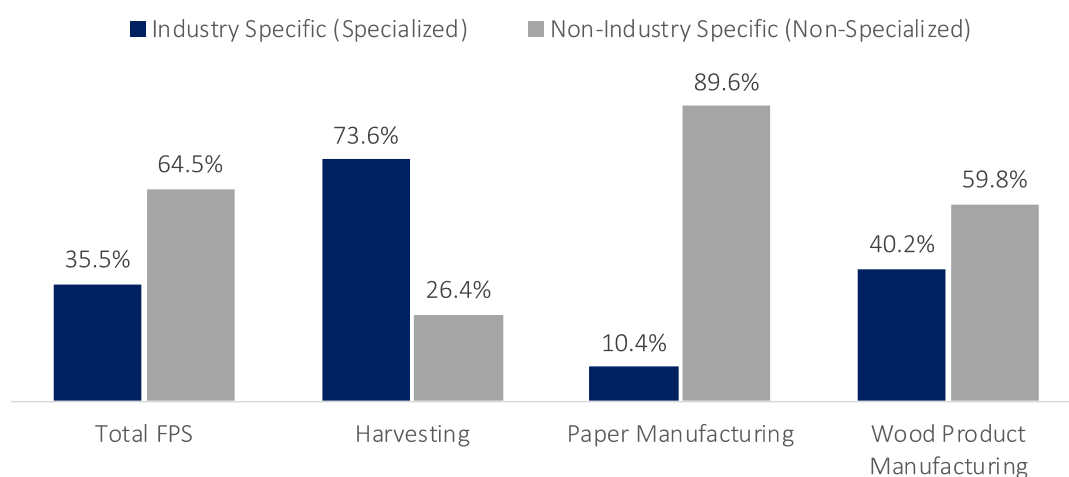


Figure 3: Distribution of Replacement Jobs by Job Category and Subsector Industry

The second implication has to do with necessary scale to support workforce training programs for specific jobs and skill sets. Non-industry specific jobs likely have larger demand profiles for workforce training, meaning there is likely a more consistent and larger pool of people in need of training. Contrarily, subsectors with larger shares of industry specific jobs may have challenges with scaling workforce programs to support the pipeline of workers if demand is not sufficient. In the case of harvesting, the Mechanized Logging Operator (MLO) training program.

<sup>12</sup> There is insufficient data to determine the exact age composition of occupations in the forest products sector and subsectors and therefore determine whether replacements will be concentrated in certain occupations than others. Projections include all occupations in these industries and are not limited to production jobs or other grouping.

Drawing on interviews with sector firms, the most urgent labor shortages are for CDL license truck drivers and logging operators. Boiler operators and other specialized skill occupations are also difficult to fill jobs, although relatively smaller in total number. Trade workers, including electricians, pipefitters, and other skilled trades, have also been identified by firms as difficult to fill. These occupations appear to be in high demand across a number of industries in Maine and are not unique to the forest products sector.

