

**Maine Economic
Development Strategy
2020-2029**

**A FOCUS ON TALENT
AND INNOVATION**

November 15, 2019

Dear Governor Mills, Members of the Legislature and residents of Maine,

This is a 10-year Economic Development Strategy for Maine. It is a dynamic and nonpartisan road-map designed to foster collaboration among the public, private, nonprofit and education sectors for the purpose of creating a diverse and sustainable economy. It is the culmination of non-partisan contributions of over 1,300 Maine people; the level of public engagement in this process was overwhelming, and we hope to have captured the ideas and energy within.

Maine is at an economic crossroads. We face serious challenges: a likely global downturn as part of the normal economic cycle; an aging workforce; and threats to some of our largest industries due to technology and climate change. This plan isn't naive about those challenges, but attempts to build on the opportunities that change presents. Maine has the wind, tides, sunlight, and expertise to lead in developing solutions to the global climate crisis. With innovations that are already underway, we can diversify our heritage industries. We can grow protein in new ways to diversify fishing and farming. We can use wood and wood residuals for new fuels, plastics, and building materials. We can advance health with our biosciences and technologies. The possibilities are limitless. Our growth potential lies at the intersection of global trends and Maine's assets.

Maine also has thriving tourism, hospitality and outdoor recreation sectors that are critical to our economy. People who experience Maine come back for more — many as tourists, and some as residents. Showcasing Maine's beauty is part of our growth strategy.

I learned again through this process the special character of Maine people. The other day an entrepreneur said to me, "People want to help; anyone in Maine will at least have a cup of coffee with you and give you their ideas." This is an example of the connectedness that is part of our Maine fabric, an ability to work together toward a common goal, a knowledge that the success of one aids the success of all. This is the commitment and the energy that we will carry forward into implementation.

I'd like to thank the thousands who participated in our hearings and online surveys: the 50 members of our subcommittees; the dozens of staff; the six members of the working team; and particularly Bruce Wagner of the Finance Authority of Maine, who organized and led this planning process. We all share a common value: there is a place in Maine's economy for everyone, and we need everyone to participate to succeed.

Thank you,

A handwritten signature in black ink, appearing to read "Heather Johnson". The signature is fluid and cursive, with a long horizontal flourish extending to the right.

Heather Johnson
Commissioner of the Maine Department of Economic and Community Development



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executive summary

In the following pages, Maine people will find a ten-year economic development strategy for the State of Maine, the first-of-its-kind in more than two decades. It is intended to serve as a dynamic and nonpartisan roadmap that can help foster collaboration among the private, public, education, and non-profit sectors to achieve a diverse and sustainable economy. It is the culmination of the contributions of more than 1,300 Maine people, incorporating a variety of perspectives collected over the course of several months.

Out of this report emerge two major necessities to spur growth in our economy: **talent** and **innovation**. We know that Maine has a talented, resilient workforce; there just are not enough of us. Additionally, the skills needed to sustain a successful workforce are changing as the world changes, and that means our workforce must be prepared to evolve with them as well. Further, fostering economic growth will require innovation – and Maine is well-poised, both through its natural resources and its people, to embrace innovation that can not only contribute to global climate solutions, but drive productivity across the entire economy.

Let's take a deeper look at both.

TALENT AND OUR WORKFORCE

Maine needs to add at least 75,000 people to our workforce over the next ten years. As many know, Maine is one of the oldest states in the nation, and the aging of our population will result in the loss of an estimated 65,000 from our workforce over the next ten years – and that is in addition to the tight labor market the state is currently confronting. There is not one simple solution to this challenge, but many strategies that, when pieced together, can help us tackle this issue. This report recommends:

Undertaking a branding effort in conjunction with the private sector, nonprofits, and the tourism industry to promote Maine as a great place to live, work, and learn in order to attract talented workers.

Building bridges for those who are not in the workforce, enabling them to join. Maine has approximately 100,000 people who are of working age but are not currently in the labor pool. We need to ensure that all people, especially those who are underrepresented and young people who are disengaged (neither in school nor in the workforce), find their role.

Welcoming foreign immigrants with programs that support rapid credential acceptance and that support housing and transportation needs.

Expanding and simplifying debt relief programs, such as the Educational Opportunity Tax Credit, to help new and existing Maine residents retire student debt, thereby enabling them to invest in housing, transportation, and other critical needs.

Technology is also significantly changing the skills needed across the continuum of the workforce. Automation is changing and will continue to change the way we work, most likely resulting in fewer but higher-paying jobs. McKinsey and Company has estimated that as many as a third of American workers will need to switch occupations by 2023 because of rapid automation. Look to the check-out area of the local grocery and notice the growth of self-checkout services as an example. In the future, we will need coders instead of cashiers.

That is why the workforce of tomorrow will require continuous upgrading of knowledge, skills, and abilities to meet ever-changing market needs. And to support that culture of continuous learning, Maine will also need an education system that is accessible, affordable, and effective. This report estimates that 44 percent of Maine's current workforce has some type of credential of value, which demonstrates to an employer that the individual has mastered a skill of use in the marketplace. By 2025, this report predicts that Maine's economy will need 60 to 65 percent of its workers to have credentials. So not only does Maine need more people in the workforce, but Maine needs more people with credentials.

As detailed in the pages ahead, this report recommends pursuing aggressive strategies to meet both demands. In the near-term, Maine should:

Develop a system of stackable, micro-credentials that enable students to quickly and affordably obtain a credential of value, which can be used to build toward other credentials and be transferred fluidly among Maine educational institutions.

Increase the availability of online learning and other flexible programs that are relevant to Maine employers and workers.

Institute statewide programs through higher education institutions that provide co-op experiences, internships, research experiences, and apprenticeships for all Maine students.



For long-term impact, this report recommends:

Establishing Maine Career Exploration to help students and families to connect to Maine's economy. This program will work with students on an age appropriate level to help them explore career opportunities that are in line with their individual area of interest. Workforce skill development will start at a young age and will grow to 100% of Maine students having an internship between their junior year of high school and one-year post high school graduation.

Better preparing of Maine students with the knowledge, skills and abilities that are aligned to the growth of the digital economy.

Investing in educator preparation and professional development to improve outcomes in pre-K through 12 education in Maine.

DRIVING INNOVATION

It is a time-tested concept: innovation drives economic growth. According to the U.S. Chamber of Commerce, economists have calculated that 50 percent of the country's GDP growth is attributed to increases in innovation. Yet, while pockets of innovation are occurring throughout Maine, such as the Maine Aqua Ventus project to create the first floating offshore wind platform, or the wellspring of microbreweries across the state, Maine lacks a clear and supported culture of innovation.

With that said, Maine's strengths position us well to innovate, and opportunities for innovation abound in every industry. The time is right for Maine businesses of all sizes and sectors to partner with education institutions, nonprofits, and governments to drive that culture of innovation and, ultimately, deliver solutions that will not only power our economy, but the world economy as well.

This report recommends:

Embracing the opportunity to capitalize on the growth of clean, renewable energy sources, including solar, wind, and biofuels. Our state has the wind, water, and solar exposure to generate substantial clean and renewable energy for both Maine residents and businesses, and, with our vast natural resources and world-class educational institutions, the ability to innovate in these fields.

Pursuing opportunities for sustainable fishing, such as aquaculture, to complement traditional fishing and meet the growing demand for a traceable food supply that is changing the way we fish and farm. Maine should also pursue the growth of support services, such as fin fish vaccines, testing for exports, and veterinary support to grow ancillary economies.

Supporting the continued growth of bio-based alternative products that emerge from the intersection of wood supply, bioplastic, and advanced building material technologies.

Investing in research and development. The State can help with academic research support, and with risk-enhanced financing from existing entities such as the Maine Venture Fund, Maine Technology Institute, and the Finance Authority of Maine to support innovation in the private and nonprofit sectors.

In the coming pages Maine people will find a specific set of strategies and action steps designed to induce collaboration across sectors to attract talent and inspire innovation. As our workforce ages and global trends create new challenges and opportunities, now is the time to take action together.



