

A New Era of Workforce Development

Prepared for the *Consensus Economic Forecasting Commission*
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The forces of change that have transformed the U.S. economy in recent decades—rapid technological advances, demographic shifts, the emergence of new business models, the changing nature of occupations, and, now, the changing relationships workers have to their jobs in a post-pandemic world—have all made it progressively harder to prepare workforce-ready talent. Now, as the technologies that have driven and shaped our current economy approach saturation, newer technologies and discoveries—in artificial intelligence (AI), big data, and biotech—are poised to bring dramatic, transformational change to all aspects of life, most especially to the world of work. It goes without saying that these changes will further complicate efforts to prepare workers for success in this rapidly changing environment. If in recent years the goal-posts have often moved faster than traditional skills-development systems could respond, it is increasingly clear that the speed of change and the workforce challenges we face will only continue to increase in the coming days, months, and years. ⁱ, ⁱⁱ

We are on the cusp of a new and challenging era.

I. Demographics and Other Seismic Shifts

For most of history, unemployment, as a percent of the workforce, has increased or decreased with the strength of the economy. Since 1971, unemployment in Maine has averaged 6%, twice reaching 10% and, during the early months of the pandemic, nearly 15%. Going forward unemployment rates are likely to be far less volatile as the population continues to age and the supply of new, skilled workers is insufficient to replace that portion of the workforce entering retirement. One clear indicator of this: post-pandemic unemployment rates have very quickly returned to record lows. In September 2023, Maine's unemployment rate was 2.7%, lower than it was in January 2020 before the onset of the pandemic.

In addition, over the current decade, Maine's working-age population is projected to decline by 5.3%, while its share of the population 65 and over is expected to increase by 36.2%. The need for new hires to replace those aging out of the workforce is great and requires increased participation in the labor force of those currently on the sidelines, many of whom lack job-ready skills.

As a result, in Maine, low unemployment rates are very likely here to stay, and workers can no longer be viewed as easily dispensable, even when the economy softens. Fifty years ago,



when there were 2.5 times the number of young people entering the workforce as there were older workers leaving it, our education and training systems could be fairly inefficient, and employers were often quick to lay off workers during recessions. But today, across the country, there is only one 15– to 19-year-old preparing to enter the workforce for every one adult 60-64 leaving. In Maine, this ratio is even more dire, with 7 people entering the workforce for every 10 entering retirement age. These trends mean that recruitment, retention, and development of employees are more important, and more complicated, than ever before.

The impact in Maine is stark. In each of the next five years fewer than 15,600 people will be old enough to enter the workforce and 22,200 Mainers will reach retirement age. Compounding this imbalance is the troubling reality that since the onset of the pandemic Maine has seen a significant decline in both the number of young people completing high school and those continuing their education and training beyond high school. This at a time when major shifts in the state’s economy have sharply eroded the number and quality of jobs available to those with only a high school diploma.

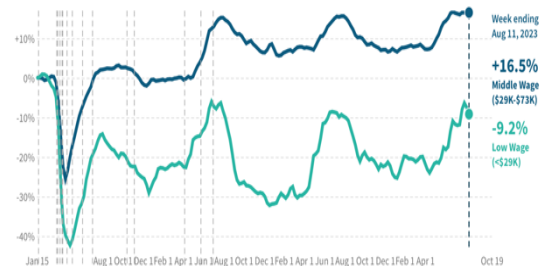
In 2018, there were approximately 130,000 working age adults (25-64) missing from the state’s workforce. These include workers displaced from traditional Maine industries, New Mainers, disengaged younger adults, and others who face barriers to employment. They comprise a large under-skilled and untapped labor pool, and they need access to programs that can provide the rapid acquisition of skills and credentials. If not reversed, these trends will continue to have a negative and stifling impact on the state’s economy.