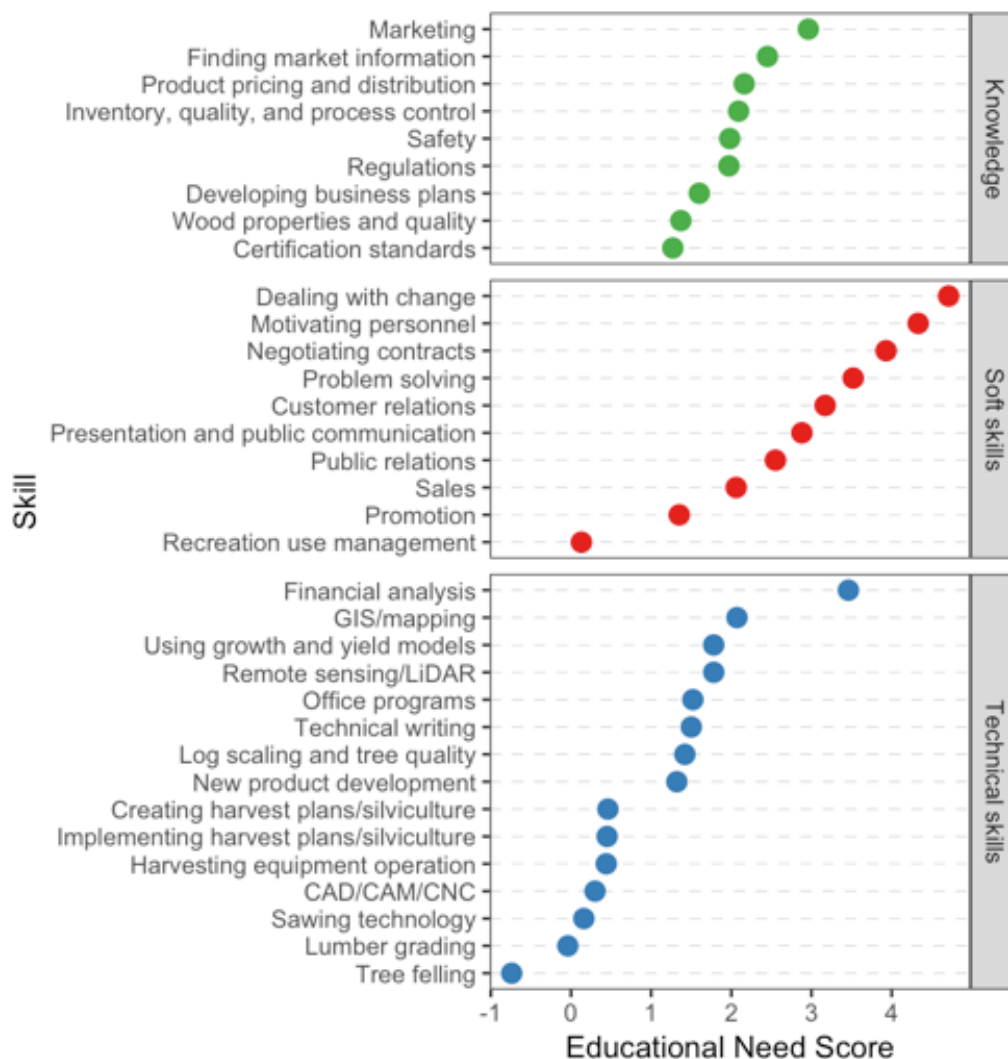
Looking ahead, the majority of demand will likely be in more entry-level positions as firms typically like to train and promote internally for most production oriented positions. However, few firms would pass on the opportunity to hire a skilled and experienced worker, whether or not there was an immediate open position. A smaller share of workforce demands will be for jobs requiring postsecondary degrees including boiler operators, as well as engineers, forestry professionals, and other science-based practitioners.

***Core skill and knowledge sets remain important, but are evolving with changing business climate and technology advances***

A recent UMaine study<sup>13</sup> surveyed 177 forest product firms in Maine that identified and ranked skills and knowledge most in-demand (Figure 4). According to the results, soft skills generally ranked highest, which are typically more tacit skills – harder to teach and are often learned by doing, whereas technical skills and knowledge are generally easier to teach and learn. Specific in-demand skills focus on communication, data-based decision making, digital skills, and soft skills, such as managing uncertainty, flexibility, and adaptability. As firms increasingly look towards technology adoption and increased automation skill demands will follow suit and should be monitored accordingly.

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<sup>13</sup> Bernstein, N., M. Crandall, and J. Leahy. 2020. "An Educational Needs Assessment of Workforce Supply and Readiness in Maine's Forest Products Industry." *Forest Products Journal*, 70(1): 22-27. Doi: 10.13073/FPJ-D-19-00046.



14

Figure 4: Skill Demands of Forest Product Sector Firms from UMaine Study

### ***Loss of knowledge from retirements***

The aging workforce presents challenges from a loss of tacit knowledge and skill that workers accumulate throughout their careers. As the older workforce exits, they take with them decades of learned experience that is not easily replicable, compelling companies to identify new ways to help transfer knowledge and train younger employees. Industry should seek ways to assist with transfer of tacit knowledge from workforce exiters to new workforce entrants. Firms recognize the opportunities to bring in younger workers and train them from the start according to the culture and systems unique to each firm. Likewise, firms recognize this represents an opportunity to adopt new technologies that

<sup>14</sup>The educational needs score provides a ranking of skill (grouped by skill domain) from -1 to 5 and is based on the relative importance of each skill and need indicated by industry stakeholders. The higher the score the greater the importance and need which is intended to indicate areas of focus for workforce development.

younger generations have greater exposure to and are important to the current competitive climate that businesses operate in.