**HERE IS WHAT WE KNOW:
there is a spot for
everyone in Maine's
economy and we
need everyone to
participate.**

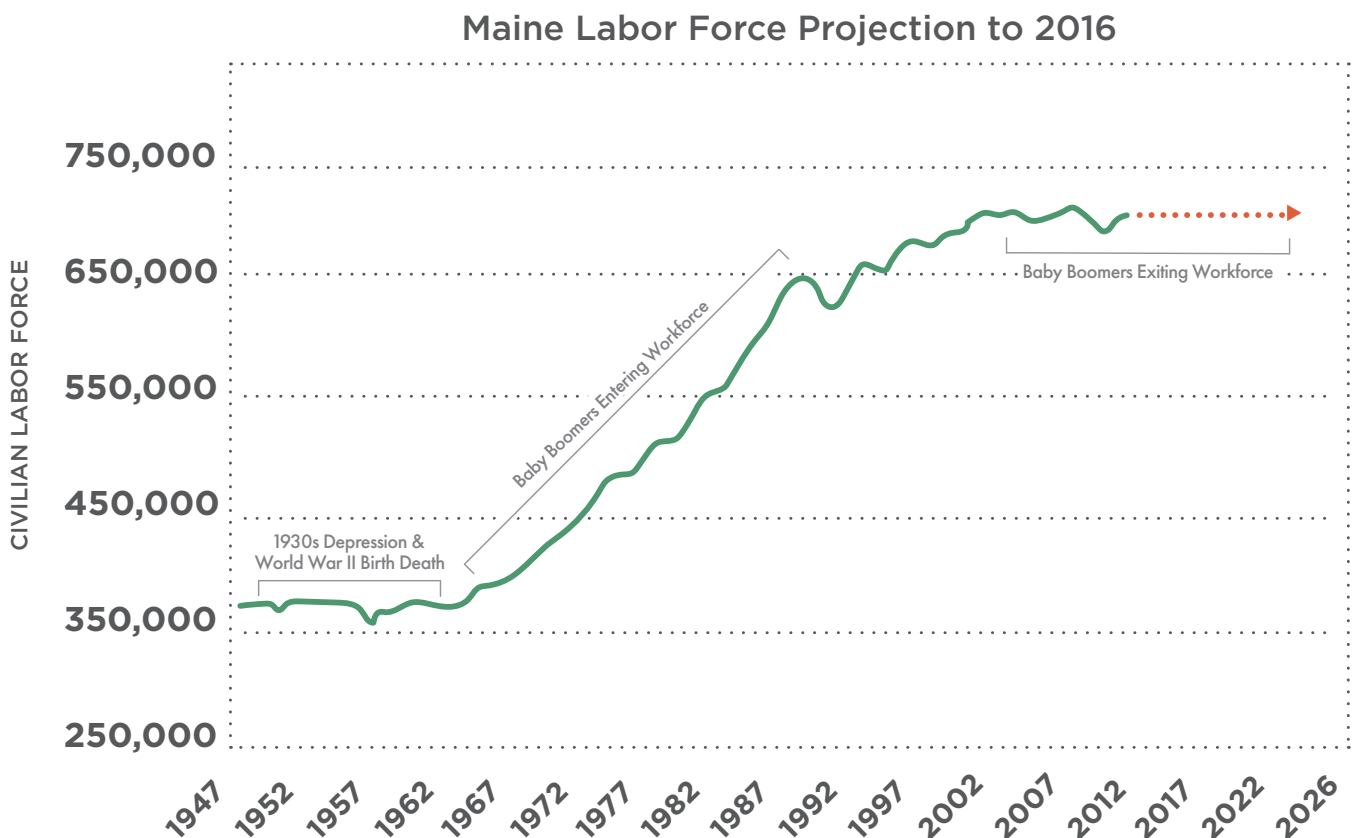
why maine needs a plan

The global economy has cyclical elements, and an economic downturn is likely within the 10-year window of this plan. This is a shared risk for all states. In addition, Maine has some unique challenges.

The first challenge is that Maine is among the least diverse and oldest states in the nation. More people are expected to retire than to enter the labor force in the coming decade. In the absence of greater in-migration to the state, Maine's labor force faces a challenge of long-term decline.¹

What are the consequences? Economists Michael LeVert and Catherine Reilly modeled the consequences of no in-migration for the Greater Portland region in 2034.² They projected that in the absence of outside in-migration, the labor force would drop by 10% — and as a consequence, so would income, employment, and tax revenues. The same is true for the state as a whole.

A second long-term challenge is that Maine's jobs do not pay enough. In the last twenty years, the average annual earnings in Maine's private sector fell from 83% of the



¹ "Workforce Trends & Outlook in Maine: Presented to the Innovation, Development, Economic Advancement & Business Committee," Glen Mills, Maine Department of Labor, 2019.

² *Greater Portland Tomorrow: Choices for Sustained Prosperity*, September 2017, Barringer et al, Appendix A.

national average to 78%.³ The relative decline can be explained, in part, by the reduction in the number of manufacturing jobs in Maine. But regardless of the explanation, the problem remains. We can't have a quality of life for our residents, attract people to move to Maine to work, or meet our public policy goals unless we increase wages and salaries to something closer to the national average.

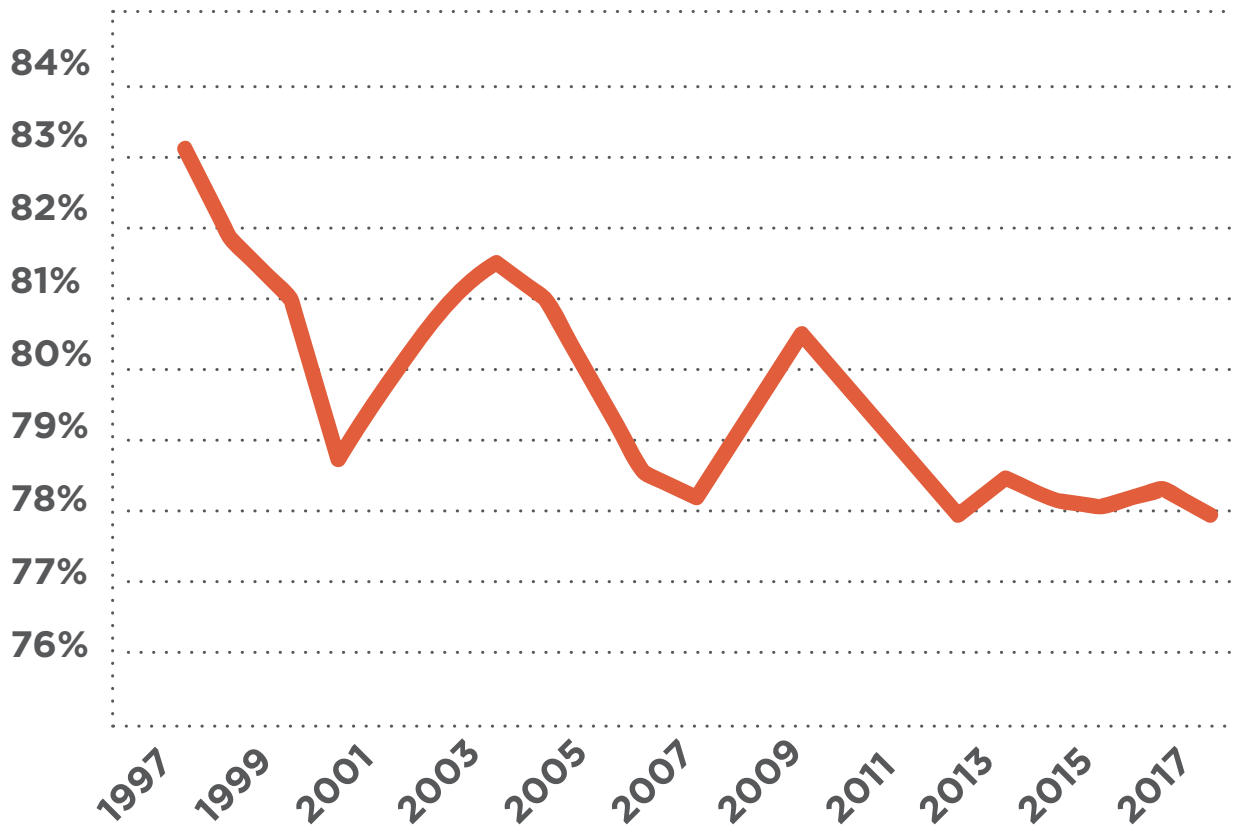
Our low wage rates are related to the lower-than-average value of the products and services that we produce. The average job in Maine produces about \$88,000 in "net" sales. The economic term for this is "value-added." Nationally, the average is \$120,000. One way to increase value is to develop new products. This can be done through research and development conducted by public, private, and nonprofit agencies; by increasing capi-

tal investment and entrepreneurship; and by increasing the skills and education of the workforce. The elements of the challenge are interrelated, therefore the solution must be comprehensive and systematic.

Since 2008, Maine's Gross Domestic Product (GDP) has grown dramatically slower than the rest of the United States. From 2008-2018 the compound annual growth rate for Maine is .6% versus the growth rate of the United States at 1.8%. (<https://www.bea.gov/data/gdp/gross-domestic-product>).

The global economy is changing and requiring innovation and new workforce skills. Maine needs to chart a course that addresses these challenges and creates opportunities based on them. Our economy can't stay the same; doing nothing will result in dramatic economic, wage and job loss.

Maine Average Annual Earnings as a % of Nation
PRIVATE SECTOR



³ QWI Explorer Application, U.S. Census Bureau

⁴ In 2012 dollars. Net sales equal total sales less the cost of other product inputs.

Economic development at its best is collaborative and looks at leveraging assets of the public, private and non-profit sectors. Effective coordination of efforts is key to success. This plan can offer a roadmap to statewide execution.





vision + goals

Maine has all of the needed natural ingredients to grow and prosper over the next ten years and beyond. In a world that is seeking renewable resources to replace petroleum-based products, Maine has an abundance of forests, and the technology to convert them into environmentally responsible alternatives. As the world demands ever-greater sources of protein, Maine has its extensive coastline and abundant resources from the sea. As climate change alters global trade patterns, Maine has well positioned deep-water ports. As much of the world seeks to escape over-crowded and increasingly unsafe cities, Maine offers accessible, safe and livable communities. That is why we put forward our vision with confidence.

OUR 10 YEAR VISION

By 2030, Maine will be an international leader with a vibrant, sustainable, environmentally-responsible economy. All across the state, the people of Maine will have access to an unmatched quality of life and good-paying jobs.

OUR 10 YEAR STRATEGIC GOALS

TO ACHIEVE OUR VISION,
WE HAVE ESTABLISHED THREE GOALS.

grow the average
annual wage by

+10%⁵

to the benefit of workers at
all income levels

increase the value
of what we sell
per worker by

+10%⁶

Attract

75,000

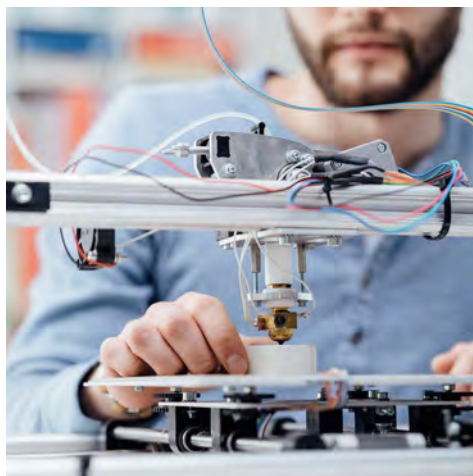
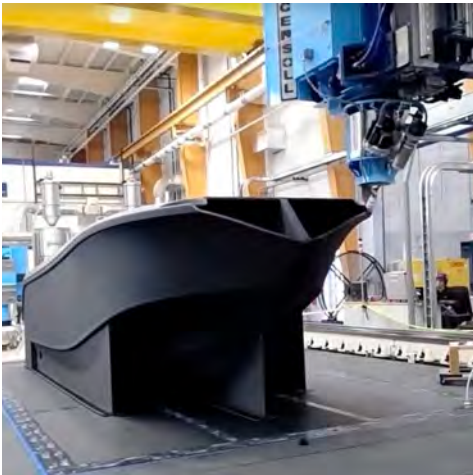
people to Maine's talent pool

both by increasing participation among Maine's existing population, and attracting new people from out of state — thus turning a potential labor force shrinkage into a gain.