A 2022 survey by the Maine State Chamber of Commerce of nearly 500 business leaders amplified this concern. Respondents noted a lack of availability of workers at all levels, but most especially of entry level workers, and they called for greater investments in the trades, in technical skills, and in vocational programs. First and foremost, the Chamber called for increased participation in the labor force of the existing population.ⁱⁱⁱ

II. The Changing Nature of Work: How Technology, Demographics, and External Forces will Reshape the Maine Workforce

Over the last half decade, as Maine jobs have been transformed or made obsolete by technology, consumer demand, automation, and global economic forces, gaps between supply and demand of talent have continued to grow. This reality has been brought into stark relief over the last several years as the pandemic has further fueled changes in the state’s economy.

According to recent findings from [Harvard University’s Opportunity Insights](#), the employment rate for low-wage jobs in Maine decreased 9.2% between January 2020 and August 2023. At the same time, the rate for middle wage jobs (those paying between \$29,000 and \$73,000) increased 16.5%.



The challenge in Maine and across the nation is that the skills of displaced workers often do not match those required for emerging middle-skills jobs. The supply of middle-skilled workers is tight and getting tighter and the skills needed for those jobs is changing rapidly.^{iv}

According to one pre-COVID-19 estimate by the Bureau of Labor Statistics (BLS), most of the top middle-skills occupations for which job openings were expected to surge between 2019 and 2029 are jobs requiring the short- or longer-term training and education provided by community colleges: truck drivers; nursing assistants; bookkeeping, accounting, and auditing clerks; teaching assistants; medical assistants; automotive technicians and mechanics; licensed vocational nurses; computer support specialists; and pre-school teachers.^v

As the BLS notes, the majority of the fastest growing roles on the list are technology related. The majority of fastest declining roles are clerical or secretarial roles, with bank tellers and related clerks, postal service clerks, and cashiers and ticket clerks expected to decline fastest.^{vi}

As we enter what some consider to be the advent of the 4th Industrial Revolution—with an explosion in new technologies emerging from advances in artificial intelligence, big data, biotech, and climate change—the rate of change in skills required of the labor market is likely to grow exponentially.

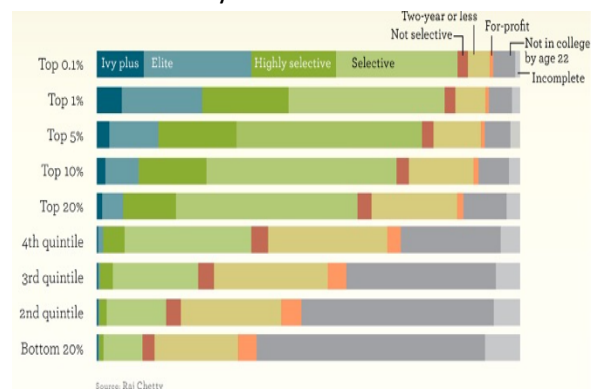
These new technologies are not expected to be job destroyers. In fact, nearly all are projected to be net job creators in the next five years. Nonetheless, they are very likely to be major job disrupters. One recent report estimates that 80 percent of the U.S. work force could have at least 10 percent of their work tasks affected by AI.^{vii}



As a 2022 Whitehouse report on the impact of AI on future workforces in the E.U. and U.S. notes: “AI has the potential to increase productivity, create new jobs, and raise living standards. However, by its very nature of performing ‘non-routine’ tasks formerly thought to be strictly the domain of humans, AI is likely to disrupt large swaths of jobs and tasks. This may lead to difficult adjustments for workers as jobs are redesigned or required skills change.”^{viii}

There is little doubt that these shifts will also lead to difficult adjustments for employers and training providers who face unprecedented demand for skilled workers. Historically Maine has not succeeded in encouraging young people to continue their education. The pandemic certainly disrupted college-going plans for many high school students, but even prior to the pandemic, Maine’s college-going rate was lower than the country as a whole and significantly lower than other states in New England.