### **Emerging technology labor demands are challenging to determine**

A report by Indufor<sup>15</sup> identified a diverse set of emerging technologies best positioned to take shape in Maine's forest products sector. Apart from a few recent announcements<sup>16</sup>, a high degree of uncertainty exists around which technologies will actually emerge, and it is virtually impossible to predict and identify specific workforce demands over an extended period, nor should this be attempted. Likewise, businesses bringing new technologies to the state, rather than emerging organically, will likely bring significant numbers of their base workforce with them, while locally emerging technologies will source more initial labor from Maine. To be sure, firms will weigh access to availability and quality of the workforce when determining whether to locate in Maine. We do expect, however, upstream labor supply demands to increase, most notably in harvesting and trucking, and to a lesser extent in sawmills and pulp manufacturing depending on technology and value chain demands. Over time as production processes becomes more standardized, a need for targeted training programs may take shape.

Nonetheless, estimates of total labor demands from emerging technologies is shown in Table 3. This assumes that virtually all growth accounted for in FOR/ME's growth targets are sourced from new technology entrants in the Maine forest products sector where there currently is not a presence (e.g., wood plastic composites, bio char, lactic acid, etc.). For the emerging industries, labor productivity is assumed to be higher than the existing sector mix, but will ultimately very depending on technology.

Between 1,100 and 1,300 units of direct labor will be needed in emerging industries over a ten-year horizon that meet FOR/ME growth targets. In addition, approximately 1,500 to 1,750 jobs will be demanded in the harvesting industry to support resource extraction. Depending on the technology, additional supply chain jobs will be needed during resource processing (e.g., pulp, sawlogs), which we are not able to easily estimate because of uncertainty in which emerging technologies will emerge. For this reason, these estimates of labor demand are assumed to be conservative, but provide a sense of the potential magnitude that can be expected.

Emerging Industries Projections

	Short-term / Immediate		Ten Year Horizon (2030)		Total	
	Low	High	Low	High	Low	High
Emerging Technology Industries	274	303	895	989	1,169	1,292
Harvesting	125	138	1,453	1,606	1,578	1,744
Emerging Industries Total	399	441	2,348	2,595	2,747	3,036

Table 3: Labor Demand Projections Assuming FOR/ME Growth Targets in Emerging Technologies

<sup>15</sup> Indufor, 2018. "Maine Forest Economy Growth Initiative: Long List Development Final Report."

<sup>16</sup> E.g., <https://bangordailynews.com/2021/02/23/news/midcoast/production-equipment-for-countrys-first-wood-fiber-insulation-plant-arrives-in-maine/>

#### IV. The Workforce Pipeline<sup>17</sup>

The forest products sector workforce pipeline will need to come from a variety of sources, primarily through cultivation of in-state youth populations, displaced workers, immigrant populations, and transferable industries. Given the in-state demographic challenges that will restrict these pipelines in the future, other potential sources of supply identified include youth in northeast regional states, exiting military service members, and competitor regions throughout the US. The industry would benefit from targeting workers that diversify the employment base along both gender and racial dimensions.

##### The Local Supply Outlook

The age composition in the forest products sector is characteristic of the broader demographic challenges in Maine and northern New England. Demographic projections for the state anticipate a deficit of over 60,000 workers in the labor force in the next 10-15 years below current levels, largely due to a disproportionately lower number of expected labor force entrants (younger age) compared to expected exits (retirees).<sup>18</sup> Given this dynamic, in-migration of labor will be required to maintain current levels of the labor force (and employment) and address labor force deficits in the future.