⁵ From \$45,370 to \$49,900, in inflation-adjusted dollars

⁶ From \$87,160 to \$95,876, in inflation adjusted dollars

There's a place for everyone in Maine's new economy: people who like to work with their hands and people who like to work with data; people who work in the woods and people who work in offices; new arrivals and old-timers. Maine is a place where people willing to work hard can find satisfying and rewarding careers.



The problems are interconnected, so the solutions we propose are interconnected as well.

**The solution starts
with talent.**

opportunities

Economies are dynamic. From 2017 to 2018, there was a net gain of 5,600 jobs in Maine — less than 1%. But this number does not tell the whole story. During that year, Maine employers lost 29,000 jobs and created 32,000 new ones. Around 100,000 people were hired, and 96,000 left their jobs. In other words, one in six employees was on the move.

Many of the new jobs that will be created in the next ten years don't exist today. And, of the existing jobs that will remain, many will be transformed by technology. The challenge is to identify which combination of global trends and Maine strengths will offer the creative space for the high-paying jobs of the future to be realized.

Dr. Andrew Crawley of the University of Maine, and Angela Hallowell from the Maine Department of Administrative and Financial Services, took on the challenge of doing an analysis. They identified four “thematic areas” in which Maine has current strengths, there is growing global demand, and there is a potential for job creation — particularly at the intersections of these strengths. The four themes are: Food/Marine, Forest Products, Technical Services, and Making/Manufacturing.

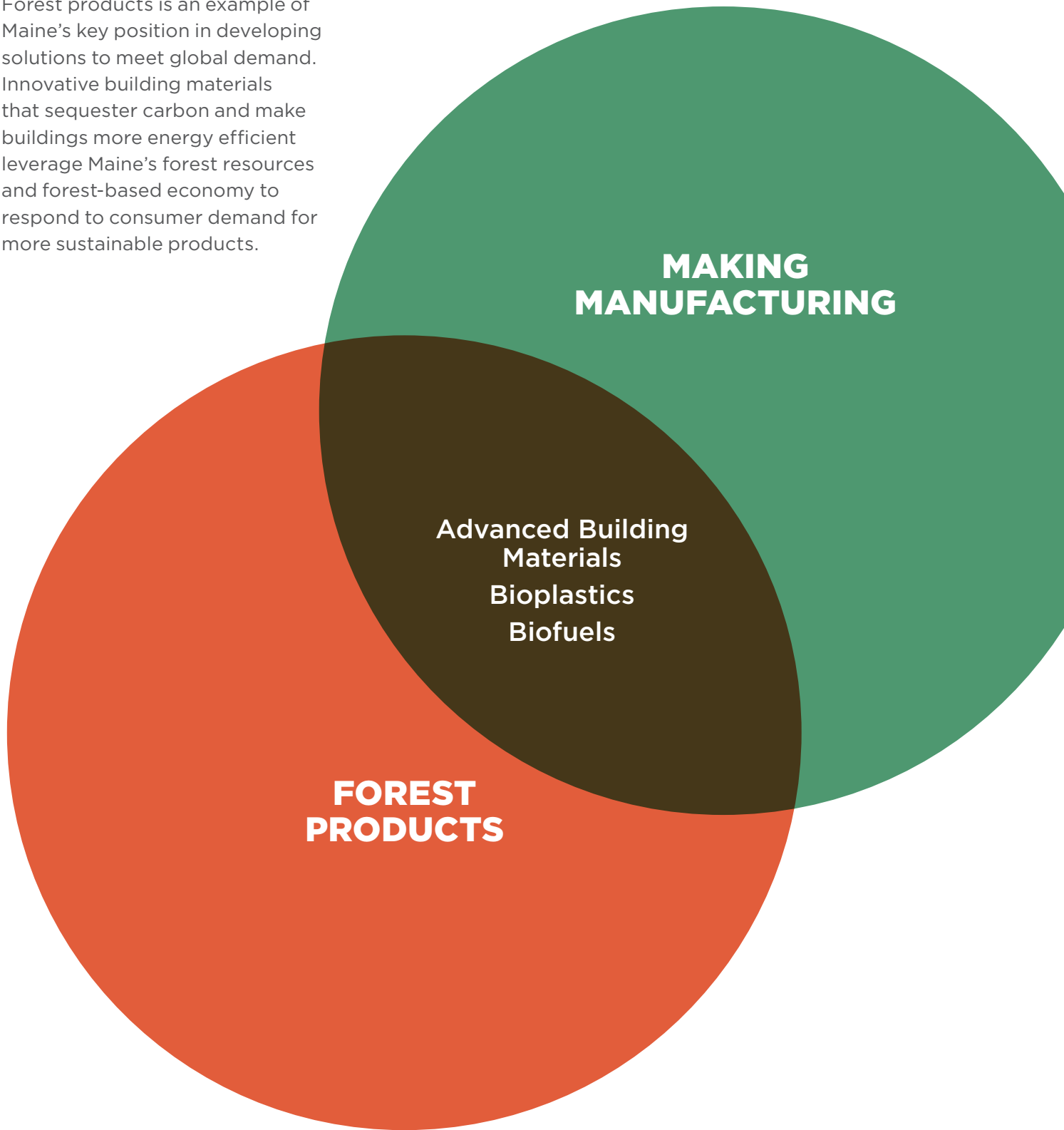
CRAWLEY AND HALLOWELL WRITE:⁷

For example, in the last couple of years the forest product industry has seen quantum leaps forward in development where new products have begun to emerge such as nanocellulose. This product takes advantage of the great abundance of trees with cutting edge science and engineering. To keep pushing this evolution, support is needed in the existing value chain, i.e. loggers are still required to fell trees and transport is still required to mills, in addition to new elements such as coders, chemists and biologists. This thematic approach requires cross cutting labor force policies that generate the depth of skills and training needed from basic to advanced degrees.

⁷ Crawley and Hallowell, “Developing Industrial Thematics for Maine Technical Report,” 2019

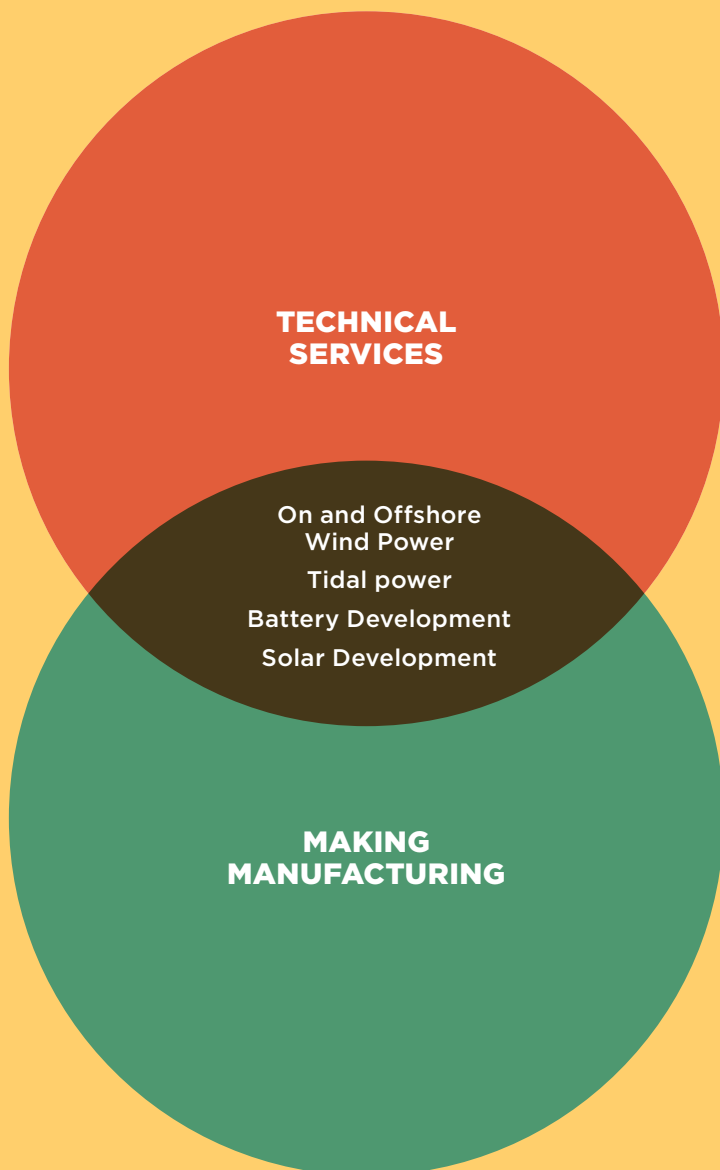
bio-based alternatives

Forest products is an example of Maine's key position in developing solutions to meet global demand. Innovative building materials that sequester carbon and make buildings more energy efficient leverage Maine's forest resources and forest-based economy to respond to consumer demand for more sustainable products.



climate change

A similar intersection of themes can be found in climate change. The global trend of looking toward green energy sources intersects with the strength of the Maine economy in technical services and making/manufacturing, and creates openings for new technologies, industries, and jobs.