Based on data from the Integrated Postsecondary Education Data System (IPEDS), prior to the pandemic, about 59% of Maine’s High School seniors enrolled in college immediately after graduation, meaning about



5,900 high school graduates did not attend college after high school. Yet with changes in workplace technology and a shrinking number of workers entering the workforce, advanced skill development is more important than ever.

Yet Maine faces challenges in increasing college attainment rates. Factors such as affordability, access to higher education, and workforce development initiatives play a role. The state has implemented various initiatives to address these challenges, including scholarship programs, partnerships with businesses, and efforts to improve college readiness and access to higher education.

In Maine, these pressures will be felt acutely in four key industries:

Healthcare

Over 116,000 individuals work in Maine’s health care and social assistance industry, more than in any other sector of the state’s economy.^{ix} As Maine’s population continues to age, the demand for healthcare workers will continue to rise, both to serve an aging population and to replace health care workers as they retire. The share of healthcare workers in the 55-64 age range has nearly doubled in Maine over the last 20 years from 11% in 2001 to 20% in 2021, while the share of workers aged 35-44 has dropped from 29% to 21%.^x Already, the Maine Department of Labor projects openings for 1,000 registered nurses annually,^{xi} and the demand for health care workers with some college or an associate degree—fully one-third of the health care labor force in Maine—continues to rise.^{xii}

Defense

Maine’s defense sector employs over 19,000 individuals at more than 150 companies. Nearly two-thirds of those workers are employed at Maine’s three major defense contractors: Bath Iron Works, Pratt & Whitney, and Portsmouth Naval Shipyard. In all, U.S. Department of Defense spending in Maine totaled \$3.2 billion in 2021.^{xiii}

As threats from China and Russia rise and the U.S. continues to support the war in Ukraine and restock its defenses, defense spending is projected to increase significantly over the coming decade. Already, BIW, Pratt & Whitney, and the Portsmouth Shipyard anticipate needing to fill some 2,000 positions each year, and small manufacturers in the state’s defense sector report struggling to find the qualified candidates they need to deliver their critical goods and services.^{xiv}

Environment

Maine’s clean energy sector currently employs some 14,500 workers and over the past eight years has been one of the fastest growing segments of the state’s economy. The industry is expected to continue its rapid expansion. Jobs are spread across multiple technology sectors including energy efficiency, renewable energy power generation, grid modernization and energy storage, renewable fuels, and alternative transportation technologies.^{xv} The skills required for mid-level jobs in these sectors range broadly and include welding, line-worker technology, construction, HVAC, electrical, IT, mechanical, and automotive. As Forbes recently reported: “Clean energy jobs offer higher wages than the national average and are widely available to workers without four-year degrees.”^{xvi} However, 90% of clean energy employers in the state

report difficulty hiring workers, citing small applicant pools, lack of experience, and insufficient non-technical skills.^{xvii, xviii}

As the Maine Technology Institute notes in a 2022 report to the Legislature: the environmental technology sector has also been growing in Maine with the convergence of market demand, innovation in composite materials, leadership from the University of Maine and industry players such as Cianbro and Reed & Reed, and Maine’s natural tidal and wind assets.^{xix}

Together, the clean energy and environmental technology sectors are poised to add thousands of good paying, skilled jobs to the state’s economy.

Technology

In addition to environmental technology, Maine is experiencing increased growth and innovation in its biotechnology, composites and advanced materials, IT, marine technology and aquaculture, and precision manufacturing sectors.^{xx}

Thanks to advanced technologies coming from the University of Maine, the existence and growth of the Roux Institute, and the presence of numerous biotechnology firms, Maine is well positioned to benefit from the introduction and adoption of new, “frontier” technologies such as machine learning, bioengineering, and big data. These technologies will not only spur innovation and create new high-skill, high-wage jobs for professionals, they also have the very real potential to build and sustain a large mid-level workforce to counterbalance declines in the workforce and support the innovations and businesses that emerge.