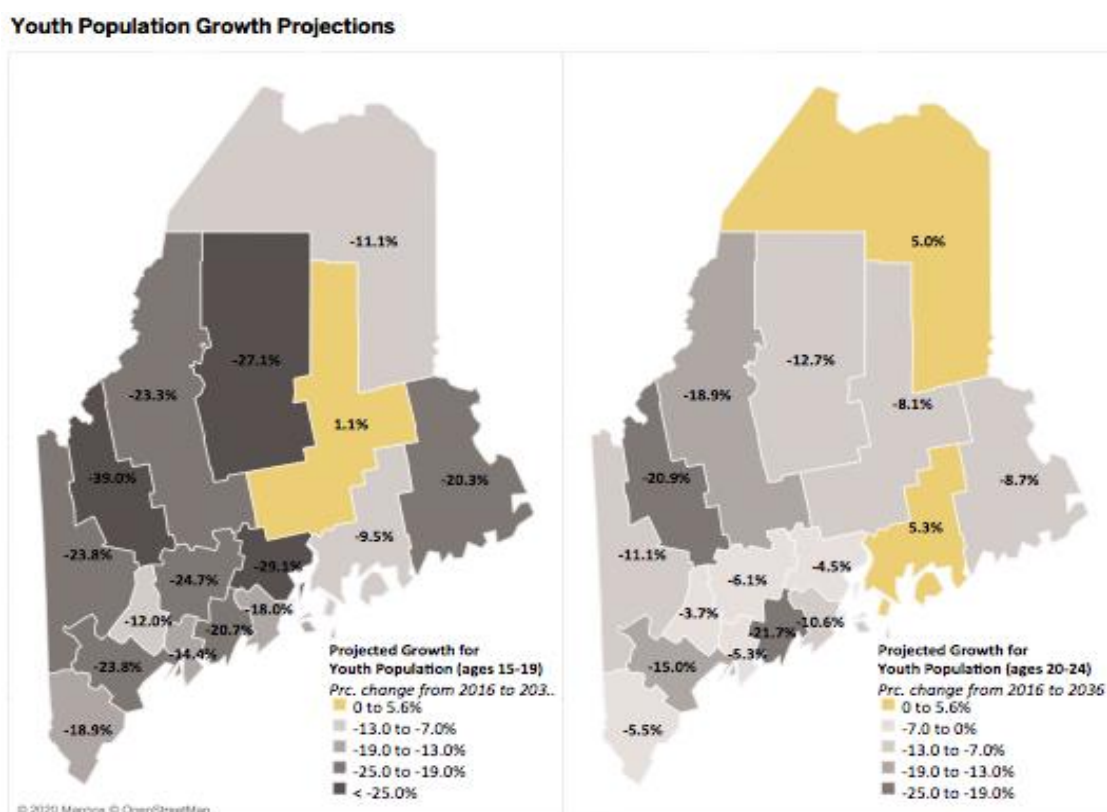


Figure 5: Maine Youth Population Projections by County, 2016-36

<sup>17</sup> Refer to Technical Appendix C for detailed data for this section.

<sup>18</sup> The state's 10 year economic development strategy calls for attracting and growing Maine's labor force by 75,000 workers. See [www.maine.gov/decd/strategic-plan](http://www.maine.gov/decd/strategic-plan).

The in-state youth workforce pipeline will continue to decline in most regions across the state forecasted through at least 2036, under current trends (Figure 5). In particular many rural areas of the state, where forest products industries are generally concentrated, are expected to see continued decline in younger aged populations lowering the potential workforce pipeline. Industries and firms will have to compete more aggressively for labor under this scenario.

#### *Emphasis of education system on post-secondary educational attainment*

The incentive structure of the current educational system emphasizes a focus on youth pursuing some form of post-secondary education with emphasis on a four-year college. One of the key metrics school districts are evaluated upon is the number of students that go on to post-secondary education. Undoubtedly the role of education is important for success in today's knowledge-based economy. However, this focus often overlooks youth that have skill sets better suited for other types of work that may not necessarily need a college degree. This framework has the unintended impact of diminishing the value and potential of youth better equipped to pursue a career outside of a four-year degree.