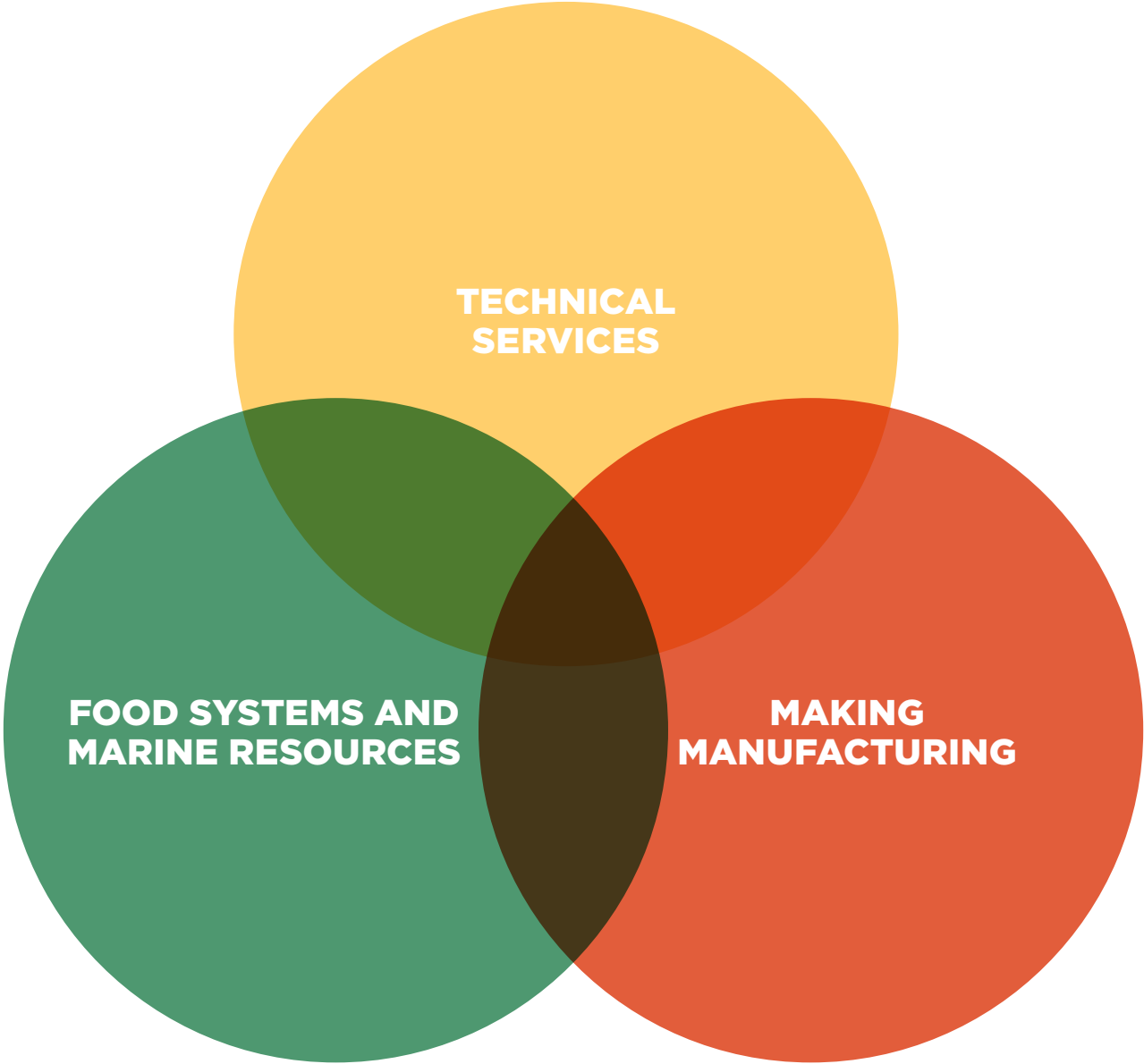
Maine is well positioned to develop solutions for the global climate challenge. We have established ambitious goals to reduce our carbon emissions, including requirements for increased renewable energy generation. While a changing climate and sea level rise offers enormous challenges for our economy, there is also opportunity to create solutions that will position Maine as an economic leader in innovative technologies. Renewable energy, energy efficiency and safe and traceable food production will create business opportunities and good jobs in some of our heritage industries, while also supporting energy and climate goals.

As of November 2019, Maine has approximately 200 solar projects in the permitting process. According to a recent report,⁸ energy efficiency is the fastest-growing energy industry in the country and there are more than 8,600 energy efficiency jobs in Maine.⁹ As Maine grows investment in energy efficiency through measures like weatherization and installation of heat pumps, the state will save ratepayers money and create new jobs. Graduates of programs such as the Kennebec County Community College Energy Services and Technology Program can enter the workforce with skills in the installation and design of high-efficiency and renewable plumbing, heating, ventilating, and air conditioning systems.

Maine has one of the best offshore wind resources in the country, and offshore wind can not only provide clean power to New England, but can be a major economic driver for Maine. One example of innovative research and economic development is the Maine Aqua Ventus Project, a pilot project that is poised to launch the first floating offshore wind turbine in the United States. The floating concrete semi-submersible hull was designed at the University of Maine and the Advanced Structures & Composites Center, and the project has developed a partnership with construction and construction services company Cianbro. Based on a University of Maine economic study, the full life of the pilot project would produce an estimated 160,000 jobs including planning, construction,

⁸ [e2.org/reports/energy-efficiency-jobs-in-america-2019/](https://www.e2.org/reports/energy-efficiency-jobs-in-america-2019/)
⁹ [e2.org/wp-content/uploads/2019/09/MAINE_2019_Final.pdf](https://www.e2.org/wp-content/uploads/2019/09/MAINE_2019_Final.pdf)

growing demand for safe, climate responsible food source



Finfish veterinary services
Shellfish vaccines
Testing for exports
Sustainable aquaculture
innovations

and ongoing operations and maintenance, and would generate around \$200 million in economic impact. A recent study showed that the offshore wind industry represents a nearly \$70 billion revenue opportunity in the next decade. The majority of the research is complete — now the focus shifts to project development, good jobs and energy savings.

Maine also leads New England in onshore wind power generation. Northern Maine Community College offers a Wind Power Technology program that is preparing future wind technicians with a focus on wind turbine maintenance and electrical power production.

A changing climate, and the need for new, more efficient technologies offers tremendous opportunities for Maine's wood products sector. From cross laminated timber, a substitute for carbon-intensive steel, to bio-fuels to wood-based insulation products, Maine is poised to be a leader in innovative construction products. In addition, as the markets and demand grow for sustainable food sources closer to markets, Maine has the opportunity to meet the significant consumer demand on the eastern seaboard, all within a day's drive of our state. From aquaculture to traditional seafood harvesting to value-added food production, growth is anticipated in these food industries and Maine can benefit greatly by growing our capacity to meet these markets.

The global demand for safe, climate-responsible food sources is growing dramatically. The United States currently imports approximately 95% of its salmon, and Maine can grow salmon to solve this need without freezing or airfreight.

This global trend intersects with Maine's strengths in marine resources, food, manufacturing and technical services. Maine can be a leader in the development of new and sustainable ocean fisheries and products. Maine is already a leader in veterinary science, and this knowledge and talent base can continue to develop the life sciences area that is a base for many industries.

Technology will play a critical role as we grow the Maine economy. Artificial intelligence will change the way we work, improve productivity and be a base for many

growth areas. This is a trend that can support Maine growth. AI is a field that will allow for more remote work and for businesses to thrive in smaller markets. This will be an advantage in Maine because of our dispersed population. Additionally, Maine is well positioned to house the growing demand for data centers with direct access to Europe and the US, available land and a cool climate.

Maine has a strong base economy that we need to continue to grow. It is critical to support businesses at all stages in their life cycles. Mature businesses can use these thematic opportunities to help diversify and stabilize supply chains throughout the state, and new enterprises can use them to find high growth opportunities.

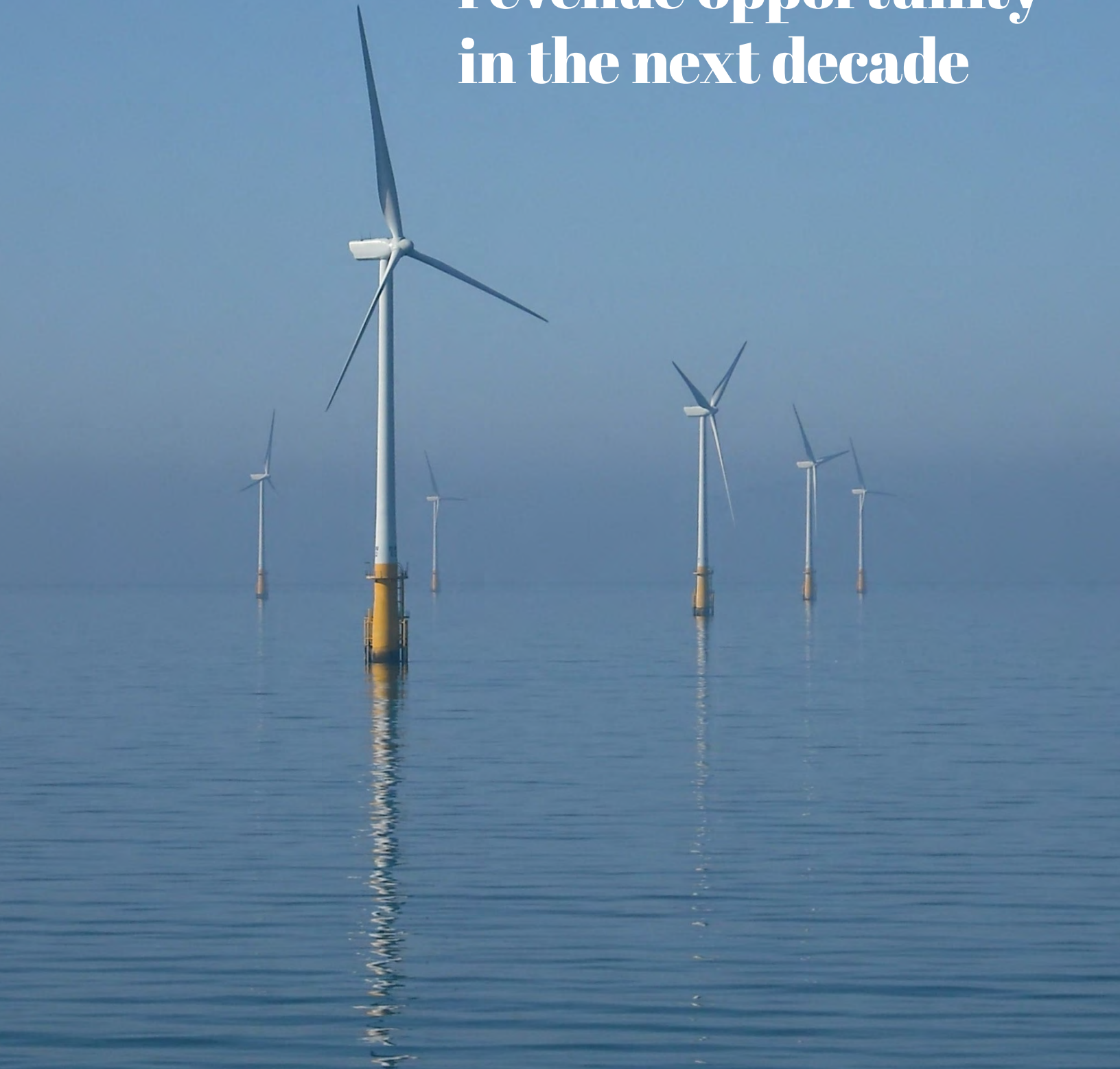
Some sectors are crucial to Maine's economy but do not appear in the themes, such as tourism and hospitality, health care, outdoor recreation, and the arts. They are important and have a great potential for growth. For example, a study of outdoor recreation in rural Maine found a potential for doubling the industry in the next 10 years, from \$2.3 billion in 2017 to \$5.6 billion in 2030. Other research shows that access to the outdoors is a major element in recruiting talent. Capitalizing on Maine's heritage and outdoor lifestyle will be an important strategy for recruiting skilled workers to Maine. With 36 million visitors a year and growing, our tourism industry will be key in exposing Maine to new people and inspiring them to move here, which will help to meet this plan's goal of 75,000 new workers in the labor force. Quality, affordable, accessible health care is key to attracting and retaining the future workforce. Arts and culture are another appealing component of Maine's special brand.