III. Changing Workforce Attitudes and Expectations

In addition to addressing specific skills shortages across industries, training programs developed by both the public and private sectors must also recognize the changing nature of the workforce and of workers’ relationship to their jobs. The pandemic, with its rapid shift to remote work for many Americans, has upended how, where, and when many American workers do their jobs. In doing so, it has provided workers with greater flexibility and—in a tight labor market that places a premium on skills—a heightened sense of empowerment over their work lives and careers.

As a result, in order to recruit and retain workers, employers must increasingly invest in them, both with meaningful training opportunities and through the creation of transparent career ladders. Studies suggest that workers across age ranges are dissatisfied with the training opportunities available to them through work and frequently pursue training outside of their jobs because company training programs do not teach them relevant skills, advance their career development, or help them stay competitive in the labor market. They also criticize companies for focusing their efforts too heavily on managers’ development, skills, and rewards. Only 36% of non-managers who responded to one major study said that their company was investing effectively in developing their skills, compared to 64% of managers.^{xxi}

Increasingly, the growing skills gap is causing employers to soften their focus on degree attainment and, instead, to evaluate potential hires on the basis of demonstrated skills and competencies. A recent report published in the Harvard Business Review found that in job announcements for intensive-care and critical-care nurses the share of postings asking for a bachelor’s degree declined by 12 percentage points

between 2019 and 2020, and degree requirements for registered nurses fell by 5 percentage points. Between 2017 and 2019, the researchers found that employers reduced degree requirements for 46% of middle-skill positions and 31% of high-skill positions.^{xxii}

IV. MCCA's Response

The nature of work has changed dramatically across industries in the last few decades due to rapid and repeated waves of automation. Nowhere is this more evident than in middle-skill positions—those that require less than a four-year college degree but more than a high school diploma. America's community colleges have been the education portal through which these workers pass.

In Maine, approximately 80% of the workforce, nearly 500,000 individuals, fill these middle-skill, often front-line jobs. In fact, the vast majority of jobs in Maine's largest industries—in healthcare, hospitality, manufacturing, construction, transportation, and other key sectors of the economy—are performed by middle-skill, front-line workers. As the nature of these jobs continue to change, and as employers, confronting the state's tight labor markets, invest in technologies to boost productivity, the skills gap grows. New jobs and tasks frequently require higher-order digital and social skills than those they are replacing.

A joint initiative by the Harvard Business School's Project on Managing the Future of Work and the American Association of Community Colleges has sought to examine the growing disequilibrium between workforce training programs and employer needs in the middle-skills environment. The study found that both educators and employers are too often failing to create the pipeline of workers necessary to keep the U.S. economy competitive and prospering and that the gulf between those who teach and those who hire only continues to grow in many parts of the country. To our state's great credit, the researchers' key recommendations closely align with the innovative work already underway between our community colleges and our employers.^{xxiii} The study's findings also closely mirror the assessment of Paul Osterman of MIT's Sloan School of Management, one that has guided our efforts in Maine. As Osterman notes: "The U.S. does not have a training system for adults if what is meant by the term 'system' is a well-articulated set of programs or opportunities that fit together in a logical stepwise way and are readily accessible to all who need assistance."

In addressing the changing dynamics of our workforce together with the increased demand for a skilled workforce, Maine's community colleges have built a platform that enables new entrants and experienced veterans in the workforce to get the skills they need.

Pathways: Leveraging Columbia University's Community College Research Center's Guided Pathway model, Maine's community colleges are building program paths and strengthening student supports. The goal is to support students as they enter and complete programs that lead to jobs or transfer to four-year colleges. In these ways, Guided Pathways has the potential to promote intergenerational social mobility among community college students. Guided Pathways is a whole-college redesign model designed to help all students explore, choose, plan, and complete programs aligned with their career and education goals efficiently and affordably.