#### *Career opportunities are overlooked*

Careers in the forest products sector are often overlooked, in part because of the negative publicity the sector has received in recent years with the closure of mills and declining employment base. This misconception stems, in part, from a lack of advocacy and promotion by secondary school guidance counselors and career advisors. To be fair, this may have as much to do with poor advocacy from the sector, as well as other production oriented industries, as much as public perceptions about the industry. One opportunity for the industry relates to the fact that younger generations have been educated in a curriculum that emphasizes sustainability and environmentalism. They may very well be receptive to seeing a career in forestry as stewardship of forest ecosystems and supporting sustainability of diverse forested regions.<sup>19</sup>

#### **Out of State Market Opportunities to Consider**

The bulk of Maine's forest products workforce pipeline will likely be cultivated through in-state populations, but as the demographics suggest, this will become increasingly more challenging over time. It is imperative that the sector, and most industries in the state, focus on attracting and cultivating a workforce pipeline from outside of the state as well. This of course is by no means a silver bullet and is not without challenges. However, there are untapped opportunities in youth markets in proximate states, as well as labor pools in forest product cluster regions elsewhere in the US. There is also untapped potential in transient populations, such as military members seeking career opportunities upon discharge from service.

#### *Out of state youth*

Outside of northern New England, youth have more limited exposure to the opportunities in forest products, as the sector has a relatively smaller footprint in Massachusetts, which boasts over 5 times as many enrollments in CTE programs. Few forestry specific CTE educational programs exist outside of

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<sup>19</sup> See <https://www.sca.com/en/career/> or <https://www.youtube.com/watch?v=73050YM4CnY> for examples.

Maine, though programs with related content, such as manufacturing, building, and other skilled trade programs are in more abundance. Such an attraction strategy should be positioned to piggyback on overall workforce attraction efforts in Maine or focused on a selection of Maine's heritage industries that include agriculture and marine industries, in addition to forest products.

#### *Opportunities to target military to civilian transitions*

Approximately 200,000<sup>20</sup> US service members transition to civilian life every year, often relocating in search of employment opportunities, quality of life, support services, and other amenities. Maine hosts one of the highest percentages of veteran populations in the country<sup>21</sup> with strong support infrastructure for veterans. As a result the state is uniquely positioned to target civilian transitions as they seek new locations and career opportunities. Sector businesses view ex-service members as being closely aligned with qualities they seek in their workforce, including situational awareness, risk management, and leadership. Local and national organizations such as Boots-2-Roots<sup>22</sup> and Workshops for Warriors<sup>23</sup>, assist with military to civilian employment transitions and could provide strong partnerships through which to market and recruit these populations to the sector and state.

#### *US regions with forest products clusters<sup>24</sup>*

Regions in the US that are concentrated in forest products industries provide another opportunity from which to target and recruit workers, particularly regions that have labor pools with similar skill sets and have suffered employment declines in recent years with dislocated workers. These regions may provide good labor pools to target experienced personnel, mid and senior level management, and specialized skill workers. In general, subsector target regions are in the Pacific Northwest, northern Minnesota, Wisconsin, and Michigan, and southern Gulf states.

### **V. Workforce Pipeline Cultivation: Attraction, Recruitment, and Retention<sup>25</sup>**

Firms use a variety of recruitment methods to target and recruit workers to their businesses and career opportunities. Interviews with business leaders and job posting data suggests two primary channels of workforce recruitment that differ depending on the experience and skill level of positions looking to be filled. These include informal means, such as word-of-mouth and local networks, and more formal and intentional recruitment through various mediums. Firm specific actions differ by subsector, firm size, and location.

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<sup>20</sup> US Department of Defense

<sup>21</sup> 13.9% of Maine's population 18 years and old identify as a veteran, compared to 9.8% for the US.

<sup>22</sup> <https://boots2roots.org/>

<sup>23</sup> <http://www.wfw.org/>

<sup>24</sup> Appendix D provides a summary to key regions related to each of the three core industries in Maine's forest products sector.

<sup>25</sup> Refer to Technical Appendix E for detailed data for this section, including the interview protocol used to collect data from industry stakeholders.

*Word of mouth most common for small firms and entry level positions*

These tactics vary depending upon the types of occupations and jobs needed to be filled, but are most common for entry level and early career positions. For example, for entry-level workers with more novice skill requirements firms generally recruit locally and prefer to train and promote workers internally providing them long-term career opportunities within the firm or business. Generally, recruitment occurs organically through social and personal networks (word of mouth). Often the geographic catchment area is very local and within a one and a half hour commute.