All sectors, all jobs matter. Our vision is that Maine is a state where every person can find fulfilling and rewarding work, and employers can find the talent they need. The thematic approach offers us a tool to focus our limited resources on high impact areas that offer growth in all regions of the state.

¹¹ *The Future of Tourism in the Maine Woods: Executive Summary*. Maine Woods Consortium, 2019

¹² *Talent Wars*, DCI, 2017.

**offshore wind
industry represents
a nearly \$70 billion
revenue opportunity
in the next decade**



STRATEGY A

grow local talent

In the 21st century, economic development is about investing in people and their communities. In order to grow, communities need to attract and retain talent.

Talent is the new currency. Maine is in competition with other states and the world to build and retain a creative and productive workforce, to attract knowledge industries, and to have a well-educated public that can make wise civic and policy decisions.

There are long and short-run aspects to talent building. For the long run, we will invest in our early care and pre-K system on par with how we invest in the rest of our educational system. We will prepare our children entering kindergarten to succeed. We will prepare all students to achieve the competencies needed to find a place in the future economy.

In the short run, we will help adult workers, who are now (or could be) in the workforce, to upgrade their skills so that they can qualify for better-paying jobs — and to simply keep their own jobs, which will require new skills as technology changes. Currently, 190,000 Maine adults (20%) have begun, but have not yet completed, a postsecondary program of study. Over a third of students at the University of Maine and the Community College Systems are over 25 years old. The education system must be dynamic and available to workers on short notice in response to new job opportunities. Maine unions will have a critical role in identifying opportunities, providing training, and modeling well-established and successful apprenticeship programs.

In 2018, 44% of Maine’s workforce has a work credential that goes beyond a high school diploma.¹³ A “credential” is a two or four-year college degree, or a license in the trades, or a professional certificate. The goal set in Maine law to increase this proportion to 60% by 2025.¹⁴

THE MAINE EDUCATION FUNNEL EFFECT AND ACHIEVEMENT GAPS

ENTERING 9TH GRADE	100%	100%	100%
HIGH SCHOOL GRADUATES	79%	95%	87%
ENROLL IN COLLEGE 2017	40%	71%	55%
RETURN FOR 2ND YEAR OF COLLEGE (2018)	28%	62%	46%
EARN A 2- OR 4-YEAR DEGREE	16%	44%	30%
	ECONOMICALLY DISADVANTAGED	NON-ECONOMICALLY DISADVANTAGED	ALL MAINE STUDENTS

To better prepare Maine students, we must specifically look to help children from economically-disadvantaged¹⁵ backgrounds to achieve success. Almost half of Maine public school students (47%) are disadvantaged. By the time of their first nationally-benchmarked proficiency tests in 4th grade, these children display proficiency in

reading and mathematics at half of the rate of the other students. Going forward, they are less likely to graduate from high school or earn a post-secondary credential. This is why investing in quality early learning is so critical; it ensures that all students enter kindergarten ready to learn and gives every child a good chance for success.

¹³ Page 22, Education Indicators for Maine, 2018, Educate Maine.

¹⁴ Workforce Board, Title 26, Chapter 25

¹⁵ Disadvantaged is defined as below 185% of poverty level, which is the criteria used for the free and reduced-price lunch program

ACTIONS TO ACHIEVE THIS GOAL INCLUDE:

ACTION A1:

Maine's Career Exploration

Research shows that heightened economic mobility for children is a result of “the connectedness, the day-to-day interactions, the diversity of people and experiences, the exposure to others, and sense of belonging.”¹⁶ We will use our neighborhood businesses and employers to enrich student learning.

Maine Career Exploration will start while students are in kindergarten and work with students until one year following graduation from high school. The mission of the program is to connect students and their families to the Maine economy, and to grow our own talent.

The program will work with students on an age-appropriate level to create valuable and rewarding connections to their community, and to explore real opportunities that fit within their individual areas of interest. Workforce skill development will start at a young age and will grow until 100% of Maine students have a 6 month paid internship between their junior year of high school and one year post high school graduation. Paid internships will engage all youth and remove the need to make a choice between needing to earn money and career exploration. Internships will also help establish professional networks for all students, thus expanding their economic mobility.

Elementary age students will be exposed to robotics, technology, and transferable skills that can be utilized in the workforce and create upward mobility. Middle School age students will explore areas of interest that build on their personal strengths and also align to marketplace opportunities. High school students will have opportunities for job shadowing and direct interaction with business, non profits and government (including public safety) to see what is available

Parental engagement will be part of the student experience; this will enable families to learn and grow together.

Students' ability to explore local career opportunities and build community networks is critical to retaining young people in Maine and strengthening civic responsibility.

Current programs such as Junior Achievement and Jobs for Maine Graduates will be key partners in providing support and wrap-around services for students who need additional coaching and soft-skills development.

Maine has several internship/apprenticeship resource sites available:

- Maine Job Link Career Center (Maine Department of Labor)
- Hospitality Maine
- Project Login
- LiveWorkMaine
- Farm Labor Link Network (Maine Department of Agriculture, Conservation and Forestry)

Despite these resources, interns report that it is difficult to understand the apprenticeship/internship system in Maine, and to find listings. The same challenge is faced by new Mainers, Native Americans, low-income students, and minorities. A simplified and well-publicized portal for students is needed.

ACTION A2:

Web Portal matching students and employers

Maine has one website that lists apprenticeship opportunities¹⁷ and two that list internships.¹⁸ Potential interns report that it is difficult to understand the apprenticeship/internship system in Maine, and to find listings.¹⁹ A simplified and well-publicized system will be created. This will be particularly helpful to students who lack access to the informal job market of family and friends, and who need to earn income as part of any experience — students such as new Mainers, African Americans, Native Americans, low-income students, and minorities.

CareerWise Colorado is a successful website for apprenticeships that could serve as a model for Maine. Maine will research best practices from CareerWise and elsewhere in creating its portal.

ACTION A3:

Align curriculums with digital economy skills

The Department of Education is now in the process of reviewing Maine's Career and Educational Development Standards and its Mathematics Standards.²⁰ These identify skills and knowledge that should be instilled from pre-K through high school graduation in the areas of workplace skills and career knowledge, as well as digital skills. Maine's curriculum will better reflect the

¹⁶ Richard Florida, “Kids Raised in Walkable Cities Earn More Money as a result,” City Lab, 10-24-19

¹⁷ joblink.maine.gov/ada/r/search/jobs?keywords=apprentice

¹⁸ Hospitality Maine and LiveWorkMaine

¹⁹ Feedback from FocusMaine summer interns 2019

²⁰ maine.gov/doe/learning/content/career/review and maine.gov/doe/learning/content/mathematics/review

technology and career skills workers will need in the current and coming job markets. Technology skills are already a base component of every job in the economy, and this will even be more true in the future. While job and technology requirements are constantly changing, providing workers with fundamental technical skills and understanding will help them adapt successfully over their careers. The skills should be responsive to the potential high-wage jobs that are identified in the Crawley-Hallowell analysis above.

ACTION A4:

Engage today’s workers in continuing education to achieve credentials for career advancement.

Employers will continue to strengthen partnerships with adult education programs, the community colleges, the University of Maine System, and private colleges to expand collaborations to enable workers to gain “microcredentials” for specific skills and jobs. Microcredentials will revolutionize post-secondary education by offering accessible, affordable courses in smaller increments that can be used to immediately improve income potential. Microcredentials can be stacked to further advanced qualifications. They are transferable within the state post-secondary system.

Maine’s Career and Technical Education (CTE) System plays a critical role. Traditionally these programs have provided credentials for jobs ranging from skilled trades to firefighter training. The CTEs need modern equipment and staffing to support these programs.

ACTION A5:

Expand the professional preparation of educators at all levels – from those caring for children aged 0-3, as well as Pre-K to high school – in STEM and other digital economy skills.

We are fortunate to have great educators in Maine. In order to support their growth and development, teachers, child care workers, and classroom assistants need continuing education and credentialing as well — first, so they can effectively teach skills to young people, and second, so they can get the credential for their own advancement and higher pay. This includes pre-service preparation as well as continuing professional development.

ACTION A6:

Improve the quality of care in our early childhood system by supplementing salaries for early childhood educators, rewarding them for their experience in the field and completing postsecondary programs.