Early College: In tandem with our partners at the University of Maine System, Maine's community colleges offer Early College Career Pathways that guide students as they learn about majors and career options. This fall, MCCA enrolled 5,054 students in Early College programs across the state.

Free College: The fall 2023 enrollment at Maine’s community colleges hit a historic high of 19,477 students this fall, surpassing the record set in 2011 and up 16 percent from last year. Fall 2023 enrollment added to the fall 2022, which increased 12%. The Free College initiative has been a significant catalyst in those enrollment gains. Created and launched when two-year college enrollments were crashing nationwide, the promise of tuition-free college was a hopeful, powerful incentive for high school graduates to emerge from the pandemic and return or start college for focused, purposeful, low-cost academic programs that prepare them for either a good job or transfer to a four-year college, saving half the cost of a four-year degree.

To qualify for free tuition under the [Free College Scholarship](#) a student must have graduated from high school or earned a Hi-SET diploma in 2020, 2021, 2022, or 2023. Students graduating or earning their Hi-SET in 2024 and 2025 will also qualify.

Since the Free College Scholarship program was proposed, 11,543 Free College Scholarship-eligible students have enrolled, surpassing the target of 8,000 students by the end of the 2023-24 academic year. The scholarship covers 100 percent of a student’s tuition and mandatory fees, which is \$3,750 a year for the average full-time student. That’s the lowest college tuition in New England.

In addition to the already mentioned enrollment gains, the outcomes include:

- *Successfully re-engaging pandemic-era students* who had not enrolled anywhere after graduating high school. National Student Clearinghouse data shows that 749 Free College students from the classes of 2020 and 2021 had never attended college anywhere before enrolling at a Maine community college in Fall 2022.
- *Attracting more “direct-from-high-school” graduating seniors*: Pre-pandemic, MCCS enrolled about 2,200 direct-from-high-school students each fall. The Free College Program has engaged students from pandemic impacted high school classes from across the state.
- *Keeping Maine dollars in-state*, benefiting Maine students and families: 95 percent of Free College students were from Maine, the same as for non-Free College students.
- *Increasing Student Success*: Fall-to-spring retention rates were higher for Maine Free College students (74 percent) than for non-Free College students (72 percent.)

In addition to the Free College initiative, enrollment was boosted through expanded programming in high demand areas, such as nursing, and the development of pathways from short-term training to college enrollment where more than 700 short-term workforce students moved into degree programs. The colleges have also been innovative and responsive in meeting the housing needs for students.

Short-term Workforce Development: Maine’s community colleges are also meeting the workforce need with a significantly expanded short-term training platform. The challenges of an aging workforce and a shrinking pool of qualified workers mean that Maine businesses are, as never before, open to new approaches to workforce training and willing to partner in new ways. This is especially true among the 98% of Maine’s private sector employers who employ fewer than 100 workers. Many of these small and mid-size employers lack human resources and training departments and struggle to identify and connect with the training resources their employees and new-hires need.

Increasingly, these employers recognize that the state's workforce problems require both the public and private sectors to unite and adopt new solutions to address a challenge of this magnitude.

Employer Engagement: This major shift in perspective is evident in the 1,300 employers that have joined forces with the System's *Harald Alfond Center for the Advancement of Maine's Workforce* by signing a Maine Workforce Development Compact (Compact). The Compact is unique to each company, but in general, initiates a relationship between an employer and the community colleges aimed at supporting a comprehensive, employer-based workforce development system to address the skilled worker shortage and promote investment for the frontline workforce. By design, the Compact aims to build new pathways for workers to enroll in degree programs.

All told, Compact members employ a total of 272,000 (~40%) of workers in Maine.

Stage I: As technology continues transforming Maine industries, tens of thousands have been displaced or left behind in low-wage employment. The Center partners with businesses hiring skilled workers and delivers short-term, pre-hire training for Mainers who need more skills to compete in the new economy, and training stipends help cover the costs of lost wages and other essentials.