*Higher skill requirements recruit through more diverse, intentional actions*

For jobs with higher skill or educational requirements (e.g., management positions), businesses are more inclined to recruit from a wider variety of sources, including universities such as Maine Maritime Academy (MMA), the University of Maine System (UMS), and the Maine Community College System (MCCS), or through online job posting services that reach broader audiences both inside and outside of the state. For the latter, those activities are typically undertaken by larger businesses that have dedicated human resource and recruitment personnel and the scale and capacity to reach wider audiences, and include platforms such as Indeed.com. For smaller businesses, such as is more common in the logging and harvesting subsector, recruitment through online mediums and higher education are less utilized and it is not evident whether they would be effective in reaching the target populations.

### **Challenges in Recruitment and Attraction**

Interviews with industry stakeholders confirmed a number of challenges firms perceive in the attraction and recruitment process, which are highlighted below. These challenges are not equal across space as certain sub-sectors and firms are further in geographic proximity to relatively larger population centers placing them at a disadvantage in attracting workers.

*Difficulty finding people that want to work in the industry*

Businesses reiterated the challenge in finding people that want to work or that are available to work in certain industries. Stakeholders are also adamant that opportunities in these industries are often shunned or overlooked by community influencers, such as guidance counselors, mentors, or family members who either lack information or have misconceptions about the career potential in the industry.

*Limited connectivity to statewide workforce recruitment efforts*

The aging demographic is a critical challenge across Maine's industries highlighted in several reports and planning documents.<sup>26,27</sup> Several statewide and regional efforts have been implemented to address this challenge, including Maine's 10-year economic development strategy, Maine Spark, digital marketing

<sup>26</sup> [https://www.mdf.org/wp-content/uploads/2019/01/MMW\\_2018\\_FullReportsml.pdf](https://www.mdf.org/wp-content/uploads/2019/01/MMW_2018_FullReportsml.pdf)

<sup>27</sup> [https://www.maine.gov/dafs/economist/sites/maine.gov.dafs.economist/files/inline-files/MuskieEcon\\_090920\\_1.pdf](https://www.maine.gov/dafs/economist/sites/maine.gov.dafs.economist/files/inline-files/MuskieEcon_090920_1.pdf)



campaigns<sup>28</sup>, and local and regional efforts. Although some forest product stakeholders reported being somewhat engaged in various efforts, the consensus suggests that the sector could be doing much more to proactively engage and advocate in state workforce attraction circles to make sure the forest economy's interests are represented.

*Need to reframe and increase the way the industry is discussed and perceived in schools, communities, and in the public eye generally*

A consistent theme experienced by industry stakeholders relates to poor public perception of career opportunities in the sector. There is a public misunderstanding about the types of jobs available, the level of innovation and technology that is occurring, and the overall conception of what actually takes place in the woods, at the mill, or in the plant. This challenge highlights a primary need for the sector to reframe, educate, and provide resources to help modernize public perceptions of the sector, and more specifically that of the career opportunities.

While there are statewide efforts to promote degree and credential attainment, these initiatives place less emphasis on careers in production-oriented industries. The public education system is incentivized to promote post-secondary degree attainment as the standard for career success. This has the unintended consequence of putting lower value on opportunities elsewhere in the economy that may in fact provide greater net value over the long-term than opportunities requiring expensive post-secondary degrees. By emphasizing the rate of cost increases for post-secondary education and the increasing share of students that are unable to afford college, the industry could offer a more attractive career investment and trajectory that includes industry provided training and certifications with limited costs to applicants.

*Recruitment in rural areas a particular challenge*

Interviews with industry stakeholders emphasized that recruitment was most difficult in remote areas, especially if people they were trying to recruit were not from rural areas. Although not the case for all jobs, the industry should consider exploiting new and existing technologies that allow for remote work or flex-work shifts when feasible. Flexible arrangements might allow people to work two weeks on followed by a week off, or some combination of on-shift and away.<sup>29</sup> During a week off, the person may engage in training or some limited remote work. This allows for their families to derive the benefits of easier access to school and healthcare, as well as the spouses being able to get jobs in less remote areas. As new technology comes along this type of arrangement will get easier.