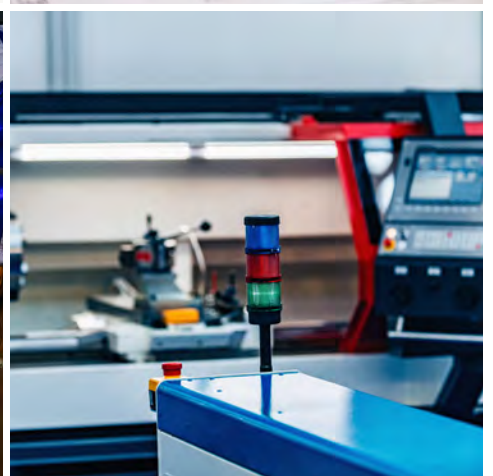
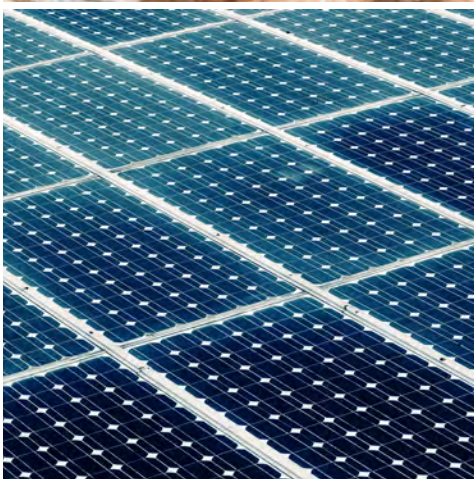
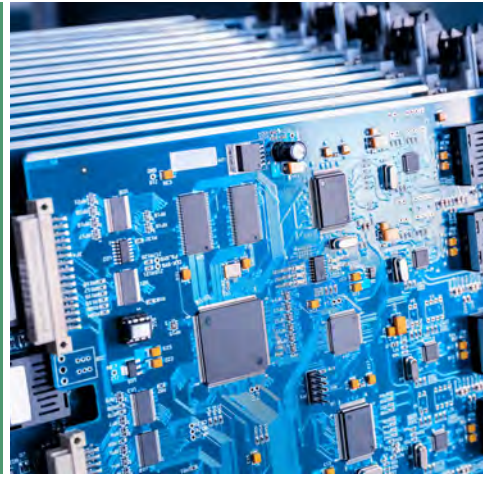
Early childhood educators are the lowest paid workers in the education field. Not surprisingly, turnover rates are high; this leads to less continuity and lower quality for children in childcare. Salary supplements for childcare teachers would not bring parity with teachers in the public school system, but would help to incentivize further education and retain teachers in the field. Without funding to attract and retain more educators, the early care and education system will have difficulty serving Maine children and families.



The Central Maine Motors Auto Group in Waterville got tired of complaining about how hard it was to find workers. Instead, they worked with local schools to create a pipeline of qualified graduates to hire.

Here is their system. The Mid-Maine Technical Center identifies high school juniors who may have an interest in working with cars. In the spring, 12-15 such students do a comprehensive job shadow at the auto group, where they spend 8 half-days visiting different departments. The next summer, roughly 10 are hired to wash cars. Then 4-5 continue working in their senior year, and after graduation, become an apprentice. The apprenticeship takes two years, and students switch every eight weeks between studying at Central Maine Community College and working (for pay) at the dealership. The local Maine Career Center covers the costs of transportation, books, and supplies for students with financial need. Students come out ready to test for ASE (National Institute for Automotive Service Excellence) certification, and earn an associate’s degree. At this point they begin full-time employment at the dealership as a lube technician and start basic manufacturer’s training. From there, the student can advance in multiple career paths. To get from high school student to used car tech (mid-level) it can take up to 3.5 years, and there are pay increases as people learn more skills and gain experience. The Central Maine Community College automotive technology program is called “Dealer Trax,” and now involves other dealerships in the area.

Maine Career Exploration will start while students are in kindergarten and work with students until one year following graduation from high school. The mission of the program is to connect students and their families to the Maine economy, and to grow our own talent.



STRATEGY B

attract new talent

The goal is 75,000 additional people in the workforce. Maine has strong, talented, hard-working people. We don't have enough of them. This strategy forecasts a 65,000 person contraction in the workforce over the next ten years unless robust countermeasures are undertaken.



**Talent
attraction
will come in
many forms.**

ACTION B1:

Increase the labor force participation of existing residents.

There are approximately 100,000 people living in Maine that are of working age but are not currently engaged in the workforce. A study done several years ago estimated that Maine can increase its workforce by over 30,000 people by increasing the labor force participation of seniors, people with disabilities, veterans, and young people who are disengaged from school and work.²² While all of these people may not be able to enter the workforce, many will be able to access work opportunities with encouragement, direct support, physical accommodations in the workplace, flexible work arrangements and mentoring.

Within this group are Maine people who are afflicted with the disease of opioid dependence, at least 6,000 who have been lost from the labor force. Helping them return to the workforce not only helps the economy, it helps them to recover. There are some existing programs

that are already doing great work, including the Maine Community College Hope Program.

People from economically disadvantaged families will be helped to enter the workforce and improve their jobs by Department of Health and Human Services programs that support training, tuition, transportation, child-care, and other supportive services. Its programs will be more closely aligned with those at the Departments of Labor – for example, collocating outreach workers and connecting TANF and Food Supplement participants to the Workforce Innovation and Opportunity Act and the Maine Career Center System to promote education, training, and job placement.

Maine also has the oldest population in the nation – offering an opportunity to identify ways to tap into older Mainers to strengthen our economy. Maine was recently designated the 6th Age-Friendly State by AARP. And we have expanded the Senior Community Service

²² *Growing Maine's Workforce*, part of the Making Maine Work series of the Maine Development Foundation and Maine State Chamber of Commerce.

Employment Program, an employment and training program for low-income people age 55 and older.

We will work deliberately with all minority groups to ensure equitability in access and engagement. Diversity is critical to growth.

Our analysis also suggests Maine's workforce could increase by as much as 8,500 if Maine women chose to work at levels similar to women in other countries with more family-friendly policies. Increasing the accessibility and affordability of childcare is the first step in doing that.

There's a place in the Maine economy for everyone, and it is our challenge to make sure that everyone finds their place.

ACTION B2:
Support the Governor's Welcome Home program.

Maine has proven we can market our assets effectively. We bring 37 million people to Maine each year as part of a \$9 billion annual tourism industry. The attraction of new workers from beyond our borders is a compelling need. Maine will scale up its Workforce Attraction + Retention marketing initiatives leveraging those learnings.

A new Welcome Home program is being developed. It will be designed to advertise a consistent brand with current tourism campaigns and Bi-Centennial celebrations. It will tell a cohesive and compelling narrative about Maine as a career and lifestyle destination. The program will also be a source of information and resources for people who are considering moving to Maine. The Welcome Home program will attract young families and skilled workers, entice people to return home, draw people who went to college or summer camp here, summer residents, immigrants and others. The program will use research findings and expertise from external partners to inform program components.

ACTION B3:
Expand - and simplify - the Education Opportunity Tax Credit.

The Education Opportunity Tax Credit (also known as "Opportunity Maine") provides reimbursements for college debt repayments for recent college graduates who live and work in Maine. While the credit has received significant national and international press attention in recent years for being a powerful and compelling tool, the

calculations for the credit are very complex and depend on what year you went to school, what you majored in, where you went to school, etc. The credit will be simplified in order to drive the action of moving to Maine, and in the process, be made available to more people. College loan help is a major incentive for young people to work in Maine. This is a tool all employers can use to attract workers as well.

ACTION B4:
Help New Americans and Other Newcomers Get Qualified to Work in Maine

In a global economy, Maine must attract the best talent from all corners of the world, including the two million college-educated immigrants in the United States who are stuck in low-skilled jobs or are unemployed—a phenomenon known as "brain waste." Maine must be known by foreign trained individuals across the U.S. as the most effective state to support their goals to attain a license in their field. Maine will develop and implement a process for effective and timely recognition of credentials issued internationally, by the military, and by other states. This need is particularly pressing for foreign teachers; they are needed in the classroom to give new Mainers adult models to emulate and learn from, but the current process for certification is onerous. In addition, when needed, Maine will work with municipalities to set up service and cultural centers for new arrivals.

Above all, Maine must be known by new Americans across the United States as the most effective State to find a meaningful job that matches their career aspirations with their prior skills. This includes providing the transitional supports (e.g., English language learning, training) that can distinguish Maine from other states.

ACTION B5:
Promote "Quality of Place" investments.

The quality of our recreational opportunities, historic places, and arts and culture are a draw for tourists and residents alike. Each area of Maine has special attributes. We will work directly with local communities to explore asset development that attracts and retains people.

ACTION B6:
Supporting learning

Attract young families to Maine by nationally marketing the NextGen 529 investment plan with our existing generous matching contribution grants. We also offer the first in the nation \$500 Alford Grant for every child born in Maine after January 1, 2013.

STRATEGY C

promote innovation

Maine has some distinctive strengths that support the four themes for high-wage growth described earlier. The University of Maine, with world-class wood composites, climate change, food, and aquaculture research programs, is based in the Greater Bangor region, but is a statewide asset, as are The Jackson Laboratory, Bigelow, MDI biolab, GMRI and cluster of companies focused on biomedical work. Greater Portland has an array of biomedical and veterinary research and startup activity. Throughout the state, advancements in renewable generation, storage and access will facilitate growth across regions.

This plan has a focus in four thematic areas; Food/Marine, Forest Products, Making/Manufacturing, and Technical Services. The intersection of these areas with significant global trends is where the largest opportunities exist for growth through innovation. These four themes will provide a focus for all of Maine's public research and development (R&D) programs. R&D, in turn, will offer profitable opportunities to feed into Maine's entrepreneurship and small business programs.

ACTION C1:**Increase R&D investment levels in Maine.**

Prior to the recession in 2009, Maine's R&D investment was 50% higher than today.²³ Maine is especially low in private sector R&D investment as well as in higher education R&D expenditures. Maine will create a combination of public subsidies, tax incentives, and higher education investments, in order to partner with the private sector to lift this total number again.

ACTION C2:**Raise the investment cap of the Maine Seed Capital Tax Credit Program.**

Every dollar of Seed Capital Tax Credit raises ten dollars of private investment. An increase in the ceiling from \$5 to \$15 million would help about 40 startups and create 2,300 new jobs.

ACTION C3:**Revitalize the Maine Innovation Economy Advisory Board**

This board brings together the major private, nonprofit and public research organizations in Maine. It will provide oversight and coordination to the state's overall effort, and ensure that funds are targeted to areas that translate into new and profitable business growth. This board will help focus innovation and connect R&D more closely to market opportunities.

ACTION C4:**Promote exports in order to strengthen the climate for startups.**

The Maine International Trade Center does a great job working with Maine businesses to promote international exports. We need to expand this work. Maine will develop a domestic exports program as well to support businesses in their efforts to sell products inside of the United States — particularly startups, new ventures, and small businesses.

²³ *Measures of Growth, 2019*, page 9.

STRATEGY D

ubiquitous connectivity

Cell phone and high-speed internet service are the lifelines of the modern Maine economy. Connectivity is a necessary infrastructure that allows communities to thrive. Connectivity in rural communities enables talent attraction, innovation, skills upgrading, and access to a global economy. Connectivity will cross all sectors — not just of the economy, but of people’s lives. The ability to access information, create and share content, improve health outcomes, access learning, and work from anywhere in our state, all hinge on high speed access. Consistent, always-available access across the state is essential. Maine cannot settle for less.