Leveraging \$35 million of Maine Jobs and Recovery funding allocated to MCCS for short-term, pre-hire training, the Center has approved 7,927 training seats (93.3% of the goal of 8,500 trainees by December 2024).

Stage II: With nearly 500,000 Maine workers (80%) classified as non-managerial, the need for ongoing training of front-line workers is high. Mainers employed in frontline jobs need ongoing training to align their skills with a changing economy. With solid foundational elements now in place, MCCS has the capacity to become the training division of small and mid-size employers across the state. Through the Compact and its partnership with industry associations and employers, the Center engages training at our colleges, in the workplace, and online to build new stackable credentials.

With a grant through the Harold Alfond Foundation, MCCS's Center for the Advancement of Maine's Workforce has delivered training to 10,990 incumbent employees, with 25% of those trainees taking more than one training course.

Stage III: By 2025, 60-65% of Maine workers will need a credential of value, up from 44% today. Building on Stages I and II, the colleges are using the Guided Pathways approach to offer college coursework leading to degree opportunities. With over 137,000 Maine adults who have started but have not completed a postsecondary degree, the colleges examine the student's prior learning records and their workforce training records to counsel students on degree and credential completion options. In addition, MCCS is offering financial and academic support, along with prior learning assessments and new delivery models, to help these working adults complete a credential of value.

As a result of this work, MCCS's Center for the Advancement of Maine's Workforce is bridging the knowledge gap by implementing Osterman's vision of "a well-articulated set of programs or opportunities that fit together in a logical stepwise way and are readily accessible to all who need assistance."

Through the aforementioned Harold Alfond Foundation grant, MCCS’s Center for the Advancement of Maine’s Workforce has delivered training scholarships to 1,197 workers through employers engaged in the Maine Workforce Development Compact.

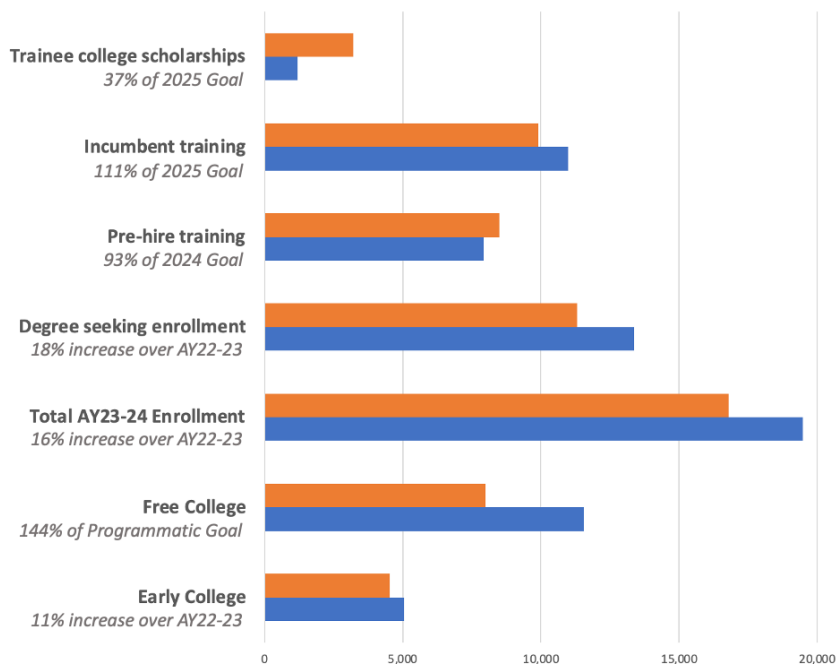
V. Final Thoughts

As we enter a new technological era and as the state’s economy and demographics continue to shift, what we are doing now in Maine, as impressive and as important as it is, will not be enough. The goalposts will keep moving down the field, faster than ever. Maine will need to build on the momentum it has already established to continue to build and deliver a more highly skilled, resilient, and responsive workforce, one that expands opportunity and prosperity for Maine people and businesses in all parts of the state.