*Amenities play an important role in workforce attraction*

Industry stakeholders identified amenities as playing an important role in the success of attracting a workforce. For example, Maine's natural amenities and lifestyle opportunities are a key asset in helping to recruit workers and families. On the other hand, local amenity access to things like affordable housing, health care, and other cultural opportunities are lacking in areas where the forest products

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<sup>28</sup> [www.liveandworkinmaine.com](http://www.liveandworkinmaine.com)

<sup>29</sup> Many resource industries already do this as part of their normal operations.

sector is typically concentrated. Engaging, promoting, and advocating for place-based development policies and initiatives with local, regional, and state leaders can help express drive home the importance of local place, as well as encourage needed change.

## **VI. Workforce Training and Education<sup>30</sup>**

Workforce delivery and service infrastructure is critical to maintaining a competitive advantage of the workforce. The general perception of the forest products sector is that there is relatively good workforce infrastructure statewide<sup>31</sup>, but there does not appear to be significant engagement by industry. Industry stakeholders also emphasize that the workforce training system is dispersed and can be fragmented. There is a need for increased connectivity and availability in more remote parts of the state. For example, CTE educational program students must often travel long distances to obtain instruction in some parts of the state, whereas certain specialized programs are only offered in one location.

### ***Focus on increasing coordination, connection, and engagement***

There are extensive workforce development resources throughout the state spanning local, regional, and state government providers, as well as institutions of higher ed and non-profit and private sector service providers. However, there is a severe limitation in coordinating programs across parties, in part because of each organizations' incentive structure, but also because of the multitude of programs that exist. This is not limited to forest product related training programs and providers, but emblematic of the broader challenges of workforce development. A dedicated workforce connector could provide a means to connect the dots and better transmit and coordinate industry needs with training program providers, while finding quicker solutions to challenges that arise.

### ***Maine MLO program has had modest success, look to scale***

The Mechanized Logging Operations (MLO) program, through the MCCA and the Professional Logging Contractors (PLC) of Maine organization, provides training and education to operate harvesting equipment helping to meet the critical workforce demands in the logging industry. The program has had good success and provides an on-ramp for workforce entrants and a community that will support them. The program could benefit from greater marketing exposure and increased enrollment.

### ***Apprenticeship program model has been successful but could be bolstered***

Apprenticeships are a unique model to provide intensive on-the-job workforce training that often leads to successful placement and long-term career progression and is a model that is increasingly being adopted in the US. The Maine Apprenticeship Program (MAP) provides opportunities for on-the-job training and instruction for specific firms. Sector firms reported engaging with MAP in recent years, but reported engagement has withered in recent years.

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<sup>30</sup> Refer to Technical Appendix E, F, and G for detailed data for this section.

<sup>31</sup> Current Capacities to Train Forest Products and programs are documented in the Technical Appendix E.

### ***Career pathways not clearly defined and promoted***

Career pathways are not always clearly defined within the sector, limiting the ability of potential workers to envision a long-term career or what career options may be within the industry. While there is currently no specific repository of career pathways specific to Maine, there are a number of resources on the internet that provide relevant information on career options and related training and certification requirements workers need.<sup>32</sup> Career pathways can also be used by workforce training stakeholders to develop programming.

### ***Bolstering internship programs, but restructure training using recent retirees***

Internships often present an opportunity to screen new workers, while building a relationship that may lead to long term placements. In practice, internships can have a negative impact in the short-term. Industry complaints related to internships and training programs were that they pulled workers away from their jobs to manage student interns that often require significantly more attention. Given there may only be one or two workers that perform a certain job or task, it made internships and some job training unfeasible. However, the same skill sets and institutional knowledge could be brought to bear through retirees. This model may represent the best of both worlds in that the skills that have not changed can be taught by these experienced people, yet the new technologies that the retirees may be less familiar with can be taught through other venues in the internship programs, perhaps through the partnering schools. There is a group doing this informally through one of the community college programs, but it could be significantly scaled up.