ConnectME, the state high-speed internet authority, has set the minimum standard for service at 25Mbps (megabits per second) “down” (receiving data) and 3 Mbps “up” (sending data). At least 85,000 locations in Maine do not meet this standard.

Maine households subscribe to broadband services at a rate of a little better than half of the national average.²⁴ The lower the so-called “take rate,” the less the financial incentive there is for a private company to invest to extend a broadband line into a new neighborhood. This points out that the issue is not simply the availability of broadband, but also its affordability.

ConnectMe is currently updating the Broadband Action Plan to streamline the expansion opportunities.

²⁴ *Measures of Growth, 2019*. page 11.

ACTION D1:

Provide a loan guarantee program for financiers of broadband projects.

One way to make investment dollars go further is for the Finance Authority of Maine (FAME) to provide loan guarantee insurance to private lenders to high speed internet providers. This would enable lenders to be more aggressive in lending their money to rural projects. The creation of a loan guarantee fund would require a large upfront investment, but thereafter the fund would replenish itself as payments came in. More important, it would reduce the need for direct state subsidies. For example, the reserves needed to support high speed internet would be 20% of the total investment, so a \$20m reserve will leverage \$100m investment. Those reserves could revolve many times with solid projects.

ACTION D2:

Continue to provide local planning grants in order to help increase take rates and make projects more feasible.

An important program run by ConnectME provides planning assistance to local governments. These are used to assess local needs, generate local interest in participating (thus raising the take rate), and create a cost-efficient strategy. Currently there are 50 communities that have completed their plans and are awaiting the availability of ConnectME funds.

ACTION D3:

Provide a consistent, predictable, and robust annual level of ConnectME infrastructure grants.

Under its current program structure, ConnectME generally ends up contributing one dollar of state subsidy for every three dollars of private, local, and federal investment. The FAME guarantee program (Action D1) would be able to increase the amount of private match to public dollars. Even with the loan guarantee, however, a continued infrastructure grant program is needed.

STRATEGY E

provide supporting infrastructure

To attract talent to move into the state — and to retain the talent we have — Maine needs a supporting infrastructure that ensures a quality of life. Broadband and schools, mentioned earlier, are pieces of the puzzle. Childcare, housing and transportation are also part of the picture. Because these functions are largely independent of the economic development system, other entities must be responsible for achieving goals in these areas, and those entities are identified on the following pages.

ACTION E1:

Set the bar high for childcare; aim to create a world-class system in Maine.

Live + Work in Maine is an outreach program seeking to attract people to move to the state. One of the most frequently asked questions by prospects is “What is the childcare situation in Maine? Availability? Quality?”

A BPC/Morning Consult poll of American parents with children under 5 found that the high cost and lack of availability of daycare affected their ability to stay in the workforce and to attend school.

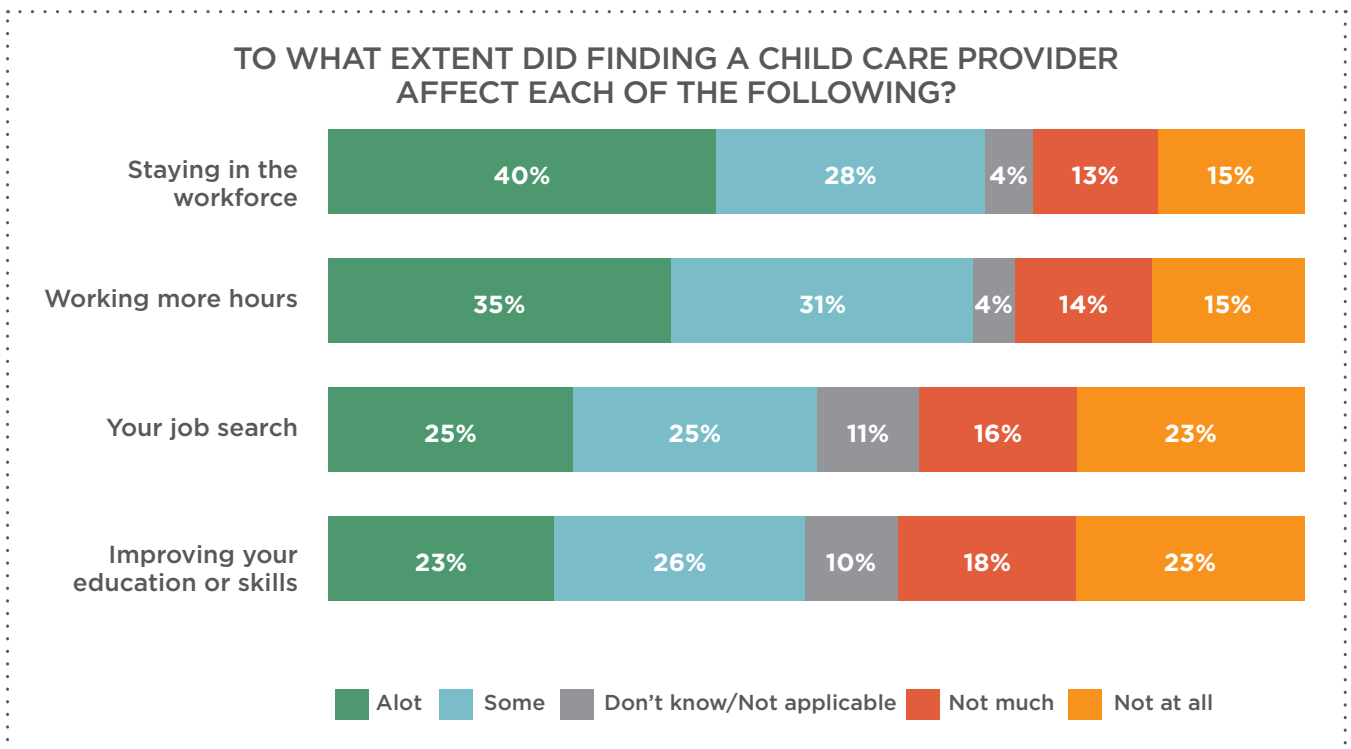
The *Maine Children’s Cabinet* has been reactivated and is meeting regularly under the new Administration. The Children’s Cabinet members include the Commissioners from the Departments of Corrections, Education, Health and Human Services, Labor, and Public Safety. One of the key goals of the Children’s Cabinet is to ensure that all Maine children enter kindergarten prepared to succeed. To reach this goal, the Cabinet is developing a plan to align and strengthen policies and programs for Maine’s early care and education system.

The Children’s Cabinet will be asked to design a long-term plan for Maine to move to an early care and education system for children from birth through age 4 that is high-quality, accessible, and affordable. This plan shall include: expanding to universal pre-K through a strong mixed delivery system (with incentives for partnerships among schools, child care providers, and Head Starts); increasing the number of quality infant and toddler care slots; investing in the childcare workforce; and improving access to the childcare subsidy program. Besides attracting new people, this strategy will also help to increase the number of Maine parents in the workforce.

ACTION E2:

Establish an adequate and sustainable funding system for public transportation.

Maine spends 86 cents per person annually for public transportation. That is 37th among all states, and is below every other state in New England. Part of the problem is that Maine’s overall transportation funding system is broken, and does not bring in adequate revenues to fund highway improvements or any other major function of the Maine Department of Transportation.



A Majority of parents say finding a child care provider affected staying in the workforce 68% and working more hours 66%

²⁵ See <https://bipartisanpolicy.org/blog/child-care-poll/#>

The Legislature has established a *Blue Ribbon Commission to Study and Recommend Funding Solutions for the State's Transportation Systems*. Increasing public transportation funding to a sustainable level should be part of its recommendations.

Employers can and have started to provide assistance and incentives for its employees to carpool and use public transit. For public transportation, local governments can provide additional subsidies in order to expand bus lines and increase the frequency of service. The GOMAINE Commuter Connection program is a resource for this.

ACTION E3:
Expand the production of workforce housing in Maine.

Increases in the cost of housing, particularly in southern and coastal Maine, are out-pacing wages. More production of affordable apartments and starter homes is needed to keep pace with demand. The mainstay program of MaineHousing is the low-income housing tax credit provided by the federal government; but that program only produced 21 apartment units for families in Maine in 2018 (with another 381 financed and underway). This is totally inadequate to the scale of the problem. Maine needs to develop its own tools for workforce housing.

An underused state tool is the Affordable Housing Tax Increment Financing Program; MaineHousing should create low interest loan supplements to make this a production program for moderate-income workers seeking starter homes, condominiums, or apartments. Another possibility is for the state to create a state tax credit program modeled on the federal law.

Local governments can reform their land use laws to permit higher-density (and thus lower-cost) housing. Employers can participate financially in the development of new housing near the worksite. Nonprofits are also working to address this need. As an example, the Northern Forest Center purchased homes in the Millinocket region to be utilized for workforce housing.

As is true in other policy areas such as workforce development and education and broadband, partnerships are needed to achieve Maine's goals.





STRATEGY F

maintain stable business environment

Maine has a set of high regulatory standards—and for good reason. Our natural resources are one of our state’s greatest assets, and safeguarding them for future generations is critical. The implementation of these standards should be done with predictability, transparency, and timeliness. The policy goals of high environmental standards and efficient regulatory processes are not in conflict with one another. Both are essential. The following recommendations focus on strategies to streamline processes, advance efficiencies, and create stability without sacrificing integral standards.

ACTION F1:

Review and simplify the application/decision process and pipeline.

Before one can utilize technology for transparency, one needs to simplify and standardize the business processes. So the first step must be to review and document Maine's existing regulatory processes. Once that is complete, state government should look at ways to improve efficiency, including areas of redundancy and options for multiple work streams for permits so that one doesn't have to be fully complete before the next one starts.

In addition, the state can provide ways to "pre-permit" some areas of anticipated development. This same process approach applies to simplifying the processes for certifying foreign professionals to practice their skills in Maine (Action B4).

ACTION F2:

Create a web portal where applicants can track their applications

Once the processes are understood and rationalized, the state can invest in the creation of an online portal that would enable businesses to understand the regulatory system for their particular projects, the standards they must meet, the critical path the application would follow, and the anticipated length of time for a decision.