Summary of MCCS Support for Maine’s Workforce:

Program	Impact	Notes:
Early College	5,054	AY23-24 enrollment, All-time high
Free College	11,543	All time enrollment, 144% of goal
Total AY23-24 Enrollment	19,477	AY23-24 Headcount, 16% over AY22-23, All-time high
-Degree seeking enrollment	13,366	AY23-24 Headcount, 18% over AY22-23, Highest since 2015
Pre-hire training	7,927	Training seats approved, 93% of Dec. 2024 goal
Incumbent training	10,990	Through mid-Oct 2023, 111% of HAF 2025 goal
Trainee college scholarships	1,197	Through mid-Oct 2023, 37% of HAF 2025 goal

MCCS Workforce Impact



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- ⁱ American Association of Community Colleges and Harvard Business School, [“The Partnership Imperative: Community Colleges, Employers, and America’s Chronic Skills Gap,”](#) J. Fuller and M. Raman.
- ⁱⁱ McKinsey Global Institute: [“On the cusp of a new era?”](#), C. Bradley, J. Seong, S. Smit, and J. Woetzel
- ⁱⁱⁱ Maine State Chamber of Commerce, Making Maine Work 2022:
<https://www.mainechamber.org/uploads/1/2/2/7/122727354/mmw2022-web.pdf>
- ^{iv} American Association of Community Colleges and Harvard Business School, [“The Partnership Imperative: Community Colleges, Employers, and America’s Chronic Skills Gap,”](#) J. Fuller and M. Raman.
- ^v Ibid.
- ^{vi} World Economic Forum, [“2023 The Future of Jobs”](#).
- ^{vii} New York Times, [“What Exactly are the Dangers Posed by A.I.?”](#), C. Metz, 5.1.2023.
- ^{viii} Whitehouse Report: [“The Impact of Artificial Intelligence on the Future of Workforces in the E.U. and the U.S.”](#)
- ^{ix} U.S. Bureau of Economic Analysis, [Total full-time and part-time employment by NAICS industry \(Maine\)](#).
- ^x Maine Department of Labor, [“2022 Maine Healthcare Occupations Report”](#), A. Dawson, 9.15.2022.
- ^{xi} Maine Department of Labor, High-Wage, In-Demand Jobs in Maine by Education,
<https://www.maine.gov/labor/cwri/data/oes/hwid.html>
- ^{xii} Maine Department of Labor, [“2022 Maine Healthcare Occupations Report”](#), A. Dawson, 9.15.2022.
- ^{xiii} Maine Department of Economic and Community Development, [“Defense Industry Maine: Strategic Plan for the Maine Defense Sector, Final Report,”](#) June 2019.
- ^{xiv} Ibid.
- ^{xv} U.S. Department of Energy, [“U.S. Energy & Employment Jobs Report 2022”](#).
- ^{xvi} Forbes, [“Clean Energy Jobs are Booming, Making Up for Rising Fossil Fuel Unemployment”](#), S. Marcacci.
- ^{xvii} Governor’s Energy Office, [“2022 Maine Clean Energy Workforce Analysis Report”](#)
- ^{xviii} Governor’s Energy Office, [“2021 Maine Clean Energy Industry Report”](#), April 2022.
- ^{xix} Maine Technology Institute, report to the legislature, <https://legislature.maine.gov/doc/8930>, 9.19.2022.
- ^{xx} Ibid.
- ^{xxi} World Economic Forum, [“2023 The Future of Jobs”](#).
- ^{xxii} Harvard Business Review, [“Skills-Based Hiring Is on the Rise,”](#) J. Fuller, C. Langer, & M. Sigelman, 2.11.2022.
- ^{xxiii} American Association of Community Colleges and Harvard Business School, [“The Partnership Imperative: Community Colleges, Employers, and America’s Chronic Skills Gap,”](#) J. Fuller and M. Raman.