## **VII. Recommendations**

The future growth and expansion of the forest products sector in Maine is critically dependent on the human capital that fuels productivity, output, and innovation. Like many industries in Maine, the sector faces headwinds as the workforce ages and firms struggle to find sufficiently skilled workers to replace retirees and support growth in emerging technologies. In order to attract younger people to the workforce and career opportunities in the sector and ensuring the workforce is appropriately skilled and prepared, a cohesive narrative highlighting the career opportunities and sufficient workforce training connectivity are important areas of focus. These recommendations are general areas that emerged from the research and are not intended to be prescriptive. Rather, they are intended to provide general guidance for the FOR/Maine initiative to evaluate, build out a strategy, and execute.

1. Design, prepare, and execute a coordinated marketing and branding campaign that showcases the career opportunities in forest products in Maine.
  - a. Leverage FOR/Maine's branding effort to market career opportunities in the sector.

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<sup>32</sup> Career pathway maps for a select group of high demand occupations are collected in Appendix H.

- b. Connect and align with other related statewide initiatives aimed at targeting and attracting workforce to the state.
  - c. Focus on consistent engagement, advocacy, and leadership across broader efforts to address workforce and economic challenges in the state.
  - d. Raise the awareness of the forest products industry careers to align with emerging career trends and job opportunities involving new technologies.
- 2. Foster greater education, outreach, and awareness of opportunities in the forest products sector to Maine secondary school students and advisors.
  - a. Support teachers and career advisors to promote forestry and wood processing careers, prerequisites, and pathways.
  - b. Provide resources, information, and materials to be sure that the sector is represented
  - c. Bolster teacher and student engagement through site visits and industry experts.
  - d. Connect guidance counselors and educators and industry through regional professional development centers, such as the Central Aroostook Council for Education (CACE) and Western Maine Education Collaborative (WMEC).
  - e. Improve access to career pathway information for students.
  - f. Expand flexible internships modelled on the MELOC internship program with community college.
  - g. Appeal to the environmental stewardship aspects of the industry that align with youth curriculum.
- 3. Cultivate out of state workforce pipelines and integrate with statewide attraction and recruitment efforts
  - a. Engage in marketing and recruitment activities to CTE, vocational, and post-secondary institutions schools in other NE states.
  - b. Partner with other Maine heritage industries, such as marine and agriculture, to market and recruit out-of-state youth and displaced workers.
  - c. Explore and test recruitment efforts in targeted locations in comparable geographic locations and industry clusters.
  - d. Target racial and ethnic minority groups, women, and nontraditional workers in the industry.
  - e. Develop partnerships with initiatives designed to place veterans and servicemembers, including Boots 2 Roots and Workshops for Warriors ([www.wfw.org](http://www.wfw.org)).
  - f. Explore and consider adoption of military recruitment models.
  - g. Explore and develop opportunities to source non-domestic labor (int'l).
- 4. Leverage existing workforce infrastructure to increase coordination and engagement and expand existing internship, apprenticeship, and training programs.
  - a. Build network connectivity across partners and with firms through a dedicated industry point person.

- b. Increase access to programs and provide opportunities for time intensive training and education opportunities (e.g., training boot camps).
  - c. Explore opportunities to integrate internship training with industry mentors to help facilitate knowledge transfer and relieve job training burden for incumbent workers.
  - d. Bolster and promote apprenticeship models where feasible.
- 5. Placemaking is important in workforce attraction and retention.
  - a. Advocate for community resources and actions that empower and enable communities and regions to build quality of place, access to core amenities, workforce housing, health care, and cultural attractions.
  - b. Increase engagement with local and regional community and economic development initiatives.
- 6. Maintain an information system that enables continuous monitoring and evaluation of workforce conditions and requirements across the industry to develop and adapt workforce development initiatives.
  - a. Monitor workforce requirements and trends, and evaluation of initiatives.
  - b. Revisit workforce demands and forecast annually or biennially.

**VIII. Technical Appendices Contents (Separate Document)**

- A. Statewide Labor Market and Demographic Context
- B. Current Workforce Trends of the Forest Product Sector in Maine
- C. Replacement Labor Demand and Occupational Projections
- D. Labor Pool Supply Characterization
- E. Firm and Stakeholder Interview Protocol
- F. Economic and Workforce Development Initiatives
- G. Workforce and Training Delivery System Capacity
- H. Career Pathway Resources