ACTION F3:

Control and reduce energy costs

The transition to a lower-carbon economy presents challenges and opportunities for Maine's economy that must be managed carefully and proactively, with a focus on stability and affordability. Maine's retail electricity costs are higher than national average, but lower than the other New England states. The cost and stability of energy prices is a particular concern to Maine's manufacturing sector, though stable and affordable energy costs are important for all Maine businesses and residents. With advancements in solar, offshore wind, and other biofuel technologies and policies, Maine can be a leader in clean energy, while also creating good paying jobs. Businesses can also utilize these new, cleaner forms of energy production, as well as increased efficiency programs, to help stabilize and lower their energy bills. Increasing Maine-based generation can support energy price stability and security while reducing Maine's reliance on imported fossil fuels that are subject to global market conditions. In addition, increased support and investment in energy efficiency, especially for Maine businesses, can reduce energy use and promote cost savings, while new technologies like energy storage can also yield cost savings benefits.

ACTION F4:

Control Healthcare costs

The recent expansion of Medicaid should ease the upward cost pressure for private insurance in the short run. The Department of Health and Human Services is reviewing a number of options to stabilize and reduce costs while creating better access.



STRATEGY G

promote hubs of excellence

A Hub of Excellence is an area with conditions present for strong economic growth. Hubs of Excellence are driven by talent and a convergence of research, higher learning, skilled workforce and business, and a livable, healthy space. Focusing on hubs allows communities to leverage their strengths and develop areas that are gaps. This concept supports communities working together to deliver comprehensive assets to their residents.

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We have some hubs naturally developing. The Bangor region has great academic institutions in the University of Maine, Husson University and Eastern Maine Community College. These academic institutions are developing a strong workforce and research assets that support market growth in a number of the industry themes.

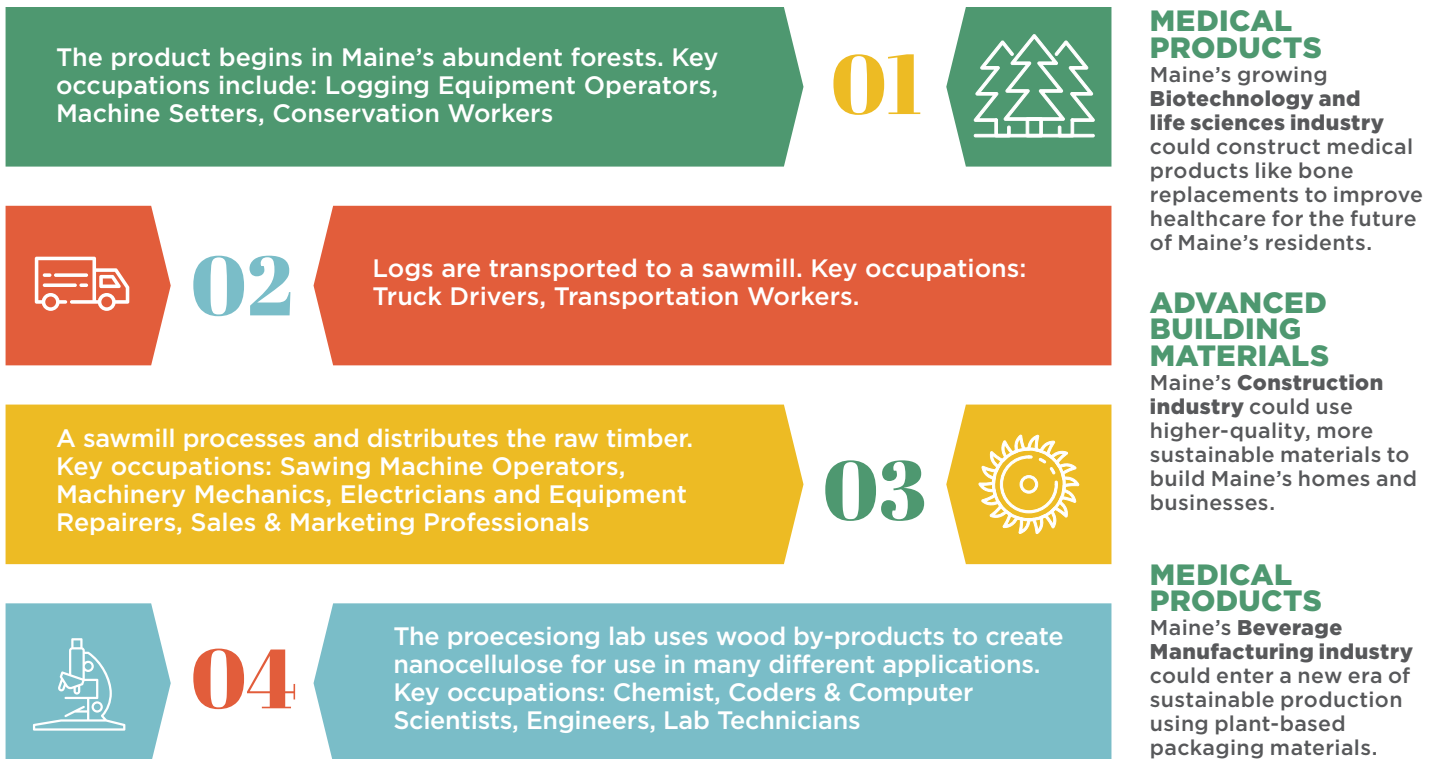
The Portland region has seen a strong growth in bioscience and is consistently rated very highly in livability.

Maine’s ability to meet its workforce attraction goals depends upon the economic health of these hubs. These hubs provide the infrastructure needed to support surrounding rural areas – health, education, transportation, cultural services. Research shows that rural towns that are near to thriving mid-sized cities do better than rural towns that are not.²⁶

What makes a hub economically competitive? Access to:

- Cultural and social diversity
- Frequent air service
- University graduate programs
- University, nonprofit, and private research laboratories
- First class hospitals and health services
- Affordable housing
- Walkable neighborhoods
- Mass transit
- Quality technical schools
- Corporate headquarter operations
- Arts and culture
- Restaurants and shopping
- Entrepreneurial centers
- Services to accommodate new immigrants

These are the places where talent comes together, where the IT person works with the researcher and the startup business to create something new. They also provide the services and attractions that improve the quality of life for people living all around.



²⁶ “Why Rural America Needs Cities,” Arnosti and Liu, Brookings Report, 2018.

While some hubs are naturally forming, we have the opportunity to partner with communities to help accelerate development. Additionally, we will look at supply chains for the hubs. As an example, advancements in the forest products industry will improve the value of a tree being removed from the woods in Western Maine, even though the production may be done in Lincoln. Focusing on supply chain development throughout the state ensures that the value of the hub is realized in many areas of the state.

ACTION G1

Communities to identify gaps for their hubs of excellence.

The State will partner with local community leaders to look at their areas of interest and support efforts to fill missing elements in becoming a hub of excellence in their chosen area.

ACTION G2

Identify areas of supply chain opportunity.

For the key growth areas, the state, in partnership with industry groups, will identify supply chain opportunities and work with local communities on asset development, education and market connections.



Appendix A: List of Contributors to the Plan

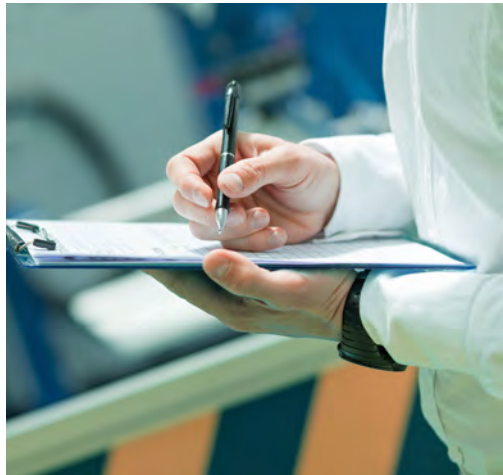
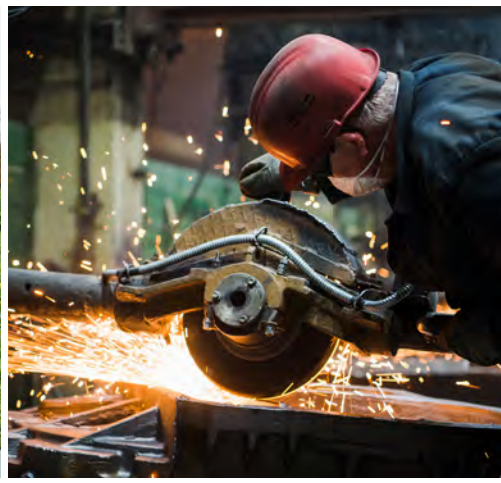
STEERING COMMITTEE; ACCOUNTABLE FOR PROCESS AND SCHEDULE; WEEKLY MEETINGS

1. Bruce Wagner, CEO, Finance Authority of Maine, Chair
2. Sarah Curran, Senior Policy Analyst, Governor's Office of Innovation and the Future
3. Peggy Schaffer, Director, ConnectME Authority
4. Amanda Rector, Maine State Economist
5. Kate Foye, Legislative Liaison/Communications Manager, DECD
6. Torrey Gray, Development Program Manager, DECD
7. Kim Smith, Deputy Commissioner, Department of Labor

STRATEGIC WORK TEAM (INCLUDES STEERING) ; ACCOUNTABLE FOR CONTENT; BI-WEEKLY - MONTHLY MEETINGS

1. Yellow Light Breen, President and CEO, MDF
2. Amy Landry, Executive Director, AVCOG
3. Ben Gilman, Government Relations Attorney, Maine State Chamber of Commerce
4. Brian Whitney, President, Maine Technology Institute
5. John Burns, Managing Director, Maine Venture Fund
6. Keith Bisson, President, Coastal Enterprises
7. Dr. Joan Ferrini-Mundy, President, University of Maine
8. John Napolitano, President, Maine State Building and Construction Trades Council
9. David Daigler, President, Maine Community College System
10. Paul Towle, CEO, Aroostook Partnership
11. Kimberly Hamilton, President, FocusMaine
12. Julia Trujillo, Director, Office of Economic Opportunity, City of Portland
13. Charles "Wick" Johnson, President, Kennebec Technologies